AGENDA
STATE BOARD OF EDUCATION

December 11, 2015

Arkansas Department of Education

ADE Auditorium

9:00 AM

Back Print

Reports

Report-1 Chair's Report

Presenter: *Toyce Newton*

Report-2 Commissioner's Report

Presenter: *Johnny Key*

Report-3 Recognition of Arkansas Schools Designated as National Blue Ribbon Schools for 2015

U.S. Secretary of Education Arne Duncan recognized 335 schools as National Blue Ribbon Schools for 2015 based on their overall academic excellence or their progress in closing achievement gaps among student subgroups. These schools demonstrate that all students can achieve to high levels. The Department honored 285 public and 50 private schools at a recognition ceremony on Nov. 9-10 in Washington, D.C. In its 33-year history, the National Blue Ribbon Schools Program has bestowed this coveted award on more than 8,000 of America's schools. The National Blue Ribbon Schools Program honors public and private elementary, middle, and high schools where students either achieve very high learning standards or are making notable improvements in closing the achievement gap. Each school received an award plaque and flag from the U.S. Department of Education, Blue Ribbon Office. The award plaque affirms the hard work of students, educators, families and communities in creating safe and welcoming schools where students master challenging content. The award flag gracing a school's building is a widely recognized symbol of exemplary teaching and learning. All schools are recognized in one of two performance categories, based on all student scores, subgroup student scores and graduation rates.

All four (4)of Arkansas' schools below were in the category of high performing. Exemplary High Performing Schools are among their state's highest performing schools as measured by state assessments or nationally normed tests. Student subgroup performance and high school graduation rates are also at the highest levels.

Mount Pleasant Elementary School, Melbourne School District
Park Magnet School, Hot Springs School District
Valley View Junior High School,Valley View School District
Vandergriff Elementary School, Fayetteville Public School District

Exemplary Achievement Gap Closing Schools are among their state's highest performing schools in closing achievement gaps between a school's subgroups and all students over the past five years. Student subgroup performance and high school graduation rates for each subgroup are at high levels. The state had no schools nominated in the second category.

The Department invites National Blue Ribbon School nominations from the top education official in every state, the District of Columbia, Puerto Rico, the Virgin Islands, the Department of Defense Education Activity and the Bureau of Indian Education. The Council for American Private Education (CAPE) nominates private schools. A total of 420 schools nationwide may be nominated, with allocations determined by the numbers of K-12 students and schools in each jurisdiction.

Presenter: *Otistene Smith and Commissioner Key*

Report-4 Arkansas Teacher of the Year (ATOY) Report

The 2015 Arkansas Teacher of the Year will present a component of her professional development project.

Presenter: *Ouida Newton*

Report-5 Arkansas Governor's School Report

The Director of Arkansas Governor's School will make a brief presentation about the 2015 school.

Presenter: *Dr. Debbie Jones/Dr. Lyle Rupert*

Report-6 Career Pathway for the Educator Workforce

The ADE Office of Educator Licensure is working with the Department of Career Education to establish a pathway to the educator workforce. The proposed pathway begins with career-focused education in high school with participating students receiving an industry certification as a Certified Teacher Assistant (CTA) upon completion of high school career coursework and passing all areas of the Praxis Core assessment. As a CTA, a student would be eligible for employment in public schools to work as a paraprofessional, gaining valuable experience while also attending a two or four-year college on a flexible schedule allowing the student to take classes and work at least part-time as a CTA. Once the CTA has earned enough credit to be admitted into a teacher preparation program, the CTA progresses to the level of a Teacher Intern with progressively increasing job responsibilities at the public school. This on-the-job experience allows for higher education institutions to be flexible with students field experiences and student teaching credit, and combined with the rigorous coursework, promotes a learner-ready educator who is eligible for a standard license upon successful completion of the degree program and corresponding assessments. To be successful, the ADE and ACE are working with school districts and institutions of higher education to promote opportunities for employment and flexible college course scheduling, as well as, sufficient support for the CTA/Teacher Intern throughout the educational path. It is critical that each step of the pathway be connected to promote success for this grow-your-own approach.

Presenter: *Ivy Pfeffer*

Report-7 Research and Technology Report

Research and Technology provides tools and support to educators.

Presenter: *Dr. Eric Saunders*

Report-8 Learning Services Report

This information is provided to keep the State Board of Education apprised of the Department's work activities associated with college and career readiness.

Presenter: *Dr. Debbie Jones*

Report-9 Computer Science Report

A monthly report will be provided to update the State Board on the progress of Governor Asa Hutchinson's Computer Science Initiative.

Presenter: *Anthony Owen*

Response to Intervention (RTI)

The goal of every teacher and school district in Arkansas is to prepare students for the future. But what about those students that are not reaching academic goals? Is it because of a learning disability or are there other reasons for lack of progress toward achieving grade-level standards? Response to Intervention (RTI) is an early intervention system that integrates assessment and interventions to maximize student achievement. By using RTI, schools use data to identify students who are at risk academically and then provide appropriate support and interventions.

RTI is a three-tier model of support for students. Tier 1 involves high-quality classroom instruction accompanied by screening and needed interventions. Students are screened on a periodic basis to establish a baseline and identify those who may be "at risk". At-risk students receive supplemental instruction during the school day in the regular classroom. Examples of Tier 1 interventions may include assignment of an extra reading or math group where identified students would receive additional focused time practicing an identified skill. The additional instruction is differentiated to meet the needs of each individual student. During that time, each child is closely monitored for progress. Students who do not show significant progress are moved to Tier 2.

In Tier 2, students receive targeted interventions. These interventions are based on the specific identified needs of the student. Intervention for the student is provided in a small group or personalized setting and is in addition to the instruction the student receives in the regular classroom. Students who do not show significant progress in Tier 2 over a measured period of time are moved to Tier 3.

In Tier 3, students receive intensive interventions and a comprehensive evaluation. Interventions at this level are individualized. These intensive interventions target the specific skill deficits a student may have. Students who do not make significant progress in Tier 3 may be referred for an evaluation and considered for eligibility in a special education program.

The Arkansas Department of Education is supporting districts as they implement a high-quality RTI program. To help districts evaluate the quality of their current RTI program the ADE has provided an RTI Self-Assessment Tool. It can be found at- http://www.arkansased.gov/public/userfiles/RTI/Arkansas_RTI_Self-Assessment_Tool_2015.pdf

Because of the new dyslexia law and the beginning of the dyslexia screening process in schools, there has been some confusion about RTI and how it relates to dyslexia. Although it is required in the dyslexia law, RTI is separate from dyslexia; however, the initial screening in K-2 can be used for both the Level I Dyslexia Screening and the Universal Screening for RTI if it is administered to all students.

One of the great resources available for high schools to use in gathering student data is the Arkansas StudentGPS Dashboard. The dashboard contains information including a student's grades, attendance, discipline, state and local assessments, advanced academics, and college and career readiness. Much of the data needed for a high school RTI early warning system screener can be pulled directly from this site. StudentGPS will also pull interventions from the Arkansas Student Intervention System.

In addition, the Arkansas Department of Education has gathered a list of other resources that schools at all levels can use to help with the development of a quality RTI program. A link to these resources is found at- http://www.arkansased.gov/divisions/learning-services/curriculum-and-instruction/rti/resources

There is a need for professional development on RTI. As a result, the Arkansas Department of Education has developed three RTI training modules. These modules are available on ArkansasIDEAS for districts, administrators and teachers to use to help implement a quality RTI program for students. Each module contains a facilitator guide, along with PowerPoints and video presentations. The modules can be used as an individual course or as professional development for district training. This allows district leaders to facilitate the RTI training modules on-site in a blended environment with their staff. Coming soon is a module on the "High School RTI Handbook". This new module will help secondary schools with development and implementation of an RTI program. The three modules currently available are as follows:

- RTI Arkansas: Overview
- RTI Arkansas: Leadership
- Multi-Tiered Support System Literacy K-5

Each regional educational service cooperative can be utilized to help districts train staff for implementing a successful RTI program. Some of the trainings being offered at the regional coops are as follows:

- The Very Basics: School Based Identification of Struggling Readers
- K-6 Intervention Instruction
- K-5, Assessment
- 6-12, Assessment
- Arkansas Student Intervention System
- Elementary RTI

Check ESC Works for dates, locations and times of trainings.

The National Center on Intensive Intervention has numerous tools to support implementation of RTI. There you can find guides and forms to provide support in RTI team meetings. These guides and forms can be used by districts to help with the documentation that is needed during the RTI process. In addition, the site also provides sample lessons and activities.

Developing a RTI program in a school district will take time, but that does not diminish the importance of putting a quality RTI program in place. If the decision is made that a gradual implementation is needed of the three-tiered system, then the recommendation would be to start with one school wide goal and one subject (literacy) first, and then grow the program into other goals and subjects. Nonetheless, all three tiers of RTI are needed. No matter the process, RTI is a school-wide framework for efficiently delivering the necessary services to improve student learning.

If you have additional questions about RTI, contact Rhonda Dickey.

Rhonda Dickey, Assistant Director of Curriculum and Instruction
Arkansas Department of Education
Curriculum and Instruction Unit
Four Capitol Mall, Room 202-B
Little Rock, AR 72201
Phone: 501-682-0471
Email: Rhonda.Dickey@arkansas.gov

Teachers May Sign-Up for Commissioner's Memos

The ADE has implemented a sign-up system to receive notifications of Commissioner's Memos. ADE issues notifications to school districts through these memos. The memos are available for school districts as well as the general public. As a teacher, you may receive memos that directly apply to you rather than receiving all memos released in the system. By signing up to receive the memos, teachers, administrators and all stakeholders can stay current on educational issues and information. To sign up, go to- http://adecm.arkansas.gov/Subscribe.aspx

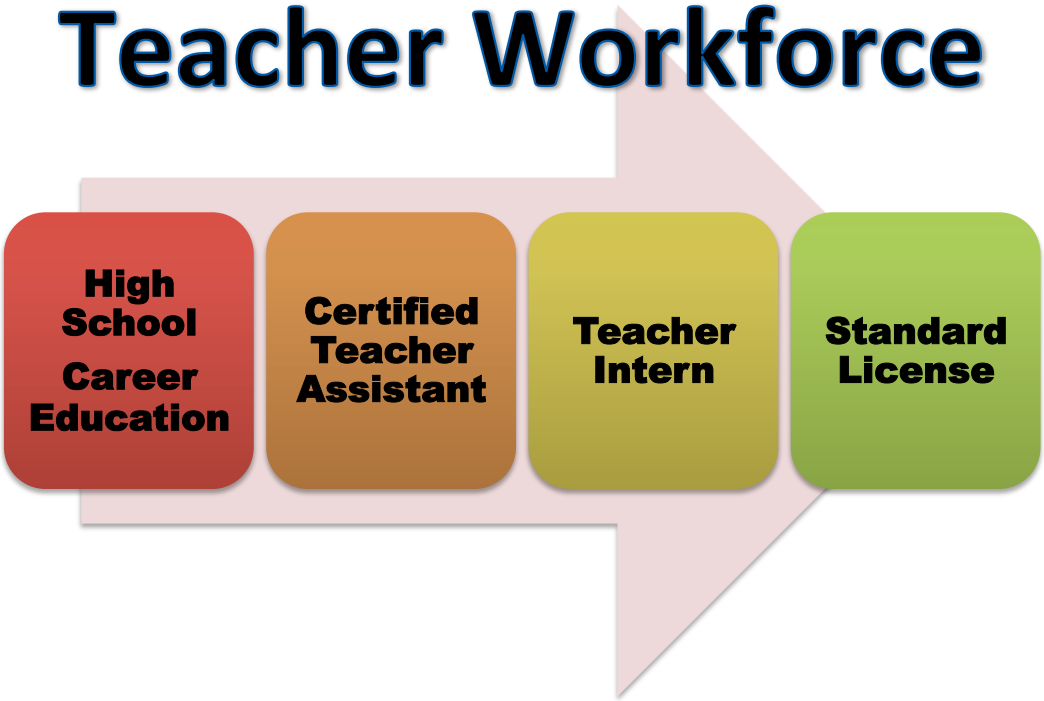
Year	2011	2012
Total Applicants	588	701
Schools Represented (Applicants)	99	100
Counties Represented (Applicants)	45	44
Total Invited (Accepted and Alternates)	428	417
Total Declined	28	17
Total Enrolled	400	400
Total Completed	395	397
Area I Applicants (1st Choice)		
Choral Music	41	29
Drama	36	32
English/Language Arts	94	127
Instrumental Music	47	46
Mathematics	83	113
Natural Science	137	173
Social Science	115	136
Visual Arts	35	45
Gender (Applicants)		
Male	214	258
Female	374	443
Male % of Applicants	36.4%	36.8%
Female % of Applicants	63.6%	63.2%
Race (Applicants)		
African American	92	103
African American, Hispanic	0	0
African American, Native American/Alaskan	0	0
African American, White	0	1
Asian	46	79
Asian, African American	1	0
Asian, African American, Native American/Alaskan, White	0	0
Asian, Hispanic	1	0
Asian, Native American/Alaskan, Native Hawaiian/Pacific Islander, White	1	0
Asian, Native American/Alaskan, White	2	0
Asian, Native Hawaiian/Pacific Islander, White	0	0
Asian, White	0	2
Hispanic	27	29
Hispanic, Middle Eastern	0	0
Hispanic, Native Hawaiian/Pacific Islander	0	0
Hispanic, White	2	6
Hispanic, Native American/Alaskan, White	0	0
Hispanic, Native American/Alaskan	0	0
Hispanic, Middle Eastern, White	0	0
Middle Eastern	1	3
Middle Eastern, White	0	0

Middle Eastern, Asian		0	0
Native American/Alaskan		3	5
Native American/Alaskan, White		1	6
Native Hawaiian/Pacific Islander, White		2	1
Native Hawaiian/Pacific Islander		2	0
White		407	466
	Total	588	701

2013	2014	2015
615	637	596
105	109	100
45	46	41
439	420	433
39	20	42
400	400	391
397	395	382
31	28	24
44	26	41
109	97	90
30	36	29
84	104	81
168	188	150
109	125	143
40	33	38
246	263	213
369	374	383
40.0%	41.3%	35.7%
60.0%	58.7%	64.3%
92	90	90
0	1	1
3	1	1
3	13	10
56	75	47
1	1	1
0	1	0
3	1	1
0	1	0
0	1	0
0	3	1
2	9	14
21	37	31
0	1	1
0	1	0
5	12	18
0	0	2
0	0	1
0	0	1
9	2	4
0	0	3

0	0	3
2	3	0
2	7	9
2	1	1
0	0	1
414	376	355
615	637	596

Pathway to the Teacher Workforce



RESEARCH AND TECHNOLOGY

Tools and Support for Educators

Quick School Stats:

- 1,065 public schools
- 475,000 active students
- 40,000 active educators

RESEARCH AND TECHNOLOGY

Tools and Support for Educators

Arkansas Public School Computer Network (APSCN)

eSchoolPLUS+

- Point of entry for all student data at the teacher, school, and district level
- Teachers can enter and edit student grades, attendance, and discipline in the system

eFinancePLUS™

- Point of entry for all financial information at the district level
- Enables uniform reporting for all districts

- Serves as the data source for the **Education Information Systems**

Education Information Systems

SIS	Statewide Information System
ADE DATA CENTER ENTERPRISE DATA SYSTEMS	ADE Data Center
triand	Triand Electronic Transcript System
student GPS	Arkansas studentGPS Dashboards
Arkansas Student Intervention System	Arkansas Student Intervention System

Education Information Systems

Arkansas School Performance Report Card

Standards Annual Accreditation System

Arkansas Assessment Analytics

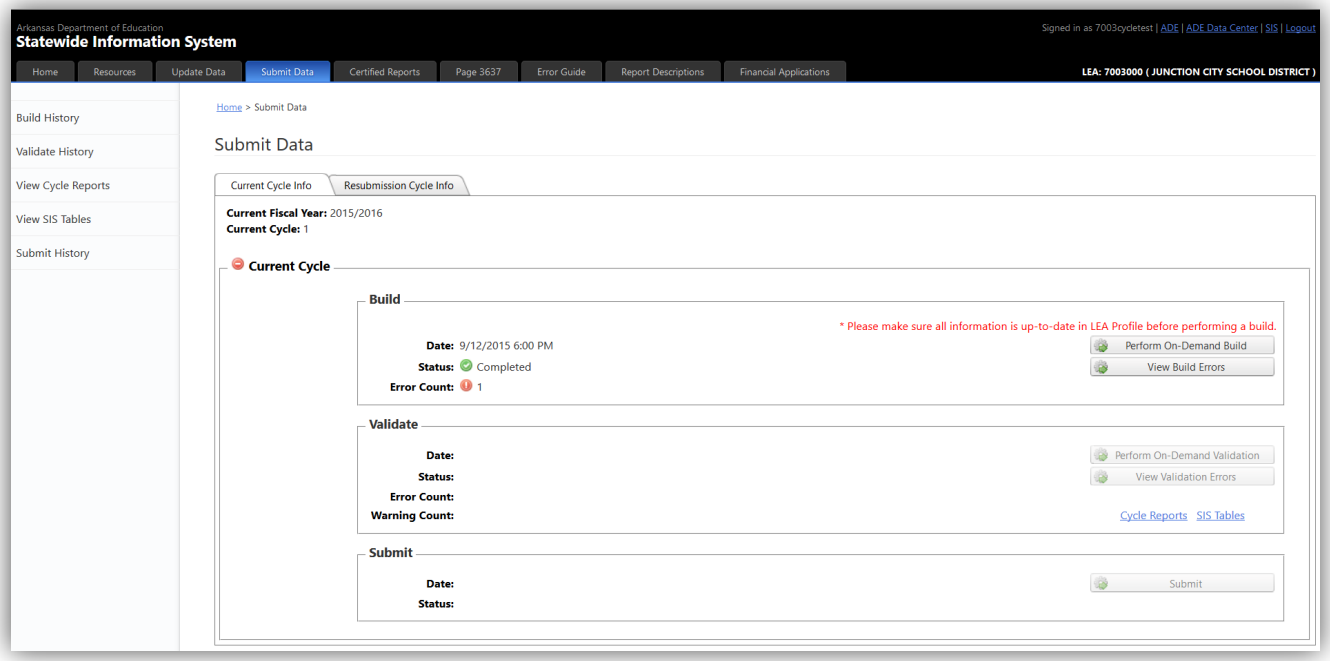
Arkansas on iTunesU

Arkansas Longitudinal Data System

SIS Statewide Information System

Allows districts to easily submit and certify data to the state

- Alerts districts of errors before data is submitted
- Connects to eSchoolPLUS and FinancePLUS both nightly and on-demand



SYSTEM USAGE

- Site is visited on average 1,100 times each day

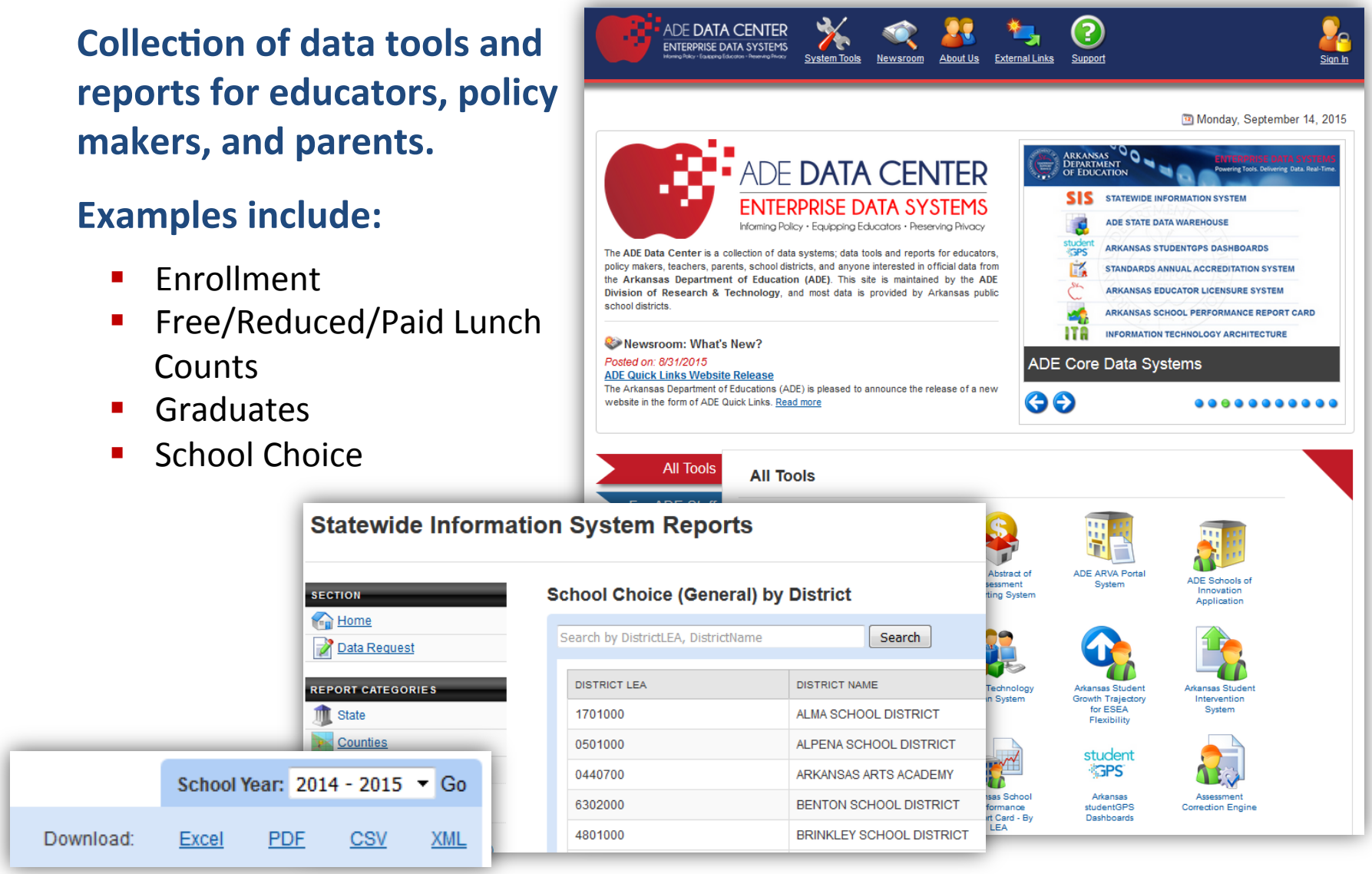
https://adesis.arkansas.gov

ADE Data Center

Collection of data tools and reports for educators, policy makers, and parents.

Examples include:

- Enrollment
- Free/Reduced/Paid Lunch Counts
- Graduates
- School Choice

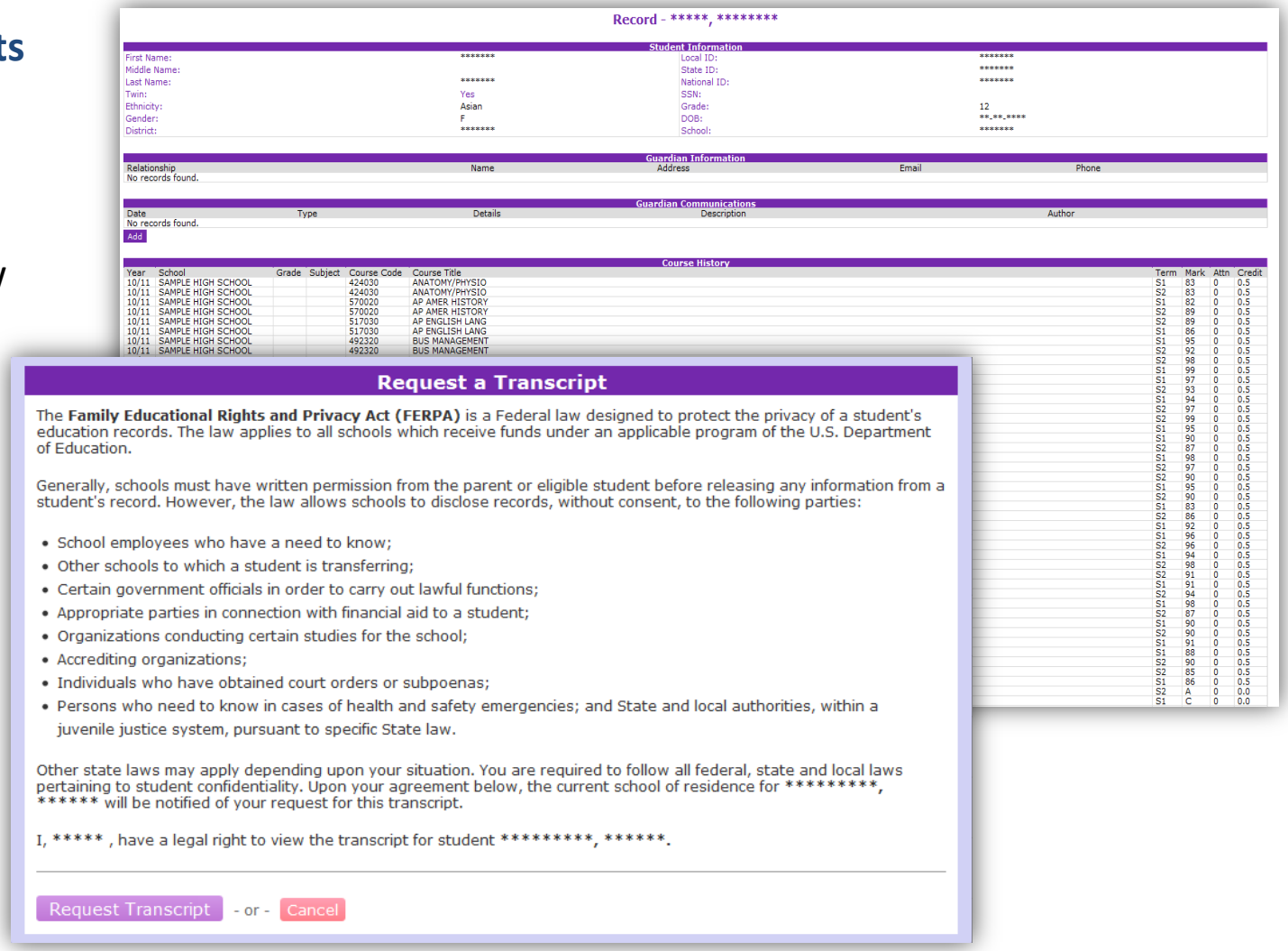


https://adedata.arkansas.gov

Triand Electronic Transcript System

Triand allows districts and schools:

- Immediate access student records for new students
- Send transcripts electronically to colleges and universities



Record - *****, ********

Student Information

First Name:	*******	Local ID:	*******
Middle Name:		State ID:	*******
Last Name:	*******	National ID:	*******
Twin:	Yes	SSN:	
Ethnicity:	Asian	Grade:	12
Gender:	F	DOB:	**.**.****
District:	*******	School:	*******

Guardian Information

Relationship	Name	Address	Email	Phone
No records found.				

Guardian Communications

Date	Type	Details	Description	Author
No records found.				

Add

Course History

Year	School	Grade	Subject	Course Code	Course Title	Term	Mark	Attn	Credit
10/11	SAMPLE HIGH SCHOOL			424030	ANATOMY/PHYSIO	S1	83	0	0.5
10/11	SAMPLE HIGH SCHOOL			424030	ANATOMY/PHYSIO	S2	83	0	0.5
10/11	SAMPLE HIGH SCHOOL			570020	AP AMER HISTORY	S1	82	0	0.5
10/11	SAMPLE HIGH SCHOOL			570020	AP AMER HISTORY	S2	89	0	0.5
10/11	SAMPLE HIGH SCHOOL			517030	AP ENGLISH LANG	S2	89	0	0.5
10/11	SAMPLE HIGH SCHOOL			517030	AP ENGLISH LANG	S1	86	0	0.5
10/11	SAMPLE HIGH SCHOOL			492320	BUS MANAGEMENT	S1	95	0	0.5
10/11	SAMPLE HIGH SCHOOL			492320	BUS MANAGEMENT	S2	92	0	0.5
						S2	98	0	0.5
						S1	99	0	0.5
						S1	97	0	0.5
						S2	93	0	0.5
						S1	94	0	0.5
						S2	97	0	0.5
						S2	99	0	0.5
						S1	95	0	0.5
						S1	90	0	0.5
						S2	87	0	0.5
						S1	98	0	0.5
						S2	97	0	0.5
						S2	90	0	0.5
						S1	95	0	0.5
						S2	90	0	0.5
						S1	83	0	0.5
						S2	86	0	0.5
						S1	92	0	0.5
						S1	96	0	0.5
						S2	96	0	0.5
						S1	94	0	0.5
						S2	98	0	0.5
						S2	91	0	0.5
						S1	91	0	0.5
						S2	94	0	0.5
						S1	98	0	0.5
						S2	87	0	0.5
						S1	90	0	0.5
						S2	90	0	0.5
						S1	91	0	0.5
						S1	88	0	0.5
						S2	90	0	0.5
						S2	85	0	0.5
						S1	86	0	0.5
						S2	A	0	0.0
						S1	C	0	0.0

Request a Transcript

The **Family Educational Rights and Privacy Act (FERPA)** is a Federal law designed to protect the privacy of a student's education records. The law applies to all schools which receive funds under an applicable program of the U.S. Department of Education.

Generally, schools must have written permission from the parent or eligible student before releasing any information from a student's record. However, the law allows schools to disclose records, without consent, to the following parties:

- School employees who have a need to know;
- Other schools to which a student is transferring;
- Certain government officials in order to carry out lawful functions;
- Appropriate parties in connection with financial aid to a student;
- Organizations conducting certain studies for the school;
- Accrediting organizations;
- Individuals who have obtained court orders or subpoenas;
- Persons who need to know in cases of health and safety emergencies; and State and local authorities, within a juvenile justice system, pursuant to specific State law.

Other state laws may apply depending upon your situation. You are required to follow all federal, state and local laws pertaining to student confidentiality. Upon your agreement below, the current school of residence for *********, ****** will be notified of your request for this transcript.

I, ***** , have a legal right to view the transcript for student *********, ******.

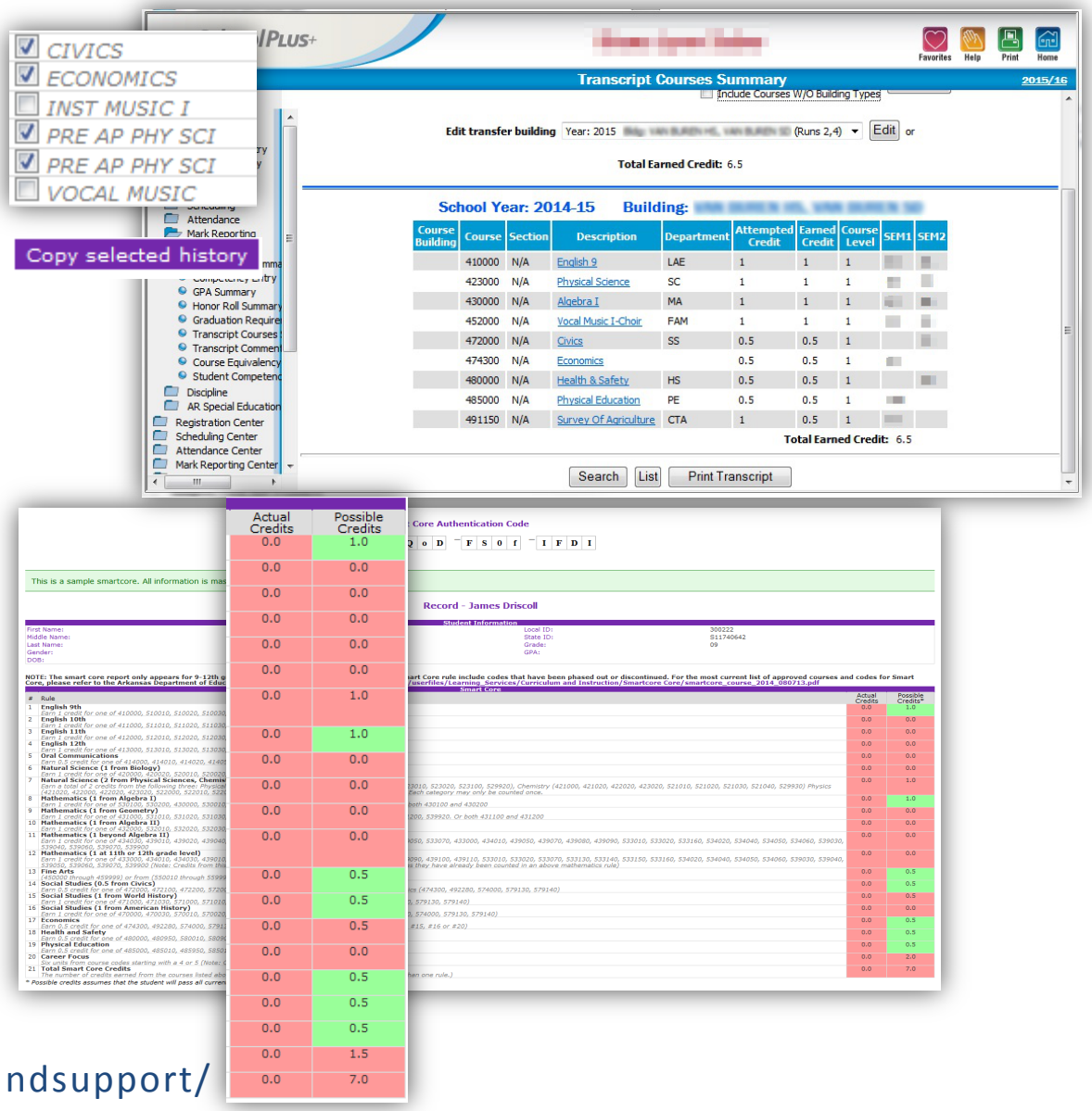
Request Transcript - or - Cancel

https://adedata.arkansas.gov/triandsupport/

Triand Electronic Transcript System

Other Features:

- Student/Parent access to student record
- Automatic transcript retrieval by ADHE for scholarships
- Downloadable reports for state assessments, including ACT, AP, SAT, PSAT, PLAN, EXPLORE, QELI, and ELDA
- Copy course history directly to eSchoolPLUS



SYSTEM USAGE

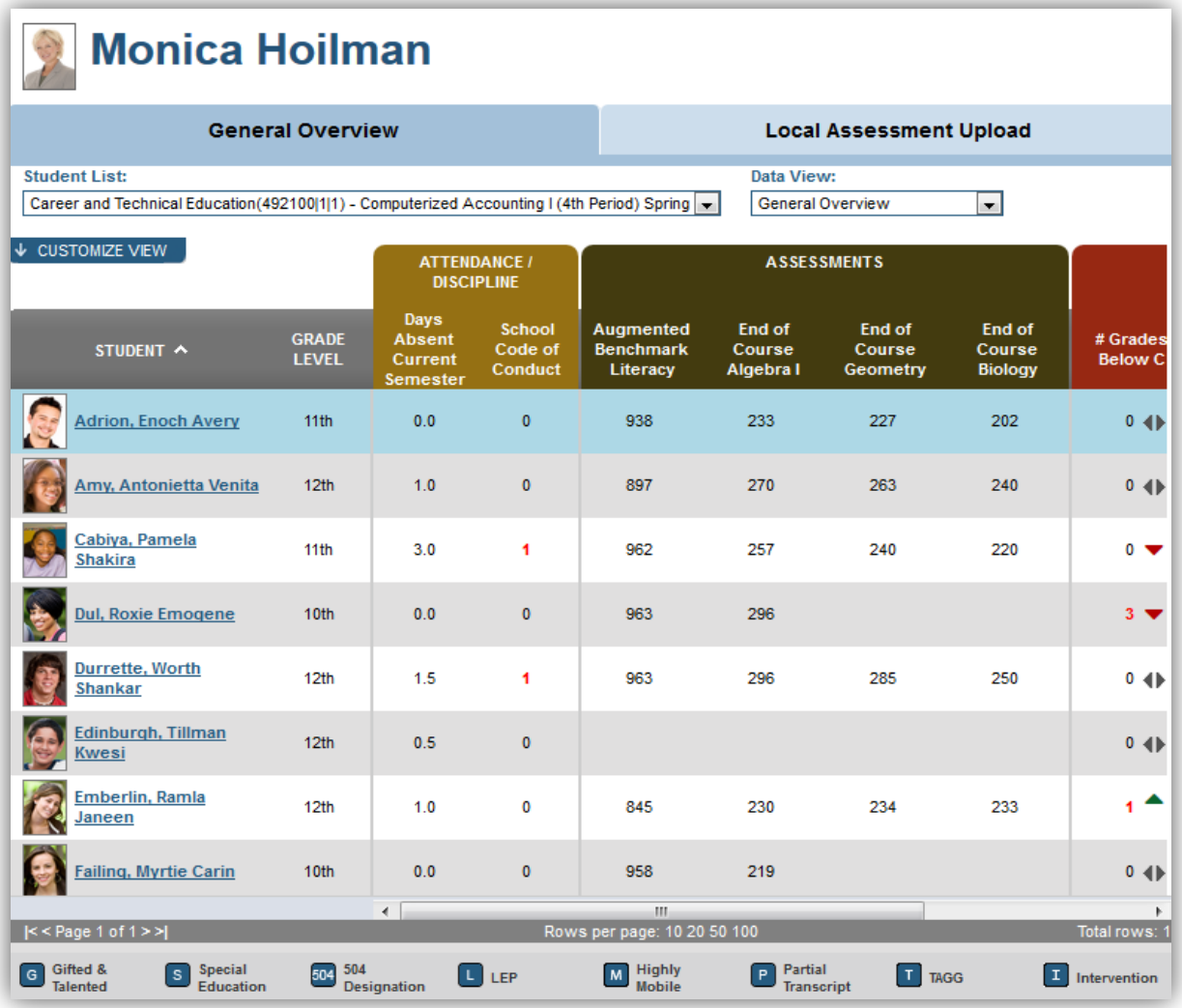
- **80,952** transcripts viewed between districts in SY 14-15

https://adedata.arkansas.gov/triandsupport/

Arkansas studentGPS Dashboards

Educators can view:

- District, school, or classroom level student data, including grades, attendance, discipline, and performance on state and local assessments
- Updated nightly

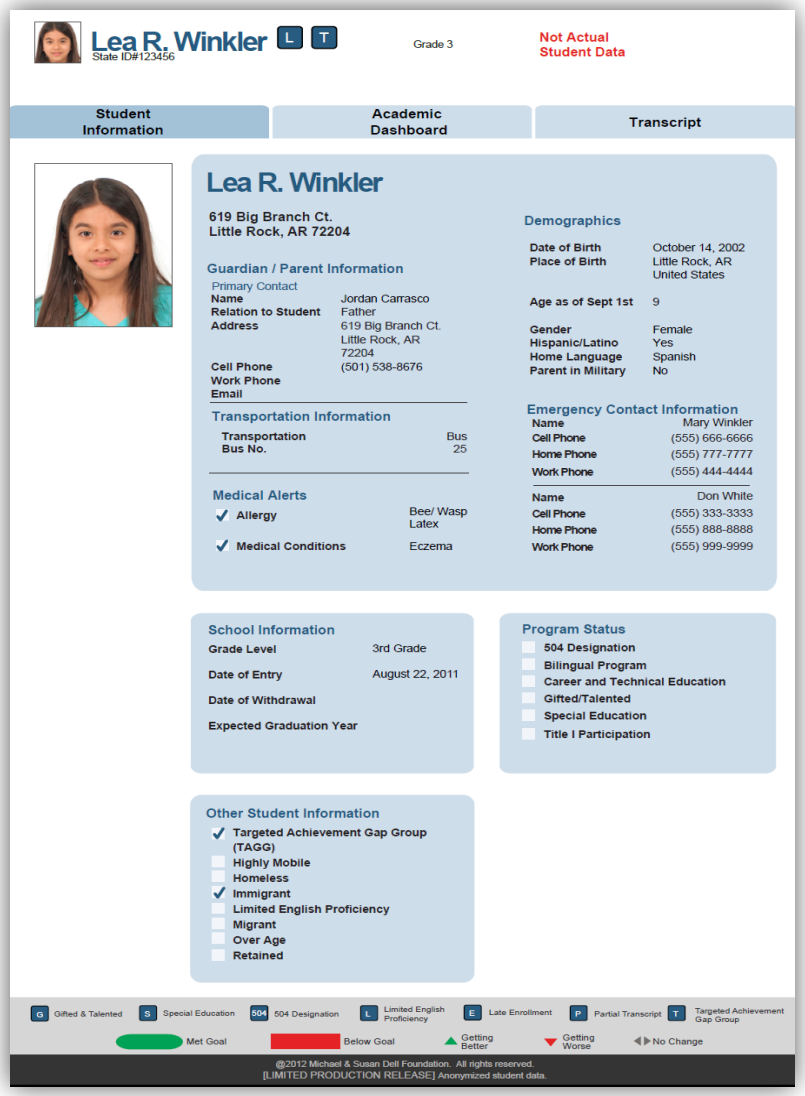


SYSTEM USAGE

- 875 schools currently utilize the system

https://adedata.arkansas.gov/sgps/

Arkansas studentGPS Dashboards



Easily accessible student data

Including:

- Student Demographic information
- Transportation information
- State and local assessments (TLI, PCG, NWEA)
- Local assessment entry (DIBELS, DRA, DSA, STAR)
- Discipline and attendance
- Transcript
- Grades and credits
- Interventions (pulled from ASIS)
- College & Career Readiness

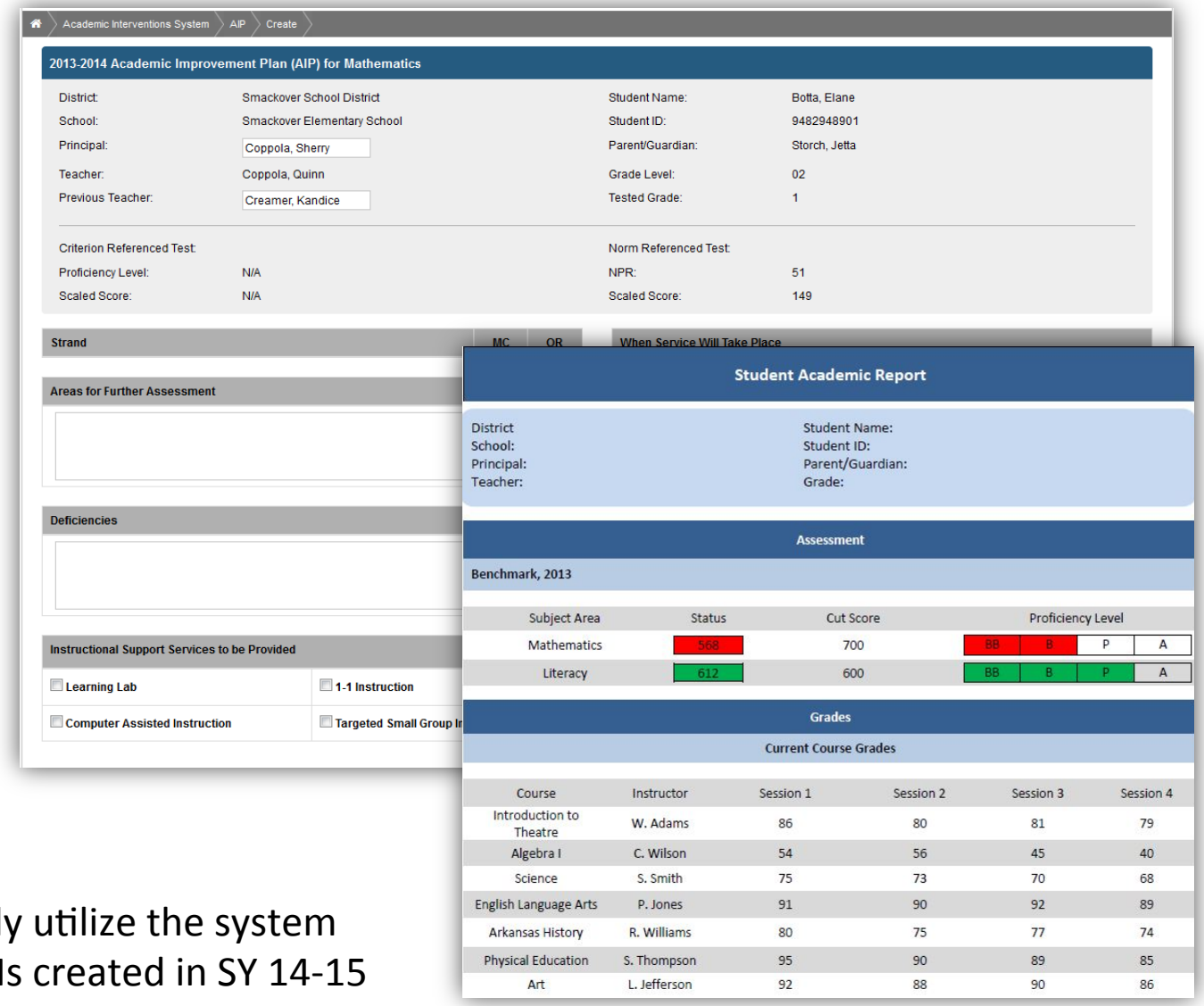
https://adedata.arkansas.gov/sgps/

Arkansas Student Intervention System

Web-based system for creating student interventions

Educators can create Student Academic Reports, containing:

- Assessment Results
- Grades
- Attendance
- Discipline



Academic Interventions System › AIP › Create

2013-2014 Academic Improvement Plan (AIP) for Mathematics

District:	Smackover School District	Student Name:	Botta, Elane
School:	Smackover Elementary School	Student ID:	9482948901
Principal:	Coppola, Sherry	Parent/Guardian:	Storch, Jetta
Teacher:	Coppola, Quinn	Grade Level:	02
Previous Teacher:	Creamer, Kandice	Tested Grade:	1
Criterion Referenced Test:		Norm Referenced Test:	
Proficiency Level:	N/A	NPR:	51
Scaled Score:	N/A	Scaled Score:	149

Strand | MC | OR | When Service Will Take Place

Areas for Further Assessment

Deficiencies

Instructional Support Services to be Provided

Learning Lab | 1-1 Instruction

Computer Assisted Instruction | Targeted Small Group I

Student Academic Report

District	Student Name:
School:	Student ID:
Principal:	Parent/Guardian:
Teacher:	Grade:

Assessment

Benchmark, 2013

Subject Area	Status	Cut Score	Proficiency Level
Mathematics	568	700	BB | B | P | A
Literacy	612	600	BB | B | P | A

Grades

Current Course Grades

Course	Instructor	Session 1	Session 2	Session 3	Session 4
Introduction to Theatre	W. Adams	86	80	81	79
Algebra I	C. Wilson	54	56	45	40
Science	S. Smith	75	73	70	68
English Language Arts	P. Jones	91	90	92	89
Arkansas History	R. Williams	80	75	77	74
Physical Education	S. Thompson	95	90	89	85
Art	L. Jefferson	92	88	90	86

SYSTEM USAGE

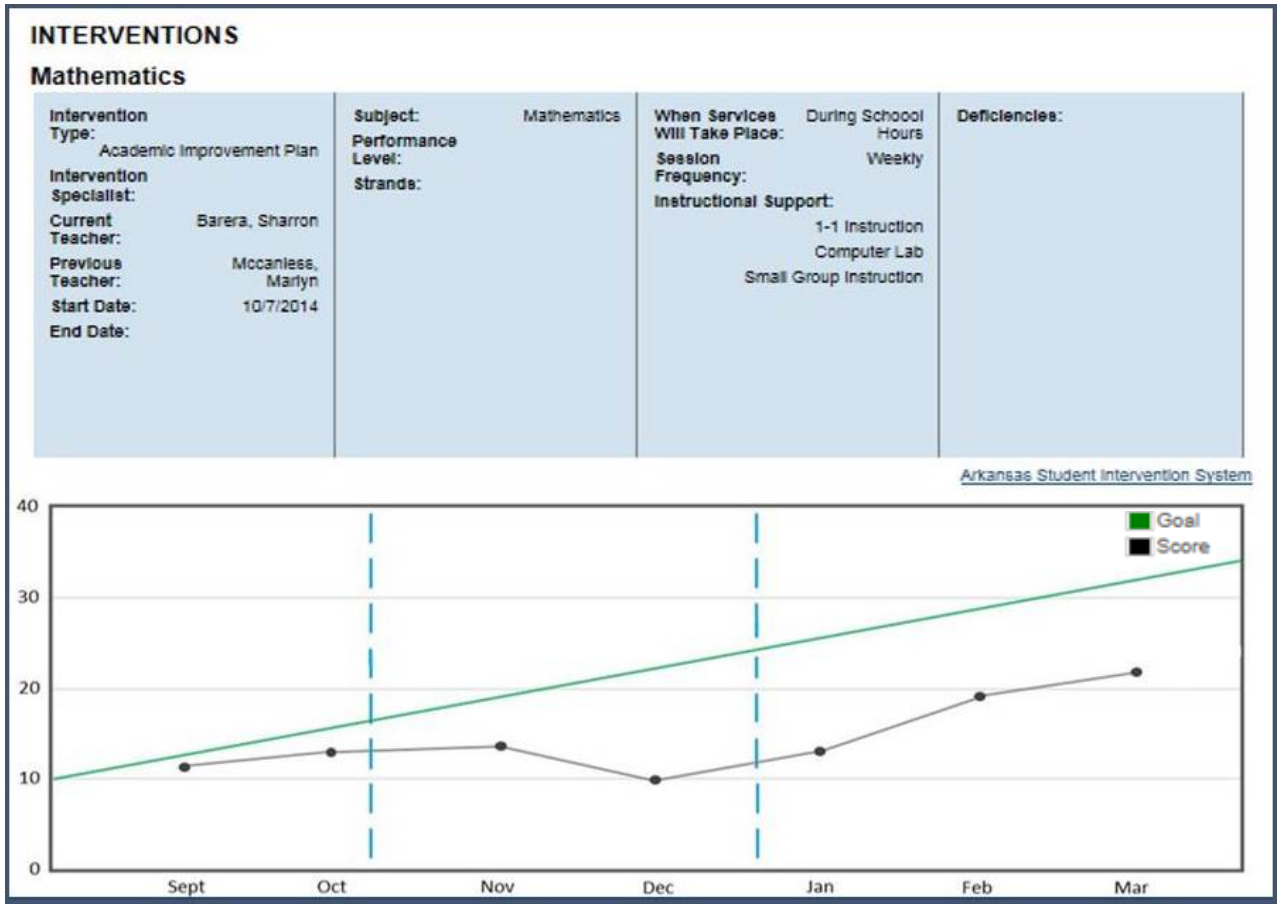
- 801 schools currently utilize the system
- 100,089 AIPs and IRIs created in SY 14-15

https://adedata.arkansas.gov/asis/

Arkansas Student Intervention System

System Features:

- Record transfers with student from school to school
- Track changes and revisions
- Intervention data displays in **studentGPS**
- Ability to mass print interventions



https://adedata.arkansas.gov/asis/

Arkansas School Performance Report Card

Arkansas School Performance Report Card

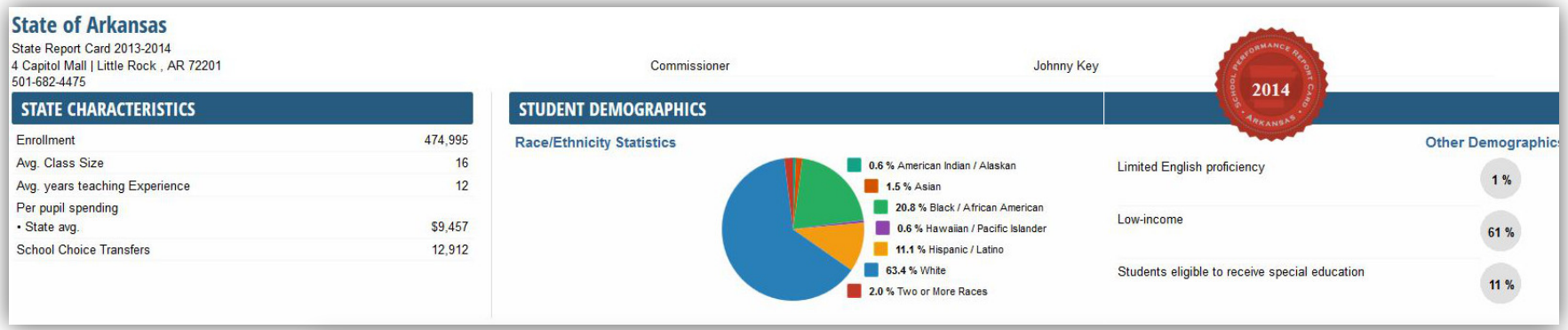
Opens the lines of communication between schools, parents, and the local community.

Publicly accessible display of:

- State, district, and/or school characteristics
- Assessment results
- Graduation and remediation rates
- School Choice
- Expenditures

Features:

- Allows districts and schools to appeal reported items
- Upload evidence of appeals
- Customize district or school report card with a message from the administration



State of Arkansas

State Report Card 2013-2014
4 Capitol Mall | Little Rock , AR 72201
501-682-4475

Commissioner — Johnny Key

2014

STATE CHARACTERISTICS

Enrollment	474,995
Avg. Class Size	16
Avg. years teaching Experience	12
Per pupil spending	
• State avg.	$9,457
School Choice Transfers	12,912

STUDENT DEMOGRAPHICS

Race/Ethnicity Statistics

- 0.6 % American Indian / Alaskan
- 1.5 % Asian
- 20.8 % Black / African American
- 0.6 % Hawaiian / Pacific Islander
- 11.1 % Hispanic / Latino
- 63.4 % White
- 2.0 % Two or More Races

Other Demographics

Limited English proficiency	1 %
Low-income	61 %
Students eligible to receive special education	11 %

***FROM THE SUPERINTENDENT**

Awards received

Golden Apple Award Winner - Ms. Smith, 2013 State Quiz Bowl Champions, 2013 Conference Champions in Girls' Cross Country

* Denotes section(s) that have been entered by the district or school. The information has not been provided or verified by the Arkansas Department of Education.

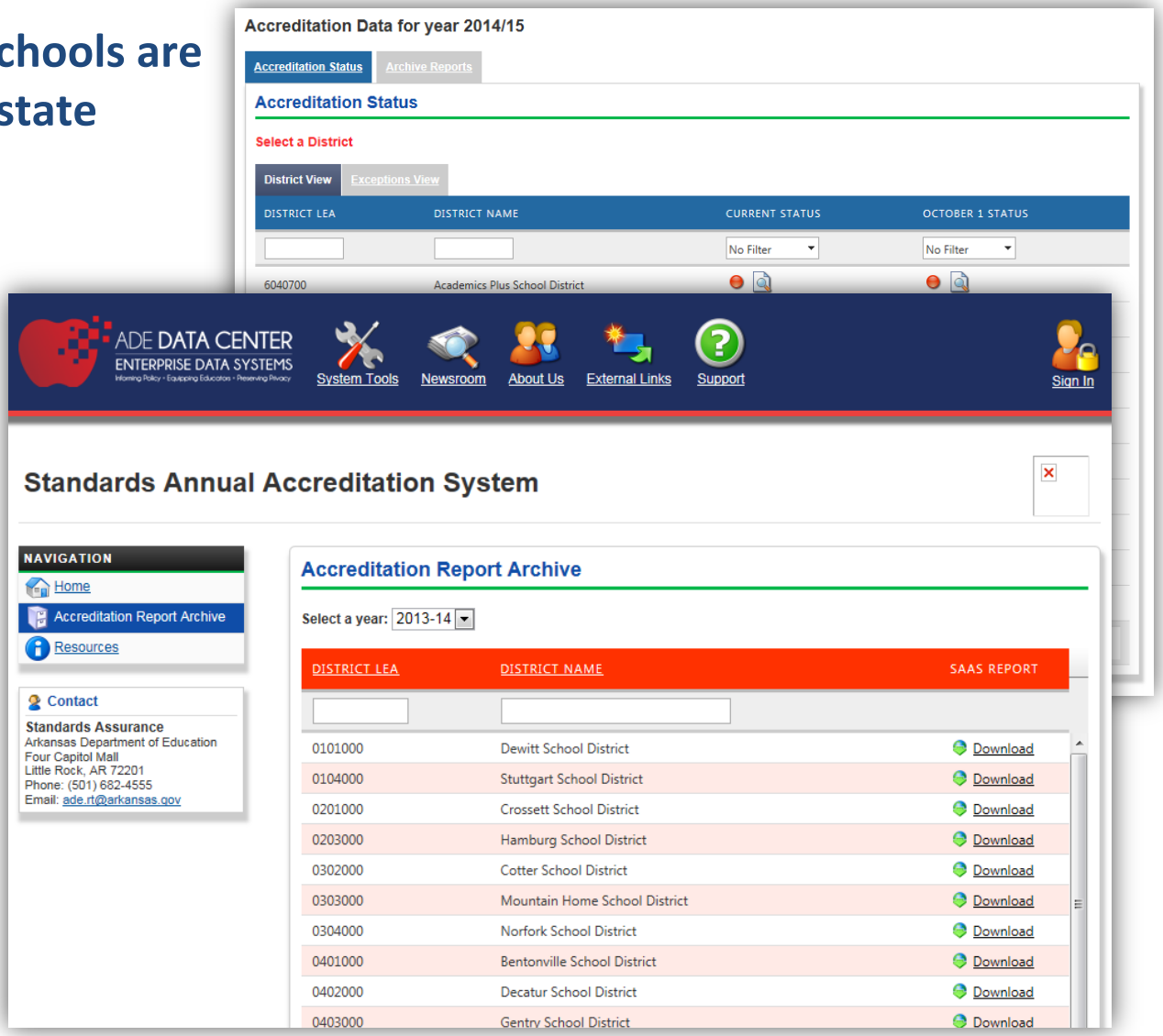
https://adesrc.arkansas.gov

Standards Annual Accreditation System

Ensures districts and schools are meeting or exceeding state requirements

Public access to archived accreditation status reports

- Allows for district review of all October 1 status exceptions before accreditation is finalized
- Encourages administrators to be proactive in resolving issues

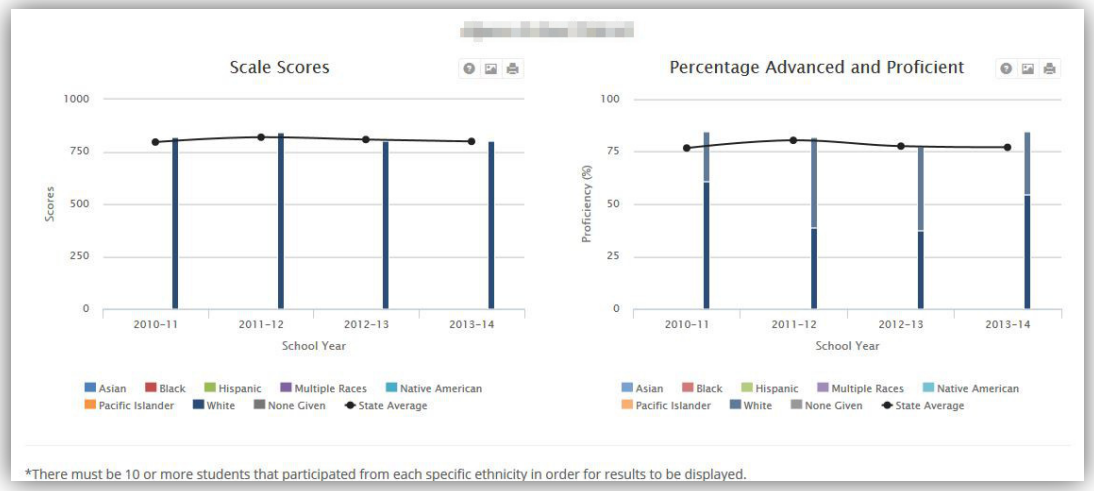


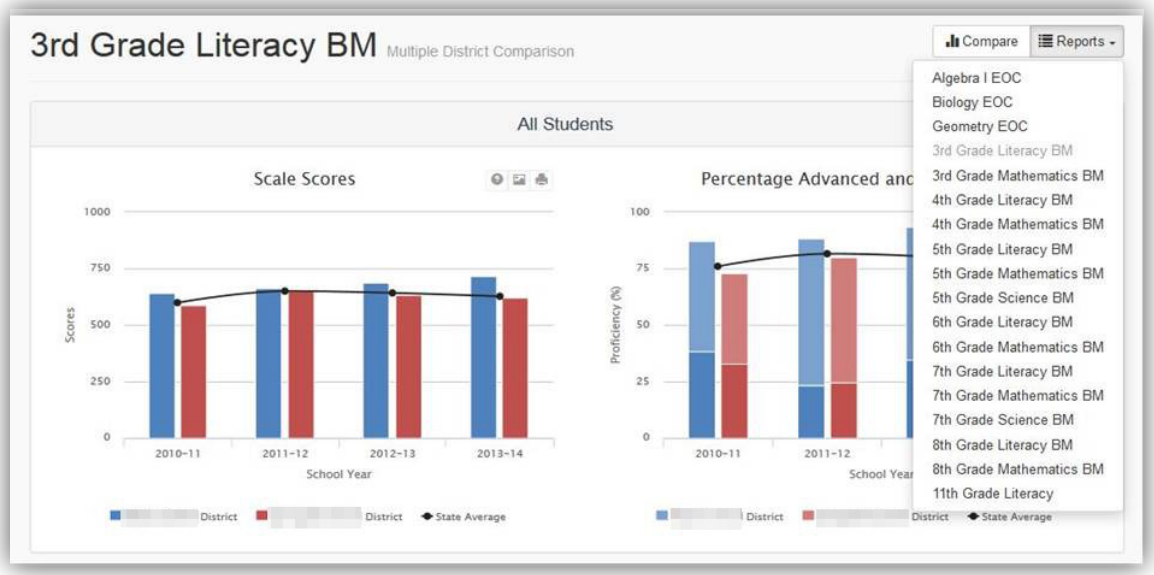
https://adedata.arkansas.gov/saas/

Arkansas Assessment Analytics *(In Development)*

Allows individuals to view performance by school or district

- Can compare up to 5 different districts or schools
- Can view up to 4 years of data



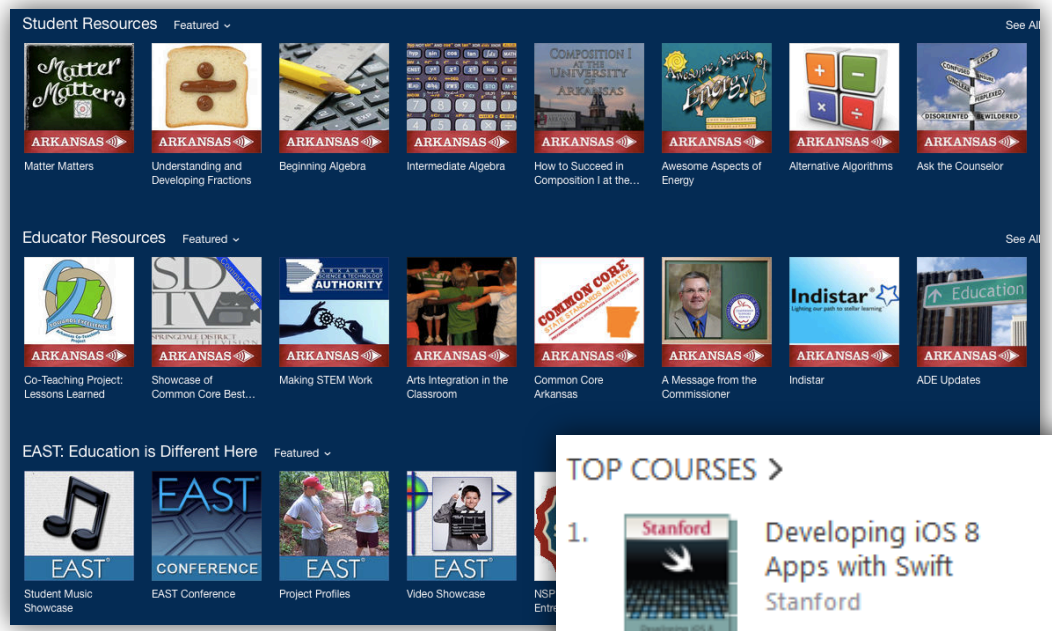


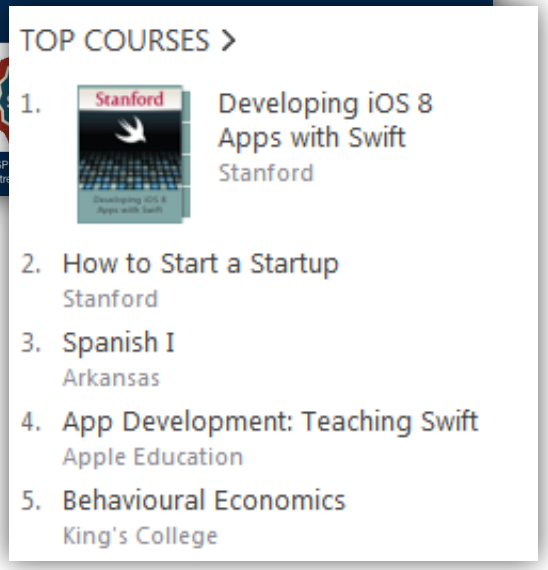
adegis.arkansas.gov/AAA/

Arkansas on iTunesU

Allows educators to contribute and view resources

- Educator-created courses, books, and video collections to support digital instruction
- Complete virtual courses for students
- ADE Updates and Communications
  - Key Points from ADE Commissioner





SYSTEM USAGE

- Average of 2,000 visitors to site per day

arkansasitunesu.com

ADE Quick Links Modules

One-stop access to frequently used systems

SYSTEM USAGE

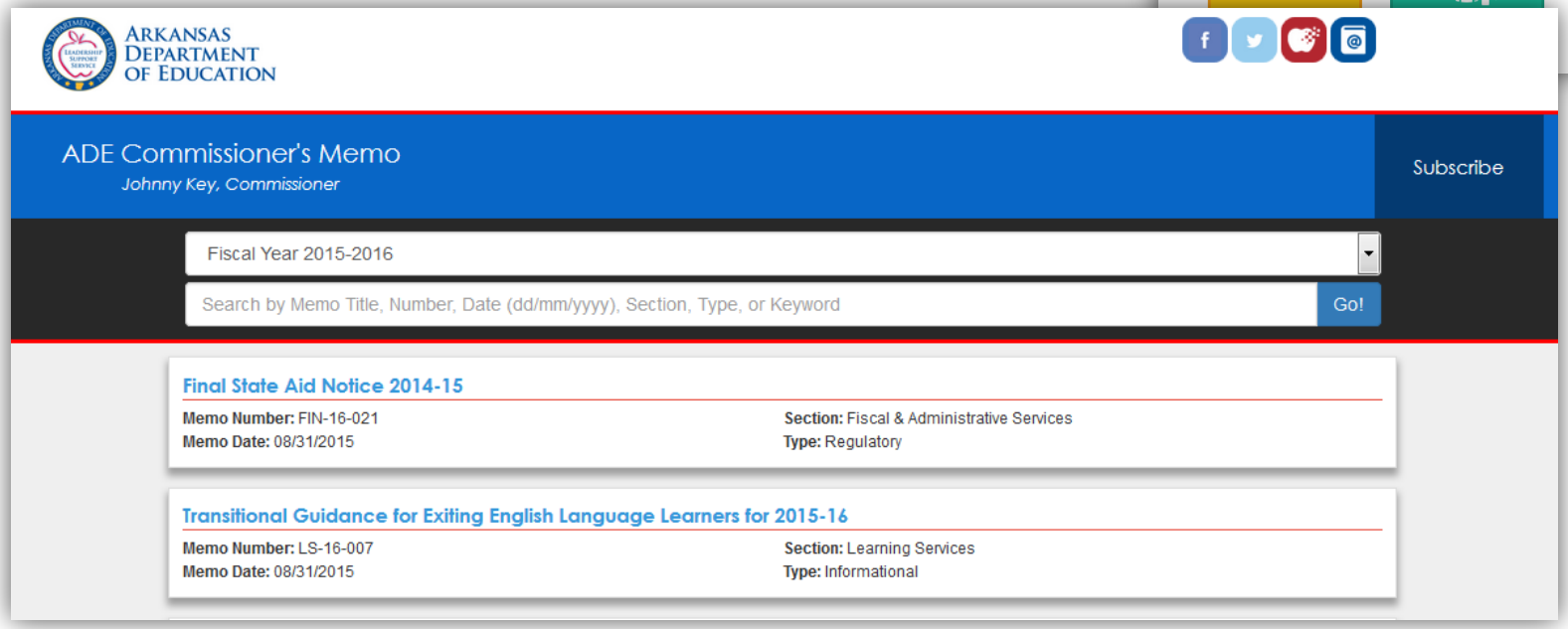
- Average of 790 page views per day

https://adequicklinks.arkansas.gov

ADE Commissioner's Memo

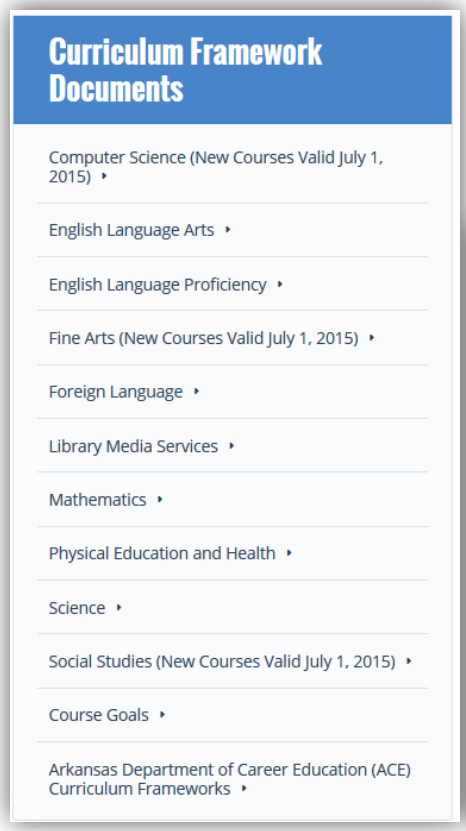
Sort memos by content based on "Keyword"

Option to "Subscribe"



Standards

Link to Arkansas Department of Education Curriculum Frameworks Documents



Available in Word
and
PDF format

ADE New Network

“With the completion of the improved network, Arkansas will lead the nation in meeting federal target levels for Internet access.”

http://www.arkansas.gov/dis/newsroom/index.php?do:newsDetail=1&news_id=174

July 15th

- 1st Connection
  - Fort Smith School District

http://www.thecitywire.com/node/38178#.VhVRqCuUIsR

Two-year rollout plan

126 school districts to be added in SY 2015-2016

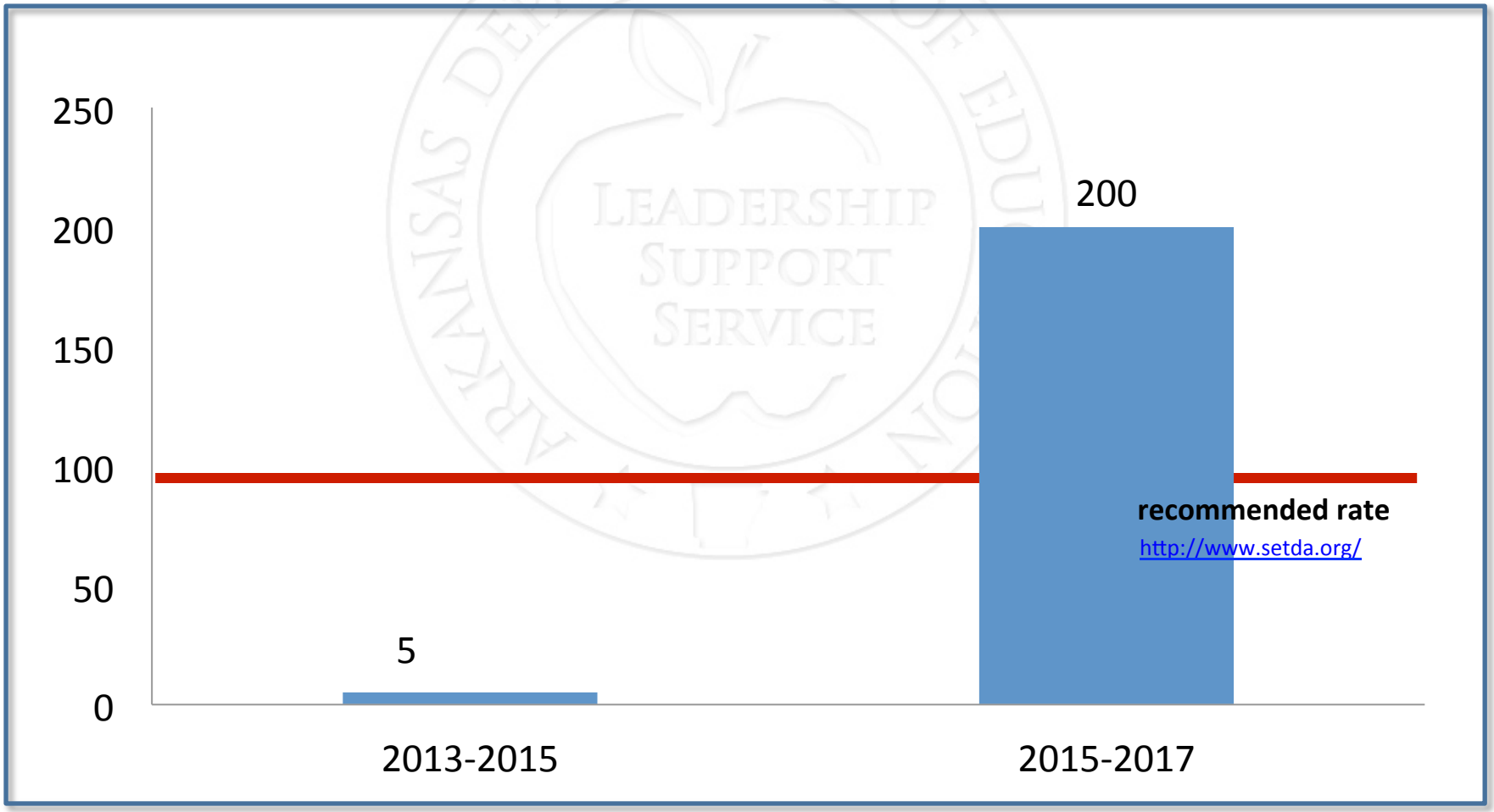
148 school districts to be added in SY 2016-2017

Approximately 3 additions per week
at no cost to districts

- Accomplished within ADE's existing $13 million budget for broadband

Connectivity Rate

- **200kbs**/user
- **40** times faster than current **5kbs**/student



Notable Achievements

- Information Systems Top-Ranked by Data Quality Campaign (DQC) consecutively 2 years in a row.
- Awarded National Center for Education Statistics "GOLD" certificate
- 100% timeliness achieved each year for EDFacts/Federal Reporting
- Recipient of 3 State Longitudinal Data System (SLDS) grant awards:
  - 2005-2008
  - 2009-2011
  - 2010-2013

Resources

For more information

- ADE Website: http://arkansased.org
- ADE Data Center: http://adedata.arkansas.gov

Contact Information:

Eric Saunders, Ed.D.
Assistant Commissioner, Research and Technology
Arkansas Department of Education
Eric.Saunders@arkansas.gov

State Board Report
December 2015
Dr. Debbie Jones, Assistant Commissioner
Division of Learning Services

The English Learners

The ESOL Director has been working with English Language Support personnel to prepare districts for submitting the annual Home Language Survey Report by November 2nd. There were seventy-two participants signed in with eight educational cooperatives being part of those seventy-two.

Professional support is offered to EL Directors in the school district through network meetings held in educational service cooperatives. In addition, Paula Johnson with the Intercultural Development Research Association offered two, four-hour sessions on "Engagement Based Sheltered Instruction" with a Part 1 and Part 2. Evaluation feedback noted the immediate usefulness of the information and the knowledge of the presenter.

The State's Home Language Survey results are shared as a state summary below:

Home Language Survey Results

Annual Home Language Survey State Totals 2015-2016	
Language Minority Student Total	52490
English Learner Student Total	39285
Home Languages Total	121
Districts with LMS	173
Districts with EL	162

Annual Home Language Survey—Top 5 Languages 2015-2016		
Language	**Language Minority**	**English Learner**
Spanish	43617	33475
Marshallese	2782	2620

Annual Home Language Survey—Top 5 Languages (continued) 2015-2016		
Language	**Language Minority**	**English Learner**
Laotian	615	371
Arabic	475	317

Annual Home Language Survey—Top 5 EL Districts 2015-2016	
District	**English Learner Total**
SPRINGDALE	9938
ROGERS PUBLIC SCHOOLS	5070
FORT SMITH PUBLIC SCHOOLS	3819
LITTLE ROCK	2892
DEQUEEN	1166

EL Assessment Timelines

- ELPA21 Vendor approved
- ELPA21 Technology Webinar, December 2nd, 1-2 pm
- ELPA21 Administration Webinar, January 7th, 1-2 pm
- ELPA21 Livebinder (http://www.livebinders.com/play/play?id=1833717)

Special Education

The Capacity Project: *Building Capacity through Evidenced-Based Practices in School Districts across Arkansas*

In collaboration with the Arkansas Department of Education-Special Education Unit, Easter Seals Arkansas Outreach is providing professional development and technical assistance to build the capacity of districts and special education school teams to implement evidence based instructional and therapeutic methods to positively impact student outcomes.

Services are being provided to assist staff with incorporating a comprehensive curriculum for students with complex learning needs (significant and/or multiple developmental needs) in an identified self-contained classroom. This may include appropriate reading, math, handwriting, social skills, daily living skills/functional routines and communication needs. During the course of the school year consultants will

provide up to 15 on-site consultations with availability for additional remote/off-site service as needed. Consultations and/or services will address the following:

- provide training & professional development
- set up or restructure of classroom physical environment
- assist in utilizing effective classroom management strategies
- assist in utilizing positive behavior supports
- develop routines and implement effective use of schedules
- assist in effectively collecting, interpreting and using data to guide programming
- develop effective teaming strategies including establishing appropriate roles and responsibilities
- assist in integrating related services (nursing, OT, PT, APE, ST, etc.)

At this time, Pulaski County Special School District, Vilonia School District, and Fort Smith School District were selected through an application process to be part of The Capacity Project and are receiving services from Easter Seals Outreach. Easter Seals Outreach will add additional districts in the future.

For more information including the application - Bitly.com/thecapacityprojectoverview

Curriculum & Instruction

Library Media Support

Cassandra Barnett, Library Media Specialist, has provided professional development for school librarians at several of educational service cooperatives. Recently she presented at Wilbur D. Mills and Arch Ford Educational Service Cooperatives to assist media specialists in using databases. This half-day session focused on the databases available through the Traveler Portal and searched strategies to help teachers and students dig deeper. Participants had the opportunity to explore the databases in depth and experimented with the strategies introduced. In the afternoon session participants took a closer look at the AASL resources.

Ms. Barnett represented Arkansas at Treasure Mountain Research Retreat, November 4-5. This year's theme was "Revolution in the Learning Commons." Due to her work in State, Ms. Barnett was asked to be one of the presenters. The format for presentation was a two-minute version of a Ted Talk, which led to a table talk where participants spent 20 minutes discussing the Ted Talk topic. She focused on a 'flash think tank' where the participants focused on best strategies for moving school librarians from the traditional school library to a learning commons, which incorporates a flexible physical space, a 24/7 virtual space and a collaborative community of learners. In addition, various aspects of the learning commons, including makerspaces, assessment, data collection and digital learning were explored.

During the American Association of School Librarians Conference the same week, she was asked to participate on a panel looking at the recruitment and mentoring of school librarians. It was well attended and may lead to some additional presentations, as well as an article for the journal, *Knowledge Quest.* Ms. Barnett was a member of a focus group that looked at the current national standards and program guidelines for school libraries. These are in the process of being revised. As specialist for the State, she will have at least two additional opportunities to comment and provide feedback before the revisions are finalized. Within the week, Ms. Barnett also attended a half-day training session for reviewers of Graduate School Library Programs for accreditation. It was an excellent opportunity to learn about the preparation of school library candidates.
Ms. Barnett continues to bring back best practices for Library Media Specialists and represents the Arkansas Department of Education (ADE) well with her presentations.

Mathematics and English Language Arts Standards
Classroom teachers and specialists from public and charter schools, educational services cooperatives, and higher education worked diligently reviewing each standards document, strand by strand. The work was tedious in nature and called for in-depth conversations regarding each standard's rigor, appropriateness, clarity and alignment.

The mathematics committee has completed the initial grade-level revisions and grade-band articulation (K-5, 6-8 and 9-12). Currently, the Curriculum & Instruction Unit specialists are formatting the work done by teachers and electronically verifying the work with these teachers. It was the ADE's commitment to value the time of the teachers, who were out of their classrooms participating in the revision process.

The English Language Arts and Literacy committee has completed all standards revisions for grades 3-12, with the exception of Disciplinary Literacy Standards. In January, content teachers in Social Studies, Science and Fine Arts, working with ADE specialists, will write clarifications to go along with the Disciplinary Literacy Standards document. There has been confusion about disciplinary literacy standards and content area standards; input from content teachers for clarification of the application of those standards in the classroom is needed. Foundational Reading Standards K-2 is incomplete at this time. The department is continuing to work with grade level teachers and specialists to complete the revision of these reading standards. Discussion paramount to the specific foundational reading skills needed for all students to be successful in reading by grade 3 is the focus of this group.

A joint effort between the Professional Development Unit and the Curriculum & Instruction Unit to utilize all ADE math and literacy specialists to assist in the revision has been a success. Professional development specialists participating in the revision

will have a first-hand account of the process used to revise the standards and can assist in the communication of changes made to the standards to districts.

Review and Comments Analysis of the Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects

Donna Wake
University of Central Arkansas

Dixie Keyes
Arkansas State University

Author Note
Donna Wake, Department of Teaching and Learning, University of Central Arkansas
Donna Wake is now serving as Associate Dean of the UCA College of Education.

Donna Wake at dwake@uca.edu

Dixie Keyes, Department of Teacher Education, Arkansas State University
Dixie Keyes is an Associate Professor of Middle Level Education and the Director of the Arkansas Delta Writing Project.

Dixie Keyes at dkeyes@astate.edu

This research was initiated and supported by the Arkansas Department of Education.

Please cite this report as follows:

Wake, D. and Keyes, D. (2015). Review and comments analysis of the Common Core State Standards for English Language Arts & Literacy in History/Social Studies Science and Technical Subjects. Unpublished report commissioned by the Arkansas Department of Education.

Abstract

Two teacher educators and literacy researchers from two separate Arkansas institutions of higher education reviewed the Common Core State Standards for English Language Arts (CCSS-ELA) by conducting an analysis of studies on the Common Core State Standards from varied sources including policy research reports, multiple national organization standards, qualitative teacher research publications, historical research from the field of literacy, and the standards research from other states. The CCSS-ELA were adopted in Arkansas in 2010, and Arkansas now seeks to expand its current research-based foundation regarding the CCSS-ELA through an updated review of the literature. Findings in this analysis include: 1) recommendation to maintain the adoption of the ELA CCSS in order to provide consistency in the curriculum-making and instructional paths already in place in classrooms across the state; 2) recommendation to place key decision-making about the standards, their layout/format, digital access and implementation in the hands of the teachers; 3) recommendation to encourage the chosen review team (to be appointed by the Governor) to consider minor revisions based on needs of English language learners and the enhanced participation of content teachers; 4) recommendation to recommend the Arkansas Department of Education develop a digital forum or network for Arkansas educators to offer feedback, curriculum and text ideas, writing samples and feedback to the Arkansas ELA Standards so teachers are empowered to further shape the standards; 5) recommendation for policymakers, administrators, the Arkansas Department of Education, and all stakeholders to reconsider the daily schedules of teachers so they are provided enhanced time for collaboration and curriculum-making related to the shifts in rigor and depth from these standards.

Review and Comments Analysis of the Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science and Technical Subjects

Table of Contents

One Teacher's Journey toward Inquiry and Empowerment with the ELA Common Core

As an introduction to this review and analysis of the ELA CCSS, we feature a 7th grade English teacher's narrative of "inquiry and empowerment in the time of the Common Core State Standards" (Grindon, 2014). This teacher's story offers a glimpse into the journey of the standards from adoption to implementation to assessment, specific to her students' experience with them as well. This analysis of a classroom teacher working to enact the CCSS-ELA is offered as a model for teachers across the state prior to our formal analysis of the standards for Arkansas.

Katherine Grindon works at a school in the 13th poorest zip code in the country. After three years of studying and working with the CCSS in her classroom, she "found that the Standards and change are not mutually exclusive. Students can master the Standards within a framework of critical, empowering, and engaging lessons" (p. 251).

Grindon's narrative of her own teacher research over this period of time is published in a peer-reviewed journal, *Language Arts*, and is accessible online (linked here). Her story begins in 2010 when she was invited to join a K-16 network of educators in her state to "deconstruct the new ELA standards" after the state had adopted the "Core Academic Standards" (this is similar to Arkansas' process in 2010). The group met one day a month for three years, even over the summers (p. 251). The teachers involved benefited from that concentrated study time while slowly working to implement the standards with their students as they watched and recorded what worked and what did not. This teacher network offered a space to discuss successes and failures. While this model was seen as positive by Grindon, she writes that many of her colleagues in other districts did not receive such an opportunity which resulted in their feelings of being unprepared to implement the standards when required. "Although I participated in the network and spent over 50 hours developing a deep understanding of the standards, it was still daunting to consider implementing new standards and moving students to mastery" (p. 252).

Grindon's work with the standards and with her students is based on the theoretical backdrop of critical literacy, an epistemological framework that asks important questions of dominant structures and systems and "includes conversations about power and justice, and calls on students to become agents for change…." (p. 252-253). This ideology aligns with Dewey's encouragement of education to create learning experiences based in critical thinking for future citizens who apply critical thought to their lives. Educators who know about critical literacy often undergird their curriculum with it so literacy experiences provide a critical examination of readings while building personal and emotional engagement about texts in the context of society's norms and values (p. 253). In other words, the CCSS-ELA provided space for Grindon to teach from a theoretical base that she valued for her work with children. Grindon writes:

> Critical literacy is possible within a CCSS-aligned ELA classroom. There are also instructional strategies that support a framework of critical literacy, such as "reading supplementary texts, reading multiple texts, reading from a resistant perspective, producing counter-texts, conducting student-choice research projects, and taking social action" (Behrmann, 2006, p. 492). More specifically, these strategies involve "identifying multiple voices in texts, dominant cultural discourses, multiple possible readings of texts, and sources of authority where texts are used" (p. 491). (Grindon, 2014, p. 253)

Grindon also notes that while some teachers may have seen the CCSS as "confining," "one could choose to view them as granting permission to be flexible and creative" (p. 253). So in her classroom with several layers of diversity, she devised a long-range thematic unit about child

labor and empowerment that was eventually called “The Advocacy Project.” She describes one portion of this curriculum:

> As we learned about Iqbal Masih, the Pakistani boy assassinated in 1995 for fighting against child slavery, students couldn’t believe that someone their age had made such an impact on the world. Impressed by his example, we discussed and read about other teens making a difference. The students particularly enjoyed reading articles from Scholastic Scope magazine that highlighted teenagers influencing society. These readings helped establish a critical framework in my classroom, as students questioned their own place in the world and appreciated the power of text to affect change (Vasquez, 2010). (Grindon, 2014, pp. 255-256).

The eventual student presentations for “The Advocacy Project” were framed by the critical literacy foundation of the classroom wherein students use multimedia to stage authentic communication (Vasquez, 2010) all while meeting the intent of CCSS Writing Standard 6 for seventh grade, “Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources” (p. 260). Below is Grindon’s chart that depicts how student learning events in her classroom aligned with the ELA CCSS:

Figure 1

Signature Unit Assessments Aligned to CCSS-ELA (Grindon, 2014, p. 259)

	This I Believe Essays	Research	PowerPoints	Presentations	Argument Essays
R.1: Cite several pieces of textual evidence to support analysis of what text says explicitly and implicitly.	X	X			
R.2: Determine central idea or theme of a text and its development.	X	X			
RI.6: Determine an author’s point of view or purpose in a text and analyze how that point of view differs from that of others.	X	X			
RI.8: Trace and evaluate an argument.		X			
RI.9: Analyze how two or more authors writing on the same topic shape their presentations.		X			
W.1: Write arguments to support claims.					X
W.2: Write informative/explanatory texts.			X		
W.3: Write narratives to develop real or imagined experiences.	X				
W.4: Produce clear and coherent writing.	X		X		X
W.5: Develop and strengthen writing through use of the writing process.	X				X
W.6: Use technology to produce and publish writing.	X	X	X		X
W.7: Conduct short research projects.		X	X		
W.8: Gather relevant information from multiple print and digital sources.		X			
W.9: Draw evidence from texts to support analysis, reflection, and research.		X			
SL.4: Present claims and findings, emphasizing salient points.				X	
SL.5: Include multimedia components and visual displays in presentations.			X	X	
SL.6: Adapt speech to a variety of contexts and tasks.				X	

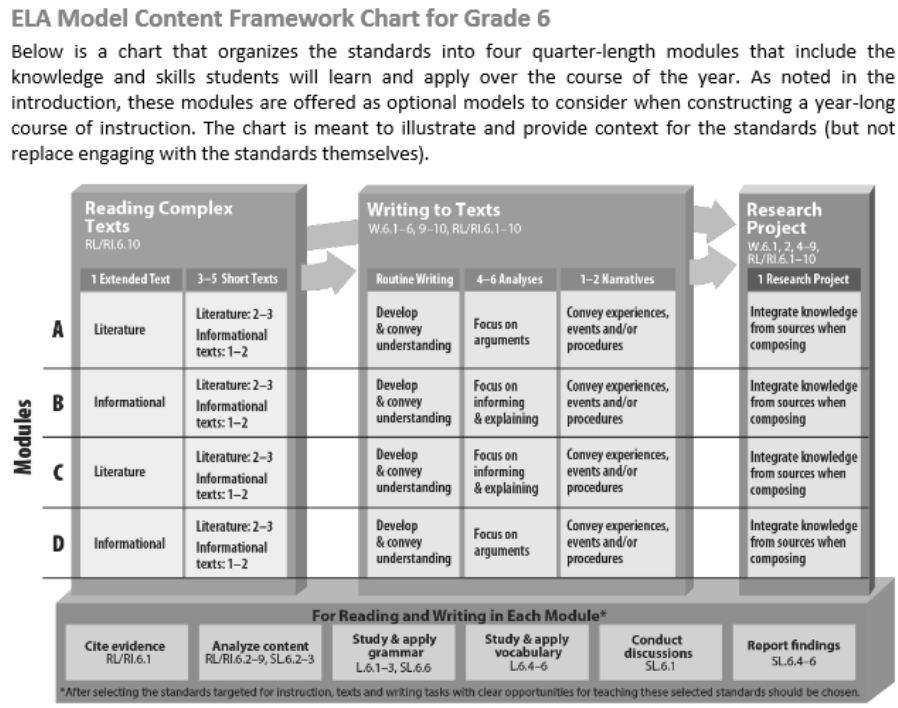
Figure 1. Relationship between 7th-grade CCSS and Advocacy Project activities.

Language Arts, Volume 91 Number 4, March 2014

We encourage the reviewers of the CCSS-ELA in Arkansas to read the Grindon article to fully comprehend the amount of thoughtful and intelligent curriculum-making and student involvement required to reach such in-depth levels of learning involving real-world issues. From argument writing to multimedia presentations to wide readings of multiple genres, students in Grindon’s classroom effectively spanned the kind of reading, writing, research and communication recommended by the Partnership for Assessment of Readiness for College and Careers (PARCC) Consortium in their instructional support documents as that consortium worked to align the PARCC to the intent and content of the CCSS-ELA:

Figure 2

ELA Model Content Framework Chart for Grade 6



This kind of complex "module" or unit development is quite involved and teachers must have the time and support to plan this kind of curriculum. Grindon (2014) acknowledges her struggle to do this:

> The truth is, I needed to embrace change, leaving the comfort of old lessons and curricula behind. I had to accept the queasiness I hadn't felt in a decade in the classroom. I needed the courage of my convictions; I refused to allow the adoption of new Standards to turn my language arts class into a test-preparation course….This process also required support and time. Monthly meetings with the state network gave me a place to wrestle with the Standards, hash out language and meaning with my peers, and vent my frustrations. I am grateful to have been given the space in which to do that, and grateful that this work was supported financially by my state and my district. The knowledge of the Standards gained from my network meetings allowed me to look for ways to incorporate them into a framework of critical literacy; without this comfort level, I likely would not have been willing to take on The Advocacy Project with my students. Teachers without such an opportunity will need to find ways to carve out time for study from their already busy schedules. As more districts and schools move to a model of Professional Learning Communities (DuFour & Eaker, 1998), teachers should advocate for ownership of PLC meetings as a space in which to study the Standards and the integration of critical pedagogy into new curricula. (p. 262)

Grindon notes how most of her students, under this umbrella of critical literacy learning, approached their readings with a new "critical eye" and she felt their "increased agency, engagement, and self-efficacy" along with increased achievement (p. 263). Her words encourage teachers toward inquiry, student engagement, and critical lesson planning:

> No longer can we look at our lesson plans and say, 'We're writing memoirs now, because that's what comes next in the pacing guide or textbook.' Teachers need to adopt the best-practice of inquiry-based units: the horrors of the Holocaust, environmental education, the challenges of democracy, the search for identity . . . the possibilities are extensive. (p. 264).

Through her experience since the origin of the CCSS, Grindon emphasizes that teachers are the professionals who need to make the choices of how to help students toward success. Standards alone do not ensure quality education; inadequate instruction can happen even with an exemplary standards framework (p. 264). The standards show the "what" students should be able to do, but the teachers are the ones who design the pathways for students to get there. Grindon offers, "…I hope my colleagues around the country are able to accept the challenge and embrace the possibility these Standards hold. Our profession, and our students, will be better for it" (p. 264).

Over the past four years, ELA teachers in Arkansas have had a unique opportunity to undertake the kind of curriculum change, development, and implementation described by Grindon. The adoption of the CCSS-ELA in the state offered teachers an unprecedented opportunity to truly examine best practices and the research base and to reconnect with the theories foundational to our profession.

If ELA teachers in Arkansas have not undertaken the kind of curriculum change described by Grindon and promoted in a time of standards change, several issues may be present. Teachers may not have been given time or guidance to read, dissect and interpret the CCSS-ELA into meaningful, critical units of study associated with challenging texts and opportunities for collaboration and sharing. Conversely, educators may have turned away from the discomfort Grindon describes at the necessity for change. Or, the CCSS-ELA may have been presented to teachers with a top-down, narrowed version of instruction and offered as preconceived units linked to the CCSS-ELA.

Our review of the CCSS-ELA will provide research, policy reports and recommendations from a variety of sources to address all of these constraints. We advocate for the work of teachers in the field to meet the intent and content of the CCSS-ELA based on their own knowledge of the students they teach and their own mastery of the content they represent.

Important Contextual and Background Notes

From Arkansas Frameworks to the ELA Common Core

We present in this section contextual and background notes regarding the multi-year processes involved in developing and implementing new content standards so reviewers can consider the time, growth and endeavors required for successful, systemic standards enactment. If this content is already known to the reviewers, they are invited to reference it as needed while moving forward in the document to more salient sections.

In 2006, the Fordham Foundation published a report analyzing current standards in place across all 50 states for ELA, Math, Science, World and US History (Finn, Julian, & Petrilli, 2006). Their evaluation of Arkansas's standards (the "Arkansas ELA Frameworks") was not flattering. Overall, Arkansas was assigned a grade of "D-" and ranked 42nd in the nation. This was an improvement over our 2000 grade of "F" and ranking of 45th in the nation. Specifically, Arkansas ELA

standards were assigned a grade of "C" in 2006, an improvement from the previous "D" score of the 2000 report. Fordham authors described the 2006 Arkansas ELA Standards in this way:

> *Arkansas's Governor Mike Huckabee, once quite obese, recently lost more than 100 pounds. His state's English standards should do the same. Though clearly written, and presented grade by grade, the document is so large that English teachers who attempt to follow it will assuredly be overwhelmed. And trying to include too much within these standards is just one problem. Too many of them are immeasurable, and too many rely on process, i.e., they contain no academic content. And redundancy is ubiquitous; a reader—or teacher—would be hard pressed to discern a change in difficulty from grades 9 to 12. Arkansas could improve these standards by including some content-specific standards that identify authors, their works, and literary traditions that reflect classical traditions. And put this document on a diet! (p. 50).*

While this candid evaluation is both amusing and disheartening, it highlighted Arkansas's need to revise the existing standards or to adopt a new set of standards. Arkansas's adoption of the ELA *Common Core State Standards (CCSS)* in 2010 provided Arkansas with an opportunity to evaluate and redesign delivery of math and literacy education across the state and to implement new and innovative practices to improve education in Arkansas and to support Arkansas K-12 learners.

As noted in a 2012 Fordham report, the CCSS provided all states with "an unprecedented opportunity to rethink current implementation practices" (Murphy, Regenstein, & McNamara, 2012, p. 41).[1] The CCSS were designed to establish shared content expectations, a more focused curriculum, national efficiency (e.g., materials, resources, expertise), and higher assessment quality (Porter McMaken, Hwang, & Yang, 2011). Indeed, in 2013 after several years of implementation in place, 80% of ELA teachers across the nation reported that the CCSS required them to altogether change their teaching practice (Gates Foundation, 2013).

Reviews of early CCSS implementation contended that the CCSS introduced "shifts" in rigor and content, included coherence across grades, and provided for skills and knowledge progressions and grade-level relevance (Cristol & Ramsey, 2014).

The CCSS was noted as holding equity as a central focus in the CCSS design and goals. The CCSS was seen as something that would lead to national economic benefits as well as better teacher preparation and professional development (Kornhaber, Griffith, & Tyler, 2014).

While the adoption of the CCSS did provide Arkansas educators with great opportunity to evaluate and redesign literacy instruction in the state, it should be noted that nobody surveyed Arkansas teachers about the adoption of the Common Core State Standards before the (former) Commissioner of Education formally adopted them. However, Arkansas was included as a Partnership for Assessment of Readiness for College and Careers (PARCC) governing state at that time. And this inclusion meant that representatives from Arkansas classroom teachers, administrators, higher education and the state department of education were involved in various committees as PARCC instructional supports were developed and as PARCC test items and processes were created.

Despite the state's involvement as a PARCC governing state and the progress in professional development and understanding of the Common Core State Standards, growing and negative media buzz around CCSS implementation, as well as shifts in political governance, have led to a

[1] Abbreviations: CCSS (Common Core State Standards); ADE (Arkansas Department of Education); ELA (English Language Arts)

re-evaluation of the CCSS in spring/summer 2015 resulting in recommendations from state governance to review and evaluate the standards' 'fit' for learners in Arkansas.

The Development of the ELA Common Core from Inception to Adoption

Although the standards provided Arkansas teachers and policy makers with the opportunity to change the face of literacy instruction in the state, the implementation of these standards was not smooth at the state or national levels leading Diane Ravitch (2010) to comment that the CCSS effort is "fundamentally flawed by the process with which they have been foisted upon the nation." The issues surrounding CCSS implementation have led to 20 states opting out of the assessments associated with CCSS (Matlock et al., 2015) with many states re-examining appropriateness and relevance of CCSS for state-specific contexts.

The CCSS represented the United States' first attempt to enact national standards and assessments; a practice that is commonplace in countries globally. A 2006 Fordham report and a 2009 research study determined that considerable variability existed among states in their pre-existing content standards and grade progressions (Porter, Polikoff, & Smithson, 2009).

Despite this variability, there did exist similar 'core' content requirements across states for ELA leading one research team to conclude that the pre-existing state content standards did include a de facto curriculum that could be used in designing a new national curriculum. This de facto curriculum included: comprehension, writing organization, public speaking/oral presentation, capitalization and punctuation, writing purpose/audience/context, expository writing, pre-writing, and narrative writing. While this de facto curriculum may have existed in term of broad content concepts, it should be noted that the pre-existing state standards' focus at that point in time were written at the lower levels of cognitive demand (Porter, McMaken, Hwang, & Yang, 2009).

The creation of the CCSS was led by the National Governors Association Center for Best Practices and the Council of Chief State School Officers and involved stakeholders from the College Board, the ACT, and from Achieve, Inc. but did not include classroom teachers (Matlock et al., 2015). In writing the CCSS, the core working group considered international assessments, the link between education and global economic competitiveness, evaluations of existing state standards, and national achievement data indicating disparate performances on assessments based on race, social class, and geographical location (McDonnell & Weatherford, 2013).

Professional organizations representing teachers (including the National Council for Teachers of English) were invited to organize groups and provide feedback to the initial draft of the CCSS. Additionally, the standards were reportedly benchmarked to international standards and assessments (Porter et al, 2011). The final standards were released in June 2010. Since the release of the CCSS, support for the CCSS has become increasingly politicized (Achieve, 2011, 2014; Matlock et al., 2015).

ADE's Guidance and Leadership

In Arkansas, implementation was planned in stages with the ADE noting a commitment to sharing resources and providing teacher and administrator professional development.

- Academic Year 2010-2011: Districts develop plans and ADE share resources and provide PD
- Academic Year 2011-2012: CCSS adopted for Grades K-2
- Academic Year 2012-2013: CCSS adopted for Grades 3-8
- Academic Year 2013-2014: CCSS adopted for Grades 9-12; Pilot assessment (PARCC)
- Academic Year 2014-2015: Full implementation of new assessment system

Arkansas Department of Education led the initiative to coordinate CCSS implementation across the state to include: 1) using the Achieve CCSS Comparison tool to compare Arkansas frameworks to the new CCSS and develop crosswalks; 2) develop suggestions for teacher professional development; 3) create district implementation plan guidelines; and 4) develop curriculum guides and create model lesson plans and assessments (Watt, 2011). ADE developed webpages with teacher implementation resources, videos, and parental information. They also began statewide opportunities for the Literacy and Math Design Collaborative professional development so Arkansas teachers could rework or create units and in-depth lesson plans aligned with the CCSS.

At that point in time, Arkansas did not take advantage of the 15% rule whereby states that had adopted the CCSS were allowed to add state-specific content to the CCSS (Kendall, Ryan, Alpert, Richardson, & Schwols, 2012).

National Public Perception

National public perception of CCSS implementation indicated that although 45 states and Washington D.C. had adopted the CCSS in 2010 potentially impacting over 42 million students and 2.7 million educators, public awareness of the CCSS was initially minimal even though there was strong support at that time for "common" or "national" standards as a general idea (Achieve, 2011).

Voters aware of the CCSS had mixed responses, but teachers had a generally favorable view. Even though they were not involved in the original creation of the CCSS, teachers and teacher groups were involved in the revision and comments part of the process (Kober & Rentner, 2011; Matlock, 2015). Conversely, voters strongly supported common assessments across states while teachers were more hesitant about the CCSS due to the reported use of tests for accountability purposes and teacher/district evaluations as well as questions about validity of value-added models (Kober & Rentner, 2011).

By 2014, national public perception had not shifted significantly although awareness was slightly higher. Again, public perception supported the idea of having "common" or "national" standards. Again, most voters still appeared unaware of the CCSS. Those who were aware had mixed responses with teachers polled showing a stronger positive view of the CCSS (Cristol & Ramsey, 2014). Additionally, a majority of voters polled seemed to understand that the CCSS would take time to implement fully before positive impact was evident in test scores and felt teachers and students needed time to adjust to new assessments (Achieve, 2014).[2]

Teachers themselves reported that external factors had caused complications with CCSS implementation and cited the inclusion of student test results into teacher evaluations (59%), uncertainty about new assessments chosen by their state (51%), uncertainty about their state's continued use of CCSS (39%), questions about whether CCSS ELA standards are developmentally appropriate (34%), media coverage (27%), parent pushback on standardized testing (24%), parent pushback on CCSS (22%), and social media conversations (18%). Tracked over time, these factors appear to produce a negative or downward trend in teachers' perceptions of the CCSS including perception of impact of CCSS on student learning (Gates Foundation, 2014).

[2] Even at that time, there appeared to be differences among voters based on party affiliation with Democrats (70%) and Independents (69%) responding more favorably to the CCSS than republicans (56%).

Teacher Perceptions in Arkansas

Teacher perceptions in Arkansas around the CCSS-ELA were generally positive and did not reflect the negative concerns towards CCSS portrayed in the media. Arkansas teachers felt the CCSS were an improvement on previous state frameworks and were more rigorous than the previous state frameworks. They also indicated they the CCSS-ELA gave them a stronger instructional focus, they were more likely to teach their content in greater depth, and they had changed their pedagogical practice for the better. Arkansas teachers also anticipated significant improvement in student achievement as a result of the CCSS. However, it should be noted that teacher attitudes trended in a more negative direction (1) for those teaching in higher grades, and (2) for those already considering leaving the profession early (Matlock et al., 2015).

While Arkansas teachers' overall views and support of the CCSS and its implementation were initially positive, Arkansas teachers did express some concerns about CCSS implementation (Endacott et al., 2015; Matlock et al., 2015). Teachers indicated they felt marginalized by the CCSS adoption process in the state and saw themselves as excluded from the implementation of the CCSS. They also indicated feeling a lack of agency to be able to meet students' needs and an accompanying loss of professional autonomy due to the CCSS being narrowly interpreted and imposed on them from top-down models (e.g., scripted curriculum). Finally, teachers indicated they felt an increased accountability due to CCSS aligned assessment data and new teacher performance evaluations that stood at odds with their loss of autonomy creating a tension they could not easily account for or resolve.

Arkansas CCSS Implementation Issues

In Arkansas, the following issues may have impacted perception of the CCSS as problematic in Arkansas's adoption of these standards:

- Lack of state legislature review of the CCSS before adoption (Watt, 2011)
- Omission of survey or public hearing to determine practitioners' attitudes before adopting the CCSS (Watt, 2011).
- Constantly changing professional demands and context (Gates Foundation, 2013).
- Inconsistent implementation among Arkansas school districts. While some districts were quite proactive in supporting teachers and revising curriculum, other districts seemed to struggle in the transition to the new standards, and some may have not attended to any shifts at all.
- Misunderstanding that the standards are not the curriculum and that teachers can choose their methods and materials to meet those standards (Porter et al., 2011).
- Inconsistent teacher professional development initiatives in the state
- Parent and community perceptions, fueled by one-sided media reporting of the CCSS, reflected a slanted, misinformed, or false understanding of the CCSS
- Co-mingling of CCSS issues with the controversy about the newly-adopted PARCC test being replaced. Many parents and community members did not understand the difference between the CCSS (e.g., their intent, their adoption, their impact) and the PARCC (e.g., the test chosen to replace the prior Arkansas benchmark exams). Parents and community members had strong reactions to the idea of "over-testing" and "teaching to the test" that had nothing to do with the actual CCSS.

What is the purpose of the Arkansas ELA Standards/ ELA Common Core?

The following guiding questions and research-based responses are written to provide guidance to the standards committee as they begin their work.

What do Arkansas teachers want from the standards? National Council of Teachers of English (NCTE) and the International Reading (Literacy) Association (IRA (now ILA)) defined the intent of the ELA standards they collaborated on and adopted in 1996: "By the term content standards, we mean statements that define what students should know and be able to do in the English language arts" (p. 1). They distinguish the limitations or non-purposes of the standards, adding, "It is important to emphasize from the outset that these standards are intended to serve as guidelines that provide ample room for the kinds of innovation and creativity that are essential to teaching and learning. They are not meant to be seen as prescriptions for particular curricula or instructional approaches" (p. 2). Using the NCTE/IRA ELA standards as a model, Arkansas must be sure of such an intent for the revision process. In following sections of this report, we refer to aspects of instructional or pedagogical intent found in the CCSS-ELA, and make suggestions about varied ways to address inclusion of supplemental material or instructional supports.

What should the purpose of the ELA standards be? Hlebowitsch (in Jenlink, 2009) describes the "package deal" that comes with content standards: (1) performance standards that describe how students can show how they achieved the standards, and (2) proficiency standards that provide the criteria to scale or measure the degree of progress on the performance standards. This package serves the system of accountability. What happens, says Hlebowitsch, is that the content standards becomes less important than the performance standard due to the tie to teacher effectiveness, so teachers may "look first to the test rather than to the standard" (pp. 81-82). If Arkansas educators and stakeholders have concerns about the priority of curriculum being to perform for the accountability test, then the content standards need to rise above this purpose and must be revised with a vision for what our students should know and be able to do in college, in career, and in life—not just on an end-of-the-year test. Another way to word this would be for an examination of the differences between "standards," and "curriculum framework," and "student expectations." If the standards are *not* a curriculum framework (but just a listing of student expectations aligned with an accountability test), should each school/district be given the freedom to determine their curricular frameworks that *extend* from the standards?

According to the Introduction of the CCSS-ELA (which may not have been widely read by practitioners), the standards were not intended to be the whole of ELA curriculum: "While the standards focus on what's most essential, they do not describe all that can or should be taught" (CCSS-ELA, p. 6).

If the standards *are* the curriculum framework (full and complete) for ELA, should the revision team include more curricular guidelines, more details and pedagogical approaches (as in the sidebars on every introductory anchor standard page)? North Carolina developed a separate document called "Instructional Support Tools for Achieving the Standards" that is accessible on their website right next to the standards document. As for the existing CCSS-ELA, in the Key Design Considerations page (again, which may not have been widely read), it is acknowledged:

> By emphasizing required achievements, the Standards leave room for teachers, curriculum developers, and states to determine how those goals should be reached and what additional topics should be addressed. Thus, the Standards do not mandate such

> things as a particular writing process or the full range of metacognitive strategies that students may need to monitor and direct their thinking and learning. Teachers are thus free to provide students with whatever tools and knowledge their professional judgment and experience identify as most helpful for meeting the goals set out in the Standards. (CCSS-ELA, p. 4)

Despite this statement that the standards do not require, demonstrate or intend to provide pedagogical direction, there is some pedagogical language and phrasing and context with the "instructional shifts" which served as cornerstones for Common Core professional development. Knowing this may serve the revision team well as they determine whether to simplify some portions of the standards or elaborate them. The Governor's panel on the Common Core recommended that ADE "annotate the standards with footnotes, comments or other instructional devices to ensure that there is consistency of understanding among educators and parents…." The revision committee will need to decide if the existing CCSS-ELA have enough annotations (more information is provided in subsequent sections of this review) or if supplemental documents may help with this (Governor's Panel on Common Core).

Do Arkansas educators need a vision for ELA? Hlebowitsch (in Jenlink, 2009) reminds us of Dewey's formulation that "managing the mission of the school to the development of its standards is essential" (p. 88). Schools sometimes miss this connection because all that schools do and accomplish cannot be measured; most accomplishments, in fact, are qualitative in nature, as can be seen in stories of individual student success or transformation; grassroots teacher learning communities; after-school extracurricular programs; parental involvement and community functions; in-school publications and news-reporting; student portfolios with artifacts and reflections.

If formulating a vision and mission for schools in the English Language Arts is beyond the scope of the current directive for revisioning the ELA standards, perhaps the revision team can ask how the CCSS-ELA already address the questions below:

- What do we want our students to know about writing and be able to do with writing?
- What do we want them to understand about literature and how to use it?
- What do they need to gain from the study of language, conventions, and words?
- What experiences do they need in listening, speaking, presenting, and research?
- What literacy-based digital skills do they need?
- What should they know about specific disciplinary modes and methods of reading, writing, and presenting?

In a policy brief requested by the US Department of Education (USDE), processes for creating content standards were delineated (CPRE Policy Brief, 1993). The report drew on five states and three national standards curriculum projects. The involved states tried to find a broad cross-section within their development of educators, policymakers, business and community leaders, students, and parents and experimented with new processes for building consensus. Due to the current political tensions, policymakers new to office may not recall or know about such processes used by the Common Core and consortiums involved or those attended to by ADE:

- iterative processes for including professional and public participation;
- reasonable time schedule for the process;
- formatting that does not restrict use;
- decisions about the best level of detail and specificity;
- using the standards as part of a capacity-building effort. (CPRE, 1993)

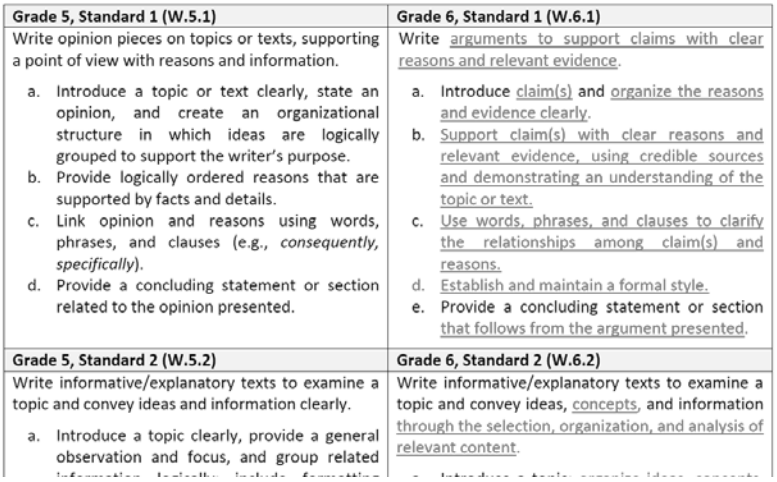
Where Arkansas may have fallen short, based on important processes noted in the report:

- The professional and public participation was largely digital in nature with online feedback to draft standards available; In Vermont, all teachers received draft copies of the standards for review, then telephone surveys and consultations with large committees and citizen focus groups occurred.
- Small representative groups from the state may have attended the development meetings, yet there may not have been an effective feedback process from other educators or stakeholders. The governor has committed to improving communication "among the ADE, cooperatives, school districts and schools to ensure that Arkansas's standards are consistently implemented as intended at the district and school level" (Governor's Panel on the Common Core, 2015).
- Effective cross-disciplinary discussions about the competing demands and interests involved in each content area may not have happened.
- Clarity about the level of detail and specificity in the standards document may have been confusing (again, the purpose and intent): "The specificity issue raises many questions about the flexibility of the standards, their ability to lead, and their ability to provide substantial guidance to other policy components such as assessment" (CPRE, 1993). This policy report posits that standards should be broad enough to allow for curriculum decisions and teaching approaches, but must include specific strands that allow for assessment and program evaluation. *Do Arkansas teachers fully understand this intent, yet are they willing to see that the standards are about more than teaching to the test?*
- A review and feedback process must be in place to give the standards "legitimacy" after they have been enacted and applied in classrooms. This meets one of the recommendations from the Governor's panel on the Common Core.

What are Ideas for Planned Pedagogical Support and Curriculum Development? Another important element for reviewer consideration is the infrastructure (that may have been invisible to some) that provided the pedagogical support and curriculum development guidance for states implementing the CCSS-ELA. Specifically, the PARCC consortium had roles beyond developing the aligned testing for the CCSS. They also spent lots of money and time bringing together educators from across the country to build and provide feedback to instructional supports that were developed. One key support was a document (available in both print and digital format) called the ELA Content Model Frameworks. We used this document both in our pre-service teacher courses related to ELA and in our professional development requested in schools (particularly Dr. Keyes' work with the PARCC Educator Cadre). Besides the module (graphic provided) that demonstrates how all anchor standards of the CCSS-ELA work together in a well-conceived instructional unit, the ELA Content Model Frameworks vertically aligned specific parts of the CCSS-ELA and offered easily accessible definitions of ELA content terminology found in the CCSS-ELA.

Figure 3

ELA Content Model Frameworks



Grade 5, Standard 1 (W.5.1)	Grade 6, Standard 1 (W.6.1)
Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link opinion and reasons using words, phrases, and clauses (e.g., *consequently, specifically*). d. Provide a concluding statement or section related to the opinion presented.	Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented.
Grade 5, Standard 2 (W.5.2)	**Grade 6, Standard 2 (W.6.2)**
Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly, provide a general observation and focus, and group related	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

We believe that with more consistent implementation of the CCSS across the state, more teachers would become aware of these instructional supports, but the political climate hindered this growing knowledge. If the CCSS-ELA are upset or overturned and new standards are developed, new supports such as these will need to be developed, and that takes money, time and years. We wanted to share with reviewers that we already have access to these quality supports.

Review and Comments, Part 1

Review and Comments, Part 1, will focus on the following categories: Comments on coverage; comments on developmental progression and developmental appropriateness; research information on rigor; level of specificity, implementation, and feedback over time; comments on clarity, coherence and focus; alignments with internationally and nationally-recognized standards.

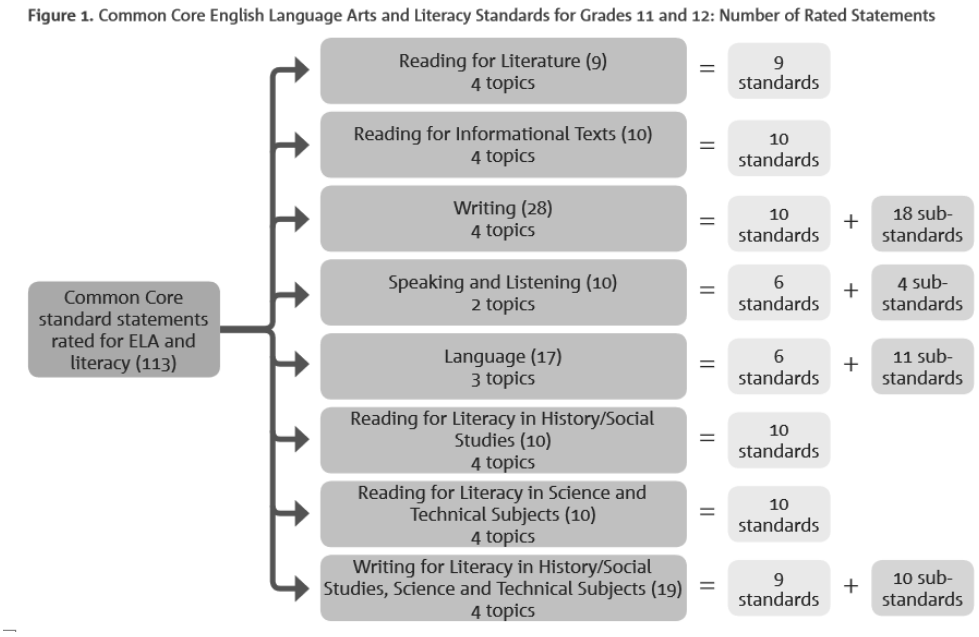
The subsequent Review and Comments, Part 2, will focus on each content category (reading, writing, listening and speaking, and language).

Comments on Content Coverage.

The CCSS were structured based on a review of current standards in the field including pre-existing state standards in the United States as well as national standards like those of NCTE/IRA and the National Assessment of Educational Progress (NAEP), the expectations or standards of other high-performing countries around the world, and the research and literature available in the field in terms of college and career ready expectations. Standards for literacy in content areas outside of ELA (e.g., social studies, science) were also included as the developers of the standards saw that students needed to learn to read, write, speak, listen, and use language across a variety of content areas in multiple disciplines. The CCSS-ELA standards include 6 strands for Grades K-5 and 5 strands for Grades 6-12 (Grades K-5 include a Reading Foundations strand not present in the older grades).

Figure 4

CCSS-ELA Standards for Grades 11-12



The CCSS align to the NCTE/ILA standards structurally by including literacy strands. The CCSS includes the following 6 strands: (1) reading literature, (2) reading information, (3) reading foundations, (4) writing, (5) speaking and listening, and (6) language. NCTE/ILA (1996) also conceptualizes literacy as having conceptual areas and uses a framework that includes reading, writing, speaking, listening, viewing, and representing.

The alignment between the two frameworks shows obvious parallels including reading (albeit the CCSS differentiate between reading literature and reading for information). Additionally, in the NCTE/ILA framework reading foundational skills and language (as categories or strands) are considered as embedded within the reading, writing, speaking and listening standards. This stems from a philosophical perspective in the literacy field that skills can and should be explicitly taught as well as taught within the context of authentic literacy instruction as learners navigate literacy through natural acts of reading writing, speaking, and listening. Thus the emphasis afforded by NCTE/ILA brings forth more clearly the integrated nature of reading and writing. The NCTE/ILA inclusion of viewing and representing are areas also included in the CCSS in considering multimodal and media supported work in reading, writing, speaking, and listening. Finally, the NCTE/ILA standards include 12 specific literacy standards that are mirrored in the CCSS except for NCTE/ILA standards 9-11 which might be considered for explicit inclusion at the state level.

The CCSS also takes a cue from the NAEP standards in terms of making recommendations to balance instruction in reading and in writing so that students read both literary and informational texts and students write for a variety of communicative purposes including

persuasion, explanation, and to convey experience. Additionally, as NCTE noted in their 2010 review of the standards, writing for narrative purposes should also be explicitly included and does indeed appear in the current version of the CCSS (NCTE, p.5). The college and career ready focus is aligned to the NAEP expectations in the following considerations: balancing reading of literature with reading of informational texts (see CCSS-ELA Standards Introduction, p. 5). Likewise NAEP and the CCSS-ELA standards focus on writing in three forms (e.g., arguments, information/explanatory, experiential).

Comments on Developmental Progression

In terms of developmental progression, the goal of the CCSS was to prepare learners to be "college and career ready." According to the CCSS ELA Introduction, the standards are "aligned with college and work expectations" (CCSS-ELA Introduction, p. 3). The standards specify the literacy skills and understandings required for college and career readiness in multiple disciplines to include work within literacy as well as history/social studies, science and technical subjects to support students in meeting the particular challenges of reading, writing, speaking, listening, and language within particular disciplines.

Indeed, the standards state a goal of establishing a vision of "what it means to be a literate person in the twenty-first century" (CCSS-ELA Introduction, p. 3) to include: close reading, enjoying complex works of literature, critical reading, engagement with high quality literary and informational texts, broaden worldviews, cogent reasoning, ability to use evidence to support private reflection and responsible citizenship. They promote student ability to research, to answer questions, to solve problems, to draw from print and non-print texts and media. The standards specifically call for inclusion of informational texts in addition to literary works. The specifically define college and career ready skills as supporting learners to:

- demonstrate independence;
- possess strong content knowledge;
- respond to varying demands of audience, task, purpose, and discipline;
- comprehend as well as critique;
- value evidence;
- use technology and digital media strategically and capably;
- understand other perspectives and cultures.

The standards introduction specifically states the K-8 standards were designed to include useful specificity to guide teachers in developing skills and knowledge. However the two-year grade bands for 9-10 and 11-12 were more broadly structured to allow schools, districts, and states flexibility in high school course design. Additionally, the focus on achievements allows teachers and states to determine HOW goals should be reached and what additional topics to include.

Various studies have examined the extent to which the CCSS prepares students for college and career environments according to the standards' developmental sequences. The CCSS-ELA non-literary reading and writing standards as well as the standards for speaking, listening, and language have been found to be applicable and relevant for entry-level college coursework. Additionally, the standards were noted has having sufficient cognitive challenge to prepare students for entering college coursework (Conley, Drummond, de Gonzalez, Rooseboom, Stout, 2011).

While the CCSS have not been in place long enough to see the impact on entering college students, it is hoped that the alignment and cognitive rigor of the standards affect the need for

entering freshmen to take college remedial courses. A 2010 student study found that four out of ten new college students need to take remedial coursework, and that students who are exposed to a rigorous high school curriculum, like that promoted by the CCSS, are more likely to do well in their first year of college (Beach, 2011; NCES, 2010)

Teachers in the field report that they feel the CCSS standards will prepare students for college and careers (Gates Foundation, 2013). Teachers in the field also feel positively that the standards will prepare their students for college (58%) and career (51%) (Gates Foundation, 2013). Finally, the CCSS has been found to sufficiently prepare students for advanced placement (AP) curriculum indicating strong alignment to college preparatory requirements (Hart, Carman, Luisier, & Vasavada, 2011).

Comments on Developmental Appropriateness

Developmental appropriateness is a frequent conversation raised in discussing the standards. There has been much in popular media questioning the suitability of the K-2 standards for young learners. Yet, teachers in the field report that they have seen positive impact on their students' abilities due to implementing the CCSS-ELA standards (e.g., critical thinking, reasoning skills). However, more teachers in elementary schools (62%) than in middle (47%) or high schools responded positively (37%) to the impact of the CCSS on these attributes (Gates Foundation, 2014). This may indicate that the standards are more appropriate for the younger ages, but these results may include other contributing factors. For example, the CCSS level of specificity for the younger grades may be more directive than for the older grades (see section on developmental progression above). In addition, elementary teachers may have had longer to adjust to the new standards and plan and refine their implementation.

If the existing CCSS-ELA for the grade span of K-2 is considered separate from testing concerns, and is considered from the lens that the standards are not all that should be taught and they do not dictate the ways teachers create learning environments or meet social and developmental needs, then educators of these grades may find the standards more suitable for the early grades. Perhaps the inertia of tension around developmental appropriateness may have hindered the reading and understanding of the CCSS-ELA for these grades.

Additionally, it may be that teachers have been interpreting the language of the standards too concretely and may need support moving to interpreting the standards through a developmentally appropriate lens. The CCSS does not mandate that kindergarten learners should be asked to read independently or to operate above their developmental ability level, and the authors of the CCSS recognize that readiness to read happens at different points in time for different readers and that all readers develop differently (Schwarz, 2015). Similarly, the CCSS K-2 writing standards routinely include the phrases "use a combination of drawing, dictating, and writing" and "with guidance and support from adults." These phrases directly advocate for approaches to literacy that draw from the gradual release from responsibility model.

One example of how the CCSS were written with the developmental needs of young learners in mind can be found in the standard asking learners to "read emergent texts with purpose and understanding." This standard does not ask learners to read independently. What it does ask is that teachers and learners to read texts with purpose and understanding using developmentally appropriate approaches such as modeled, shared, and interactive reading. Indeed, under "Reading Standards: Foundational Skills" (CCSS-ELA, p. 16), a note appears on this page that states: "*Note: In kindergarten children are expected to demonstrate increasing awareness and*

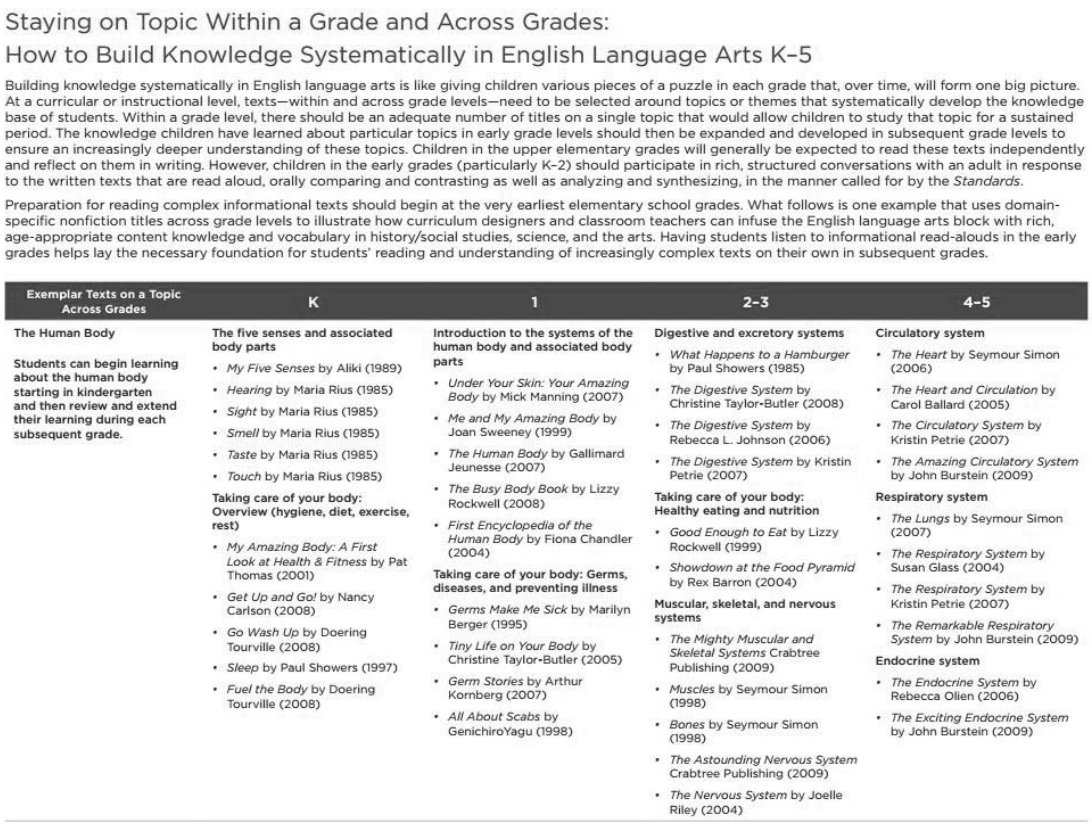
competence in the areas that follow." It seems the intent here is to allow for developmental needs at this early age, as noted by the phrase, "increasing awareness and competence."

Another example can be found on an informational page within the CCSS-ELA, "Staying on Topic Within a Grade and Across Grades: How to Build Knowledge Systematically in English Language Arts K–5" (p. 33):

"*However, children in the early grades (particularly K–2) should participate in rich, structured conversations with an adult in response to the written texts that are read aloud, orally comparing and contrasting as well as analyzing and synthesizing, in the manner called for by the Standards. Preparation for reading complex informational texts should begin at the very earliest elementary school grades. What follows (see Figure 5 below) is one example that uses domain specific nonfiction titles across grade levels to illustrate how curriculum designers and classroom teachers can infuse the English language arts block with rich, age-appropriate content knowledge and vocabulary in history/social studies, science, and the arts. Having students listen to informational read-alouds in the early grades helps lay the necessary foundation for students' reading and understanding of increasingly complex texts on their own in subsequent grades."*

Figure 5

CCSS-ELA Guide for Building Knowledge in ELA for Young Learners



Staying on Topic Within a Grade and Across Grades:
How to Build Knowledge Systematically in English Language Arts K–5

Building knowledge systematically in English language arts is like giving children various pieces of a puzzle in each grade that, over time, will form one big picture. At a curricular or instructional level, texts—within and across grade levels—need to be selected around topics or themes that systematically develop the knowledge base of students. Within a grade level, there should be an adequate number of titles on a single topic that would allow children to study that topic for a sustained period. The knowledge children have learned about particular topics in early grade levels should then be expanded and developed in subsequent grade levels to ensure an increasingly deeper understanding of these topics. Children in the upper elementary grades will generally be expected to read these texts independently and reflect on them in writing. However, children in the early grades (particularly K–2) should participate in rich, structured conversations with an adult in response to the written texts that are read aloud, orally comparing and contrasting as well as analyzing and synthesizing, in the manner called for by the *Standards*.

Preparation for reading complex informational texts should begin at the very earliest elementary school grades. What follows is one example that uses domain-specific nonfiction titles across grade levels to illustrate how curriculum designers and classroom teachers can infuse the English language arts block with rich, age-appropriate content knowledge and vocabulary in history/social studies, science, and the arts. Having students listen to informational read-alouds in the early grades helps lay the necessary foundation for students' reading and understanding of increasingly complex texts on their own in subsequent grades.

Exemplar Texts on a Topic Across Grades	K	1	2–3	4–5
The Human Body **Students can begin learning about the human body starting in kindergarten and then review and extend their learning during each subsequent grade.**	**The five senses and associated body parts** • *My Five Senses* by Aliki (1989) • *Hearing* by Maria Rius (1985) • *Sight* by Maria Rius (1985) • *Smell* by Maria Rius (1985) • *Taste* by Maria Rius (1985) • *Touch* by Maria Rius (1985) **Taking care of your body: Overview (hygiene, diet, exercise, rest)** • *My Amazing Body: A First Look at Health & Fitness* by Pat Thomas (2001) • *Get Up and Go!* by Nancy Carlson (2008) • *Go Wash Up* by Doering Tourville (2008) • *Sleep* by Paul Showers (1997) • *Fuel the Body* by Doering Tourville (2008)	**Introduction to the systems of the human body and associated body parts** • *Under Your Skin: Your Amazing Body* by Mick Manning (2007) • *Me and My Amazing Body* by Joan Sweeney (1999) • *The Human Body* by Gallimard Jeunesse (2007) • *The Busy Body Book* by Lizzy Rockwell (2008) • *First Encyclopedia of the Human Body* by Fiona Chandler (2004) **Taking care of your body: Germs, diseases, and preventing illness** • *Germs Make Me Sick* by Marilyn Berger (1995) • *Tiny Life on Your Body* by Christine Taylor-Butler (2005) • *Germ Stories* by Arthur Kornberg (2007) • *All About Scabs* by GenichiroYagu (1998)	**Digestive and excretory systems** • *What Happens to a Hamburger* by Paul Showers (1985) • *The Digestive System* by Christine Taylor-Butler (2008) • *The Digestive System* by Rebecca L. Johnson (2006) • *The Digestive System* by Kristin Petrie (2007) **Taking care of your body: Healthy eating and nutrition** • *Good Enough to Eat* by Lizzy Rockwell (1999) • *Showdown at the Food Pyramid* by Rex Barron (2004) **Muscular, skeletal, and nervous systems** • *The Mighty Muscular and Skeletal Systems* Crabtree Publishing (2009) • *Muscles* by Seymour Simon (1998) • *Bones* by Seymour Simon (1998) • *The Astounding Nervous System* Crabtree Publishing (2009) • *The Nervous System* by Joelle Riley (2004)	**Circulatory system** • *The Heart* by Seymour Simon (2006) • *The Heart and Circulation* by Carol Ballard (2005) • *The Circulatory System* by Kristin Petrie (2007) • *The Amazing Circulatory System* by John Burstein (2009) **Respiratory system** • *The Lungs* by Seymour Simon (2007) • *The Respiratory System* by Susan Glass (2004) • *The Respiratory System* by Kristin Petrie (2007) • *The Remarkable Respiratory System* by John Burstein (2009) **Endocrine system** • *The Endocrine System* by Rebecca Olien (2006) • *The Exciting Endocrine System* by John Burstein (2009)

Really, all the standard is asking for is for students to listen to increased informational text in the earlier grades. Furthermore attending to developmental appropriateness, a footnote in small print at the bottom of P. 32 of the CCSS-ELA: *"*Children at the kindergarten and grade 1 levels should be expected to read texts independently that have been specifically written to correlate to their reading level and their word knowledge. Many of the titles listed above are meant to*

supplement carefully structured independent reading with books to read along with a teacher or that are read aloud to students to build knowledge and cultivate a joy in reading."

This hard-to-find footnote probably answers some of the concerns from early educators, yet how many can see it or know it is actually a note in the CCSS-ELA? This is an example of a pedagogical/contextual note for teachers that may be embedded in the standards, yet not in a clear, visible way. Or one could say that teachers should be provided the time to read and comprehend all writing in and around the standards. These particular pages and footnotes may not be available on the phone applications or the version of the standards listed as bullets. We accessed these notes and pages by clicking on the "Download the Standards" option on the corestandards.org website.

Gangi and Reilly note multiple issues with the K-2 standards and cite some researchers. They specifically noted socio-emotional and cultural needs in the early learners and the focus on academic learning rather than instructional, developmentally appropriate methods in the CCSS-ELA (p. 13)--again, some people are reading the standards expecting to see pedagogical and developmental aspects involved but they do not see the supplementary pages or notes, while others are misinterpreting that the K-2 students will need to fully comprehend and answer questions about informational texts on accountability tests.

In Coleman and Pimentel's "Revised Publishers' Criteria for the CCSS ELA," (revised 2012 after input from "teachers, researchers and other stakeholders" p. 1), the authors address concerns of foundational reading, choosing appropriately complex texts, supporting materials with developmentally appropriate instruction, and criteria for questioning and development of tasks that align with the shifts and anchor standards of the CCSS-ELA.

Research from the literacy field for K-2 – Reading. We brought forward well-known literature in the field of literacy that supports some of the ELA CCSS for grades K-2. One of the conversations involved with the early grades standards involves the mandated inclusion to read expository or informational texts. Informational texts can be motivating and tap into children's curiosity about the world around them which has been shown to encourage overall literacy development as children engage with texts because of interest (Caswell & Duke, 1998).

There has been a documented scarcity of informational texts in the younger grades (Duke, 2000; Gibson, 2008; Kamberelis, 1999; Olinghouse & Wilson, 2012; Yopp & Yopp, 2000). Additionally, students exposure to informational texts appears to differ based on factors such as school socioeconomic status, race/ethnicity, and gender. Duke (2000) found that first grade students spend only 3.6 minutes a day on informational texts. In low SES classrooms that number drops down to 1.9 minutes per day. Kamberelis (1999) found that K-2 students had far more knowledge of narrative genres and defaulted to these genres even when composing science reports.

Student and teacher talk around expository text has found to be more extensive and more complex (Price, Van Kleeck, & Huberty, 2009). Additionally, Duke and Carlisle (2011) found that as students move through the grades, they are increasingly expected to learn from a greater variety of texts and that young children's knowledge of both narrative and informational text structures can develop during this time but only through the teacher's work in choosing appropriate tasks, fostering language use in talking about texts and scaffolding students' understanding of informational text structures.

Often teachers and teacher candidates learn how to teach expository structures in a content reading class. This content and this type of course are not uncommon in elementary and early

childhood program requirements. However, teacher candidates may struggle in accepting or acquiring this content based on their own lack of familiarity and frustration with expository text (Kamberelis, 1999). Indeed, teachers and teacher candidates have been shown to favor narrative over expository text structures. These personal preferences may affect their instructional practice (Gibson, 2008; Kamberelis, 1999; Nathanson, 2006; Wake, 2009).

The differences between narrative and expository structures involve specialized cognitive and affective responses in order for a student to enter and succeed in that text (Dymock, 2005; Heath, 2000; Moss, 2004). Teachers cannot assume that if students can read (i.e., decode), then they can read and comprehend expository text. Nathanson (2006) writes that reading informational texts "places a unique demand on the reader's cognitive processing and relies on the reader's ability to apply prior knowledge and to make use of the text's organization and structure" (p. 3). Additionally, understanding of genre directly impacts comprehension indicating that knowledge of genre helps learners select strategies to enhance comprehension and helps students understand how genre-specific elements can support comprehension (Yoo, 2015).

If students are not exposed to informational text structures or scaffolded in how to navigate these structures at an early age, then their progression through the grades will be impeded as the later grades (and college and career contexts) do require more reading in non-narrative formats (Nathanson, 2006). Excluding or minimalizing young students' exposure to informational text perpetuates a cycle where readers become more familiar and able to comprehend narrative text and less familiar and less able to comprehend expository text.

The CCSS K-2 ELA standards target those skills that are necessary for learning to read informational text and balance these skills with learning to read with narrative texts. Given the literature in the field, the informational reading standards are appropriate provided the teacher is scaffolding learners for this work. For example, the kindergarten standard "With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts) (CCSS.ELA-LITERACY.RI.K.7) simply asks a child to talk about the pictures in the informational book and the text they share with the teacher in modeled or shared reading time. Similarly, this second grade standard "know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently" (CCSS.ELA-LITERACY.RI.2.5) asks the learner to attend to those features unique to information text to begin learning how those features can contribute to overall comprehension of a topic.

Research from the literacy field for K-2 - Writing. Many of the points discussed in the K-2 – Reading section above are also relevant here. The research in the field indicates that teachers may favor narrative structures over informational structures in their classrooms. Again, the differences between narrative and expository structures involve specialized cognitive and affective responses in order for a student to craft that type of text (Dymock, 2005; Heath, 2000; Moss, 2004). Teachers cannot assume that if students can write (i.e., encode), then they can read and comprehend expository text. Informational texts contain unique features in terms of text organization and structure (Nathanson, 2006). Additionally, understanding of genre directly impacts ability to produce that genre indicating that knowledge of genre helps learners understand how genre-specific elements can support their writing efforts (Yoo, 2015).

If students are not exposed to informational text structures or scaffolded in how to navigate these structures at an early age, then their progression through the grades will be impeded as

the later grades (and college and career contexts) do require more reading in non-narrative formats (Nathanson, 2006).

Many classroom teachers are uncomfortable with writing and writing instruction and admit a lack of knowledge and efficacy for teaching writing (Graves, 2002; Pardo, 2006). Gerde, Bingham, and Wasik (2012) found that early childhood teachers "rarely are seen modeling writing for children or scaffolding children's writing attempts" (p. 351). This speaks to a need to explicitly include the focus on writing practice and instruction within early childhood curriculum.

Writing instruction need not be thought of as the child taking pencil (or keyboard) in hand and drafting first hand. Writing for the early grades should be considered as an act of composing and expressing ideas; not the activity of handwriting or penmanship. Indeed, young children may not yet possess the fine motor skills to grasp and control writing utensils.

Recommendations in the field focus on approaches to writing that allow the child to create language through drafting as a mental process while the teacher serves as a scaffold for placing content on paper (or the screen) (Tompkins, 2003) focusing on the process of writing rather than the product (Machado, 1999).

Writing approaches that allow the learner to draft through oral and visual avenues, but not necessarily transcribe, include modeled, dictated, and shared writing. Providing early childhood teachers with an alternate view of writing as composing (not "writing") is one recommendation for supporting learners in drawing and dictating and oral composition.

Providing teachers of young learners with an alternate view of writing may open the door to their ability to support learners in drawing and dictating and oral composition (Pardo, 2006; Gerde et al., 2012). Continued recommendations for meeting the CCSS in writing include modeling writing for learners in multiple classroom contexts (e.g., daily activities or routines such as morning meeting or centers or job/task charts), engaging in modeled and shared writing, scaffolding students' writing efforts, engaging children in meaningful writing for authentic audiences, and implementing digital writing options (Gerde et al., 2012).

While early and middle grade writers may embrace technology as a tool for writing, they still express a desire to use the traditional tools of pencil and paper in the writing process (Lenhart et al, 2008; Wake & Whittingham, 2012). This is of great significance given the current push for increased keyboarding and technology skills in the early middle grades. The Common Core State Standards for English Langue Arts & Literacy in History/Social Studies, Science, and Technical Subjects indicate that by fifth grade students should, "With some guidance and support from adults, use technology, including the Internet to produce and publish writing as well as to interact and collaborate with others, demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting" (Council of Chief State School Officers and National Governors Association, 2010, p.21).

This expectation of keyboarding and technological proficiency may not seem to be reasonable given that young children may perceive that their own technology and keyboarding skills are a hindrance to the writing process. Students of this age need time and support to develop the fine motor and hand-eye coordination skills necessary for manipulating the tools to support their ability to write in digital formats (Burke & Cizek, 2006; Moats, Foorman, & Taylor, 2006). Whithaus, Harison, and Midyette (2008) suggest handwriting and keyboarding represent varying skills necessary for composing and processing and recommend that high-stakes testing should make accommodations that provide for student comfort.

Comments on Rigor

There have been several studies conducted attempting to evaluate the rigor of the CCSS. As stated in the CCSS-ELA standards introduction, "as specified by the CCSSO and National Governors Association(NGA), the Standards are (1) research and evidence based, (2) aligned with college and work expectations, (3) ***rigorous***, and (4) internationally benchmarked" (CCSS Introduction, 2010, p. 3).

Although some critics have stated the CCSS framers provide little research supporting the presumption that adopting the standards necessarily leads to a more rigorous curriculum to better prepare students for college (Beach, 2011; Mathis, 2010), 72% of teachers in one survey were very positive/positive about the rigor and consistency of the CCSS learning goals among states and schools (Gates Foundation, 2013, p. 84). The same survey also reported that 60% of teachers were very positive/positive about the quality of education provided by the learning goals in the CCSS (p. 84).

It can be assumed that the CCSS focus on rigor was based on the perception, which may or may not be grounded in real data, that existent educational standards and practices reflected lowered expectations for student learning. Given the 2000 and 2006 Fordham reviews of educational standards across all states, it is clear that the existent curricula varied greatly from state to state and that the standards in some states did reflect lower expectations for student learning than is present in the current CCSS.

With this in mind, the CCSS were drafted with the idea that national standards would increase rigor in the classroom. The CCSS conception of rigor relies on the concept that providing teachers with a well-defined set of rigorous expectations for each grade level would lead to elevated performance from students and teachers. Indeed studies indicate that the CCSS are more rigorous than the pre-existing state standards (Gallup & Edweek, 2014; Kober & Rentner, 2011; Rentner, 2013; Rentner & Kober, 2014).

Porter et al (2011) concluded that the CCSS shifted content expectations toward higher level of cognitive demand and that the CCSS prioritized analysis type tasks whereas previous state standards tended to emphasize comprehension level cognitive demands and tasks-based procedures (Porter et al., 2011). McDonnell and Weatherford (2013) also noted variability among state standards but did note that a few states' standards were actually *more* rigorous than the CCSS (CA, IN, and MA).

Similarly, Carmichael, Martino, Porter-Magee, and Wilson (2010) noted two states and D.C. had previous standards that were "clearly superior" to the CCSS and 11 states had standards that were equivalent to the CCSS.

Beach also called for "further alignment research" based on the supposition that the CCSS better prepares students for postsecondary education. He shared a concern that "most states currently do not have plans to coordinate the CCSS with higher education curricula (Kober & Rentner, 2011) and that not all students want to attend college but rather to aim for technical and/or vocational training. Additionally, a 2013 Gates Foundation study found teachers were less certain about how well the CCSS prepared students for career options as opposed to college entry. So, additional research may need to be conducted to analyze how the CCSS aligns to preparation for careers related to current job demands. Lastly, Beach calls for research into how implementing the CCSS will be consistent with 21st-century cultures of learning constituted by

collaboration, interactivity, connectivity, and multimodal communication mediated by use of new literacy/digital tools (p. 181).

Despite Beach's contention that there is little research on the alignment of the CCSS to college or career, a number of studies conducted since the publication of the CCSS do support the concept that the CCSS does prepare students for college coursework. However, the alignment of the CCSS to competencies for career fields is less clear.

These reports include a 2011 College Board report finding that the CCSS for ELA do align to the Advanced Placement (AP) English Literature and AP English Language Curricula. While the alignment of the CCSS for AP coursework was stronger in mathematics than ELA, the CCSS ELA standards did represent a logical progression from high school coursework into AP coursework.

A 2013 study examining the alignment between the CCSS-ELA and the NAEP reading and writing expectations found that the NAEP reading expectations were aligned with the CCSS-ELA standards and that at the higher grades the CCSS-ELA were actually more complex and more discipline specific than NAEP. NAEP expectations for higher grades (above 8th grade) focused on general comprehension over using informational texts in content specific contexts. Similarly, the alignment between CCSS-ELA for writing was strong. Again, the CCSS- ELA focused more specifically on reading and writing in the discipline and reading and writing based on research and discipline-specific vocabulary rather than general writing skills expected by NAEP. In both reading and writing, the CCSS-ELA also more clearly and explicitly included the role of technology, digital texts, and digital writing (Wixson, Valenica, Murphy, & Phillips, 2013).

A 2014 Fordham study on districts' early implementations experiences found that the ELA CCSS differed from previous state standards in that the CCSS were seen by teachers as more rigorous promoting depth over breadth of content coverage requiring teachers to have a strong grasp of their content (Cristol & Ramsey, 2014). In particular, the ELA standards reflect an increasing level of rigor in terms of text complexity. These shifts mean a paradigm shift that will involve all aspects of standards implementation including professional development, curriculum design, and assessment design/selection. In line with this finding, many educators also reported that their CCSS-based professional development has supported them in learning to cover fewer topics with greater depth (Cristol & Ramsey, 2014).

Arkansas teachers also felt the CCSS were an improvement on previous state frameworks and were more rigorous than the previous state frameworks (Matlock et al., 2015). While this was the strongest overall finding in the study, it should be noted that these teachers also noted concerns about the implication this increased rigor would have in terms of their performance evaluations and student accountability.

The benchmark for establishing rigor in the CCSS was the idea of preparing students to be "college and career ready" and established a vision for what it means to be literate in the 21st century (CCSSI, 2010). This content includes the ability to parse complex works of text, the ability to critically read and assimilate large amounts of text, the desire to seek high-quality literary and informational texts, and the ability to use text-based evidence to develop thought and provide a foundation for active citizenry.

A study involving nearly 2,000 college instructors did conclude that many of the ELA CCSS were applicable and relevant to entry-level college courses. Instructors surveyed taught Composition and English Literature courses as well as a variety of Social Science courses (e.g., psychology, sociology, history, government) and Science courses (e.g., Biology, Chemistry, Physics). Eighty-four percent of these instructors did rate the ELA standards as of sufficient cognitive demand to

prepare students for college level coursework. The most applicable as rated by the college instructors were informational writing, informational reading, speaking and listening, and language. Of the 113 ELA standards, instructors rated only two as potentially unimportant: using narrative techniques in writing and observing hyphenation conventions. Comprehension of nonfiction texts was rated as the most important of the ELA CCSS (Conley et al., 2011).

It should be noted that while the rigor of the CCSS may prepare students for college level entry coursework, states may not have developed plans for sequencing K-12 and postsecondary content expectations (Finkelstein et al., 2013; McMurrer & Frizzell, 2013). Additionally, there were no studies on alignment of the CCSS for career expectations in current contexts.

A College Board (2011) study determined that the CCSS would prepare students for study in Advanced Placement courses; however, this alignment was stronger for math than for ELA.

Finally, study commissioned by the Bill & Melinda Gates Foundation also noted the increased expectations of the CCSS in terms of content rigor. A quick summary of findings from that study is included here (Gates Foundation, 2013).

Figure 6

Teacher Perceptions of CCSS Content Rigor Expectations

Percent of ELA Teachers Assigning Ratings of Very Positive/Positive	**Attribute tied to CCSS Rigor**
54%	the CCSS *prepared their students to compete in a global economy*
63%	the CCSS *prepared their students to enter college*
56%	the CCSS *prepared their students for entering a career path*
77%	the CCSS prepared their students to *think critically and use reasoning skills*
76%	the CCSS prepared their students to *effectively present their ideas based on evidence*
77%	the CCSS prepared their students to *read and comprehend informational texts*
51%	the CCSS would provide students with *increased knowledge of and experience with classic literature*
53%	that the CCSS would provide students with *increased knowledge of and experience with popular fiction*

Finally, although the CCSS are regarded as more rigorous than most pre-existing state standards, Tiffany-Morales, Astudillo, Black, Comstock, and McCaffrey (2013) noted teacher concerns that many students, early in the implementation, were unprepared for CCSS expectations and unprepared for the academic rigor of the CCSS. Working with students to meet the new demands of the CCSS would require changes to instructional practice and a time of transition to ensure success for teachers and students involved in the process.

While the standards are more rigorous, it is important to conclude this section by noting that rigor is more than the content that is taught. Rigor is not more homework; rigor is not letting kids struggle with materials over their capability level; rigor is not pre-packaged in a textbook or online program (Blackburn, 2012).

Instead, rigor is how the teacher implements the content and how learners demonstrate understanding of the content. Rigor is the expectations the teacher sets for students and the culture of learning established by the teacher. The CCSS themselves are merely the plans and outlines for practice. Teachers are the key to meeting these high expectations with authenticity and commitment. This intent of "rigor" aligns with the opening narrative from Grindon in her use of a critical literacy backdrop of curriculum development.

Comments on Level of Specificity and Implementation over Time

Many more thoughts on specificity will be included in Part 2 of the Review and Comments, specific to the content categories. Generally, major findings tell us that our focus should be on supporting teachers in curriculum (Wohlstetter, Buck, Houston, & Smith, 2015) as well as gaining educator feedback and analyzing student outcomes over time in order to determine if changes in specificity are needed for the standards. This provides one keen reason for keeping the adoption of the ELA CCSS in Arkansas.

North Carolina created their own ELA standards document that has the standard statements on the left, and a column on the right called "Unpacking." The document states on the first page: "*The unpacking of the standards done in this document is an effort to answer a simple question, "What does this standard mean that a student must know and be able to do?'"*

Figure 7

North Carolina Standards Template Exemplar

CCR ANCHOR STANDARD	CCSS STANDARD	UNPACKING
College and Career Readiness Anchor Standards for Reading	**Reading Literature**	
	Key Ideas and Details	
1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.	1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	Fifth grade students are required to quote accurately from the text to support their answers. "Quote accurately" may include using their own words. Determining a theme continues to be a focus and students should be giving more thought to characters' actions in a text. They are required to refer to specific details in the text when finding the similarities and differences between two or more characters, settings, or events. Use questions and prompts such as: • Can you tell me the reasons why you think…? Show where you linked your thinking to the text. • What are the most important events that happened in the story? Can you provide specific examples from the text to support your thinking? • What is the theme of this text? • Summarize the story from beginning to end in a few sentences. • Can you tell me how the character solved the problem in this story? • Describe how these two characters are the same. How are they different?
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.	2. Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.	
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.	3. Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).	

As we brought forward in the "Important Notes for Background and Context", we hope that as Arkansas educators develop curriculum ideas and find additional resources, that ADE will develop a functional and easily-accessible tool for teachers to share any ideas and informational spaces that may help in determining future changes in specificity of the standards that will help students learn better.

Comments on Clarity, Coherence, and Focus

An intention existed, from the start of the development of Common Core, for an enhanced and obvious coherence among grade level expectations, a coherence that would also exist among the states to ensure students who moved from state to state would have familiarity with standards and expectations specific to his/her grade level. A noteworthy positive to CCSS is its "coherence across grades" in skills and knowledge that are "made clear and relevant" from grade prior to next grade (Cristol & Ramsey, 2014, p. 96).

A Gates Compendium Report (2013) shared that 65% teachers very positive/positive about the learning goals and their clarity for what students are expected to learn (p. 84). A Fordham report rated the ELA CCSS high for rigor and clarity (Compendium, p. 36), yet the approach the Fordham analysts used has been criticized because of its lack of consistency about the intent of the standards. Some state standards were rated low from Fordham on clarity when the standards were written in a general way on purpose so teachers could have autonomy in how they enacted the standard or so multiple viewpoints could be considered.

Porter et al (2011) found the CCSS substantially more focused than previous state content standards yet concludes "but clearly the Common Core standards could have been more focused than they are" (p. 115). Beach responded saying, "One key finding of Porter et al's report is that the CCSS lack curriculum focus. This lack of curriculum focus can lead to superficial coverage of many topics with little depth of development. One possible explanation for the lack of focus is that the CCSS retain the familiar standards categories of reading, writing, speaking/listening, and language found in most state standards. Although the CCSS do cross reference standards across these categories, privileging each category simply leads to more specific standards. For example, having a separate 'language' category, while certainly not unimportant, automatically results in, as the report finds, an increase in emphasis on language study when compared to earlier state standards. This familiar four-part standards framework replicates status quo curriculum frameworks rather than encouraging thinking outside the box to reinvent those frameworks (Wiggins, 2011), for example, by achieving focus through integrating curriculum around understanding and producing oral, written, and media texts" (p. 182). Beach seems to advocate that standards developers, from the start, may have had beneficial "out-of-the-box" ideas were it not for a preconceived focus on the familiar categories.

Beach continued to raise questions about the content analysis methods used to create the standards. He writes:

> …they focus on identifying cognitive processes and 'cognitive demand' based on a hierarchy …. It should be noted that this focus on cognitive processes and demands represents only one of many ways of conceptualizing literacy learning in an ELA curriculum and their model may not reflect the understandings or practices of teachers in the field enacting the curriculum in a literacy practices-situated cognition learning theory situation….. All of this suggests that determining how teachers align their instruction to the CCSS remains a challenge given issues in the validity of content analysis of language meanings, meanings that can vary across different classroom contexts shaped by differences in factors such as time, materials, work assignments, and 'reform clutter/fatigue' (Kennedy, 2010, p. 596). Porter et al (2) agree and recommend further research with teachers in the field using *Surveys of Enacted Curriculum* as well as the development of additional models for conceptualizing ELA other than their hierarchy of cognitive processes and demands (p. 180).

Alignment with Nationally and Internationally Recognized Standards

In comparing the CCSS to nationally recognized standards, a 2011 survey sponsored by the Epic Policy Improvement Center and funded by the Gates Foundation compared the CCSS to the pre-existing standards in five states identified as exemplary. This study analyzed all standard sets for rigor, similarity of content, cognitive challenge, and level of alignment. The standards included in this review included: California, Massachusetts, Texas, the Knowledge and Skills for University Success (KSUS) standards, and the International Baccalaureate (IB) Diploma Programme.

The standards sets were deemed to have strong alignment in knowledge and skills alignment, cognitive depth and complexity, and similar breadth. This study also determined that only 7% of the CCSS are at the lowest levels of cognitive complexity (recall and reproduction); another 12% involve skills and concepts; 55% require strategic thinking; and the final 26% involve extended thinking (Conley et al., 2011).

A 2014 study comparing the CCSS-ELA to pre-existing standards in California, Florida, and New Jersey found that while the CCSS-ELA had fewer objectives that these objectives required more *higher*-order language skills and tasks then did the state standards (Wolf, Wang, Huang, & Blood, 2014).

In contrast, Arkansas's standards were noted as "clearly inferior" to the CCSS and described as "bloated, vague, and/or repetitive" with unclear progressions and an "experience-centric" focus resulting in reduced rigor. The authors of this report noted that Arkansas standards were among the worst in the country earning a grade of "D" while the CCSS earned a "solid B-plus" (p. 54). It should be noted that this report has been criticized for an inconsistent approach (Hlebowitsh in Jenlink, 2009, pp. 84-87).

A research study sponsored by the American Education Research Association (AERA) compared the CCSS to pre-existing state standards and to the NAEP assessment using a measurement of teachers' enacted curriculum based on these standards sets. While Arkansas's standards were not included in this study, the researchers did review the standards of 24 states ranging from Alabama to Wisconsin. The CCSS were found to have high degrees of correlation for content coverage at the strand level (less at the component or standards level) and to have higher cognitive complexity. The CCSS was also found to have higher alignment to the NAEP than previous state standards (Porter et al., 2011).

This study also looked at the CCSS compared to international standards in Ontario, Finland, Sweden, and New Zealand. Moderate alignment was noted, and the study authors do recommend Finland's standards as a "focus country" for making any modifications to the CCSS noting that Finland puts greater emphasis on "perform procedures" and at the "generate/create" levels of cognitive engagement. Finland also places less emphasis on language study and on phonics than the CCSS and Finland's standards include overall greater emphasis on writing, listening, and viewing than the CCSS (Porter, McMaken, Hwang, & Yang, 2011).

Tienken (2008) also found no strong correlation between international test performance for countries with national standards (Tienken, 2008). One example is Canada, which has no national standards, but its students score well on international reading tests (Mullis, Martin, Kennedy, & Foy, 2006). Nevertheless, removal of assessment tied to standards has not been one of the recommendations from the Governor's Panel on the Common Core.

Finally, in comparing the CCSS to the National Core Arts Standards Conceptual Frameworks group completed "The Arts and the Common Core: A Review of Connections" which displayed connections to the CCSS-ELA. Some of those are listed below:

- "The Common Core can potentially provide arts teachers with a common language with which to describe the cognitive skills that they are already addressing and cultivating through rigorous and meaningful arts experiences" (p. 4).
- "...It is a priority of the Coalition (the National Coalition for Core Arts Standards) to ensure that the goals and objectives of the Core Arts Standards relate clearly, directly, and meaningfully to the Common Core, and that these connections are actively considered as a part of the standards writing process" (p. 4).
- The "Reading" sections of the CCSS-ELA contain the most arts-based connections. "Among these 220 standards (Reading), 50 contain at least one direct reference to arts-based learning" (p. 9).
- " If the definition of text may be expanded to include non-print texts, such as works of dance, visual or media arts, music, or theatre, then all of the standards in this category, at every grade level, have direct references to arts-based content or investigation" (p. 10.)
- "Connections to Creative Practices: In addition, the introduction to the ELA Standards contained elements relating to all four creative practices: imagining, investigation, construction, and reflection" (p. 12.)
- "Connections to Creative Practices: All seven items listed in the College and Career Readiness portion of introduction relate to the creative practices of investigation and reflection. Four items aligned with the practice of imagining, and three aligned with construction" (p. 13.)
- "Connections to Creative Practices: The creative practice of reflection had the highest instance of alignment with the Anchor Standards for Writing; this process was reflected in all 10 anchor standards. The creative practice of construction was closely aligned with these standards, as this activity (defined by the framework as to make or form by combining parts or elements) is so closely tied to the practice of writing. The other two creative practices, imagining and investigation, were well represented in the writing standards as well; imagining aligned with seven out of 10 standards, and investigation connected to six" (p. 14).
- The American Council on the Teaching of Foreign Languages (ACTFL) aligned the National Standards for Learning Languages with the CCSS-ELA in 2012. They wrote that the four strands represented in the CCSS are represented in the National Standards for Learning Languages by the Communication Standards (interpersonal, interpretive, and presentational). ACTFL also notes that their four other goals for learning languages (Cultures, Connections, Comparisons, and Communities) also support and are aligned with the CCSS, describing college, career, and "world-ready" expectations (p. 1).

Review and Comments, Part 2

Part 2 of the Comments and Review focuses on the content standards in the CCSS-ELA, as well as special population considerations.

Comments on the Standards for Reading - Literature and Informational

We brought forward well-known literature in the field of literacy that supports some of the CCSS-ELA for reading literature. One of the primary criticisms of the CCSS reading standards

focuses on the recommendation from Coleman and Pimentel that close reading (without consideration of background or prior knowledge or interpretation) should be a commonly enacted and exclusive practice. In their revised criteria for K-5 and 6-12, Coleman and Pimentel extend their recommendations for choosing materials for reading with a stronger focus on close reading. They focus on students' ability to "draw knowledge from the text" through close reading regardless of the text selected for analysis (literature or informational).

The 'close reading' criteria make plain that developing students' prowess at drawing knowledge from the text itself is the point of reading; reading well means gaining the maximum insight or knowledge possible from each source. Student knowledge drawn from the text is demonstrated when the student uses evidence from the text to support a claim about the text. Hence evidence and knowledge link directly to the text. (2012, p.1)

The definition of comprehension offered by Coleman and Pimentel does not include the concept of "third space" which "recognizes the critical influences of students' social and cultural histories on their ability to interpret prose and provides guidance to teachers regarding their instructional responsibilities and roles." Miller and Faircloth (in Israel & Duffy, 2009) note this third space as important to help students "discover significance within their studies" and depicts how the cultural and social histories of students impact their "identities as learners" (p. 317). This part of being an effective ELA teacher, especially to students from diverse backgrounds and cultures should have a role in the standards or should be included in supporting documents for educators.

While Coleman and Pimentel speak explicitly about the merits of close reading, it should be noted that the CCSS-ELA do not stipulate this approach to the exclusion of engaging students with text through prior knowledge and personal response. The CCSS-ELA simply stipulates that text should be used as evidence to support reading comprehension and discussion, but not to the exclusion of personal response.

Tangentially, another critique of the reading standards is the requirement to include informational text and reading for efferent purposes as a requirement for literacy development. The inclusion of "Appendix B" with its lists of recommended texts has also been noted as possibly causing some districts or teachers to limit the texts they bring into the classroom seeing the recommended list as the "required" list. Both of these critiques are misinterpretations of the CCSS-ELA.

Gangi and Reilly (2013) write that aesthetic reading has been marginalized in the ELA CCSS in deference to "efferent" reading, citing Rosenblatt. They praise New York for adding "Standard 11" to the ELA CCSS before acceptance: "...recognize, interpret and make connections in narratives, poetry and drama to other texts, ideas, cultural perspectives, personal events and situations" and "self-select text based on personal preferences" (p. 10).

Hodge and Benko (2014) analyzed experts who had written books about implementing the ELA CCSS. They note Calkins, noted reading and writing workshop expert, and how she encourages teachers to "allow student choice, include books in the Young Adult genre, and...devote much time to independent reading" (p. 186-187). Other teacher educators in the state also advocate that "something needs to be added to the standards about personal engagement with texts as a starting point for reading and writing about them" (Joliffe, 2015, personal correspondence).

From NCTE standards: Determining texts to be read-- "What criteria should be used to select particular works for classroom study? In choosing texts, teachers and students should consider relevance to students' interests and other readings; relevance for students' roles in society and

the workplace; literary quality; and balance and variety in form, style, and content. Complexity is another important criterion. Students benefit from reading texts that challenge and provoke them; they also benefit from simpler texts that promote fluency. Opportunities to read books for pleasure are also vital. While some of these texts will be suggested or assigned by teachers, students also need to choose texts for themselves so that they develop a sense of themselves as independent readers" (1996, p. 20).

The balance of literature and informational texts is also important to address here. The concept that the CCSS would prohibit teachers from using literary texts was one commonly heard in social media contexts. The recommendation in Arkansas was that students in Arkansas should have decreasing exposure to literary texts as they progressed through the grades. In Arkansas the recommendations included that K-5 students should read 50% literary texts and 50% informational texts. For grades 6-12 that balance was to shift to 30% literary texts and 70% informational texts.

What many in and out of the field failed to grasp was that this recommendation encompasses the entirety of the student's day so that the reading they did in their classes outside of the ELA classroom were included in this breakdown. If a student had a typical 7-period day, then the inclusion of literary works could fill the content in up to 2 of those class periods. Truly the goal here was for teachers to infuse informational and literary texts across the curriculum as relevant and appropriate to the content with literary texts receiving no more or no less attention than they did previously.

In this way, English teachers could and should teach how to work across both literary and informational genres based on the themes and topics they developed in their curriculum. Conversely, non-ELA content area teachers (e.g., history/social studies, science, and technical subjects) were also empowered by these standards to include literary and informational texts relevant and appropriate to the discipline in order to teach learners how to navigate and comprehend content-specific language conventions.

In 2013, the NAEP Validity Studies Panel commissioned an examination of the content and context of the CCSS. Below is a graphic excerpt from their findings about or for the Reading NAEP based on their analysis of the ELA CCSS. Note their favorable commentary to the CCSS-ELA documents:

Figure 8

Specific Conclusions and Recommendations for NAEP Reading

1. Panel members find that many aspects of the current NAEP reading assessment are consistent with conceptualizations of the reading process found in the research and in CCSS-ELA documents:
   - Cognitive focus aligned with research
   - Broad range of text types
   - High quality and appropriate length of texts used in assessment
   - Attention to literary and informational comprehension
   - Use of text pairs
   - Attention to reader-text interactions in item development
   - Inclusion of writing in response to reading
   - Parsimony and elegance in crafting questions to align with specific texts
   - Thoughtful, meaningful items—well sequenced and crafted

   Panelists also recognize the different purposes of NAEP and CCSS-ELA and feel strongly that NAEP should retain its independence from any particular curriculum and serve as a general assessment of reading comprehension. In addition, NAEP's ability to sample a wide variety of student performance on a range of texts and tasks through its matrix sampling is consistent with the range of reading performances expected by CCSS-ELA and should be preserved.

The explicit inclusion of informational texts early in the standards is also important to highlight here. The developmental appropriateness section (above) gives the research base around early childhood teachers' inclusion of informational texts in their curriculum

In early grades classrooms, student and teacher talk around expository text has found to be more extensive and more complex than talk around literary texts (Price, Van Kleeck, & Huberty, 2009). Additionally, Duke and Carlisle (2011) found that as students move through the grades, they are increasingly expected to learn from a greater variety of texts and that young children's knowledge of both narrative and informational text structures can develop during this time but only through the teacher's work in choosing appropriate tasks, fostering language use in talking about texts and scaffolding students' understanding of informational text structures.

The differences between narrative and expository structures involve specialized cognitive and affective responses in order for a student to enter and succeed in that text (Dymock, 2005; Heath, 2000; Moss, 2004). Teachers cannot assume that if students can read (i.e., decode), then they can read and comprehend expository text. Nathanson (2006) writes that reading informational texts "places a unique demand on the reader's cognitive processing and relies on the reader's ability to apply prior knowledge and to make use of the text's organization and structure" (p. 3). Additionally, understanding of genre directly impacts comprehension indicating that knowledge of genre helps learners select strategies to enhance comprehension and helps students understand how genre-specific elements can support comprehension (Yoo, 2015).

If students are not exposed to informational text structures or scaffolded in how to navigate these structures at an early age, then their progression through the grades will be impeded as the later grades (and college and career contexts) do require more reading in non-narrative formats (Nathanson, 2006).

Comments on the Standards for Writing

A recent meta-analysis of writing and writing instruction in school contexts focusing on current trends in research on writing found a clear and dominant focus on social contexts and writing practices (e.g., in school and out of school contexts). These studies tend to be conducted on post-secondary populations (undergraduate, adult, or other postsecondary populations). Least emphasized in the literature is writing and technology and the relationship among literacy modalities. Also underrepresented in the literature is research into the writing practices of pre-school, elementary, and middle-school students (Juzwik, Curcic, Wolbers, Moxley, Dimling, & Shankland, 2006).

When polled about their school based literacy practices, adolescents report that they write often; unfortunately, most of their in-school writing comprises only simple paragraph to one-page compositions and that these pieces are often not based in research (Lenhart, Arafah, Smith, & MacGill, 2008). This trend is in line with research into teacher approaches to school-based writing instruction using the dominant, didactic approach focused on writing to the test. In addition, these students tell us that when they are asked to write longer compositions, they do so only in their English and language arts classes. This finding is opposed to best practices recommendations and the Common Core State Standards that ask students write across content areas.

Although not reflected yet in the research base, writing has received increased popular and professional focus due to the Common Core State Standards which focuses on writing in K-12 contexts in preparation for college and career readiness. These standards identify the ability to write as critical to college and career readiness (Juzwik et al, 2006). Writing is seen as essential to the "knowledge economy" of schools and workplace environments, and the demand for writing in various contexts and for diverse purposes has never been higher (Brandt, 2005). Furthermore, increasing students' writing abilities has been shown to increase the likelihood they will stay in school and graduate (Schroeder, 2006). In addition, the standards published by the National Council of Teachers of English (NCTE) and the International Reading Association (IRA) also include foci on writing, technology, and multiliteracies (standards 4, 5, 8, 11 and 12).

The balance of types of writing (e.g., argument, information, and narrative) is also important to address here. The CCSS based recommendation in Arkansas was that students in Arkansas should have decreasing opportunity to write narrative structures as they progressed through the grades. In Arkansas the recommendations included that students should write 30% argument, 35% information, and 35% narrative in grades K-5. For grades 6-12 that balance was to shift to 40% argument, 40% information, and 20% narrative.

Truly the goal here was for teachers to infuse all types of writing across the curriculum as relevant and appropriate to the class content. In Coleman and Pimentel's Revised Publishers' Criteria (2012), they acknowledge that genres of writing might be blended and may not be as concrete as represented in the CCSS-ELA.

The NAEP examination of the context and content of the CCSS-ELA referenced earlier also brought forward helpful notes about the CCSS-ELA, and while they acknowledge the different purposes of what the NAEP test does and what the CCSS-ELA do, reviewers spotlight a possible shift in the way they assess writing, as evidenced in the excerpt below, specific to technology and complexity of writing processes.

Figure 9

Specific Conclusions and Recommendations for NAEP Writing

4. At present, NAEP limits the role that technology plays in assessment to students' use of a computer for composing and editing with a limited set of commonly available tools. CCSS-ELA, on the other hand, conveys a portrait of college- and career-ready students who "use technology and digital media strategically and capably." Panelists recommend that NAEP consider expanding the use of technology in writing, either as part of the regular NAEP assessment or as a probe study. They also note, however, that if students are to have a wider range of technology-enabled options in the regular NAEP assessment, they would need to have more time to compose as well as to understand the options presented in whatever platform is used in the assessment.
5. NAEP assesses on-demand writing in an abbreviated time frame, while CCSS-ELA emphasizes writing under a variety of conditions and conveys specific expectations for students' use of writing processes such as planning, revising, editing, and rewriting. Panelists recommend that NAEP consider investigating ways to allow different amounts of time for different kinds of tasks. Providing more extended time frames could encourage revising and/or accommodate some of the more complex reading/writing tasks found in the CCSS-ELA. Panelists also suggest that NAEP consider conducting special studies of extended tasks as they are being used in schools.

For K-12 learners it is important to keep in mind that writing should not be a contrived experience. While the National Writing Project contends that there is no single correct approach to teach writing, the model promulgated focuses on the writing process enacted within a community of practice that supports and provides feedback as the writer initializes, develops and refines their work. The model encourages writers (and teachers of writing) to simply write based on presented prompts and experiences providing a first-hand aesthetic response (Rosenblatt, 1938) or to write on content as desired by the writer. The efferent work of writing is then nurtured by the community as the writer moves from idea to draft to final product as they write for an authentic audience within a relevant content-specific context.

Authentic writing is defined as writing with a real audience and purpose in mind – not writing for a contrived reason (i.e. – for testing purposes) or for a limited audience (i.e. – the teacher, test reviewers). An authentic audience is comprised of people genuinely interested in the writing topic who will be likely to listen to, respond to, and attach value to the writing. Yet, the researchers posited that this type of writing may be unfamiliar to our young writing camp participants. Sadly, all writing in schools is not authentic writing with an authentic audience. Much in-school writing falls into what Nauman, Stirling, & Borthwick (2011) call the genre of test writing with its own specific purpose and audience. They advocate teaching students that test writing has a place in writing instruction, with the understanding that all writing is not test writing. In addition, writing should be integrated across the curriculum and students should be taught how to write within specific content areas given the unique specific conventions within those disciplines (science, social studies/history, technical subjects) (Condon & Rutz, 2012).

The researchers' fears are that the literacy curriculum in Arkansas schools will be largely driven by the state-mandated frameworks and testing requirements focusing primarily on grammar instruction, vocabulary, comprehension strategies, and responding to writing prompts. Understandably, teachers focus their writing instruction on benchmark exam preparation where students write to contrived prompts for an audience of the teacher and unknown test

reviewers. Teachers follow this practice to adhere to school policy and out of a fear of poor student performance. This is aligned with the findings of Corbett (2009) and Gruenewald (2003) who warn against the influence of standardized curriculum and accountability in education as a dehumanizing and homogenizing experience privileging those students who can meet the demands of testing but who may not be able to transfer skills and concepts to more relevant and authentic settings such as college or career options.

While, the new Common Core State Standards were designed to encourage more relevant and authentic classroom instruction, it is still unknown what the impact of these standards may be. In particular, the Common Core includes many standards to guide authentic writing in multiple formats and contexts; however, teachers may or may not have the training to understand or implement these goals (Swain & LeMahieu, 2012). Finally, to prepare for college and career contexts, students will need the opportunity to learn some basic and well-known technologies (blogs, Prezi) to support their writing practice, particularly in terms of publishing their language and thoughts.

On p. 8 of the CCSS-ELA, on the Anchor Standards for Writing page, a footnote (small print) reads: "*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types."

So, here within the CCSS is an acknowledgement or note to teachers that there are subgenres of the broad types, but does that mean it is acceptable for the subgenres to serve the intent of those standards? There may be some clarity issues within the CCSS-ELA writing modes, yet experienced, knowledgeable writing teachers know the possibilities of blended genre, multiple sub-genres, and even additional modes of sharing or expressing their thoughts, understandings and responses. Returning to the recommendation for a Vision and Mission about what our learners and writers need to know about written expression would help Arkansas develop relevant professional development about writing. During our time in higher education in this state and in our work with preservice teachers, there has been no specific initiative driving enhancement of writing instructional practices for Arkansas educators. Four National Writing Project sites in the state exist at four major universities, and perhaps involving NWP teachers in this important work surrounding writing instruction in our state could be a move in the right direction. Multiple studies across the country from National Writing Project sites and teachers provide evidence of the support and outcomes from NWP grants, summer writing institutes and professional development programs (Stokes, 2011; Singer & Scollary, 2005; Whyte, 2006; Swain, Graves & Morse, 2011; NWP Research Brief, 2010). Furthermore, NWP has been federally funded 30 years.

Notably, and perhaps the input into the CCSS-ELA will show this, there is an important absence of writing as creative personal expression/realization and community engagement as noted from the National Arts Standards Connection document--National Core Arts Standards Conceptual Frameworks, "The Arts and the Common Core: A Review of Connections. There are four National Arts Standards absent from connections to the Writing Section of the ELA Common Core: (1) Arts as Creative Personal Realization, (2) Arts as Culture, History and Connectors, (3) Arts as a Means to Well-Being, and (4) Arts as Community Engagement."

In addition, the NCTE Standards specific to writing share an emphasis within the processes of writing for a strong focus on real audiences and purposes: "Teachers can create a sense of the purposefulness of writing by helping students to consider the needs of their audiences as they compose, edit, and revise" (p. 25). We recommend that language and considerations for these

aspects of writing be involved in any revisions or enhancements to the Writing section for the Arkansas ELA Standards.

An additional consideration is that Appendix C, which contains writing exemplars that evidence writing as responses to (multiple) texts in most cases, does not align with the kind of writing required by the ACT Aspire. Because the ACT Aspire writing simply requires a written response to a de-contextualized prompt, students who have shown proficiency in the more complex writing demanded by the CCSS-ELA should be able to achieve success on the Aspire test. This is another aspect of teaching beyond the test and recognizing that our standards should do more than prepare students to pass an accountability test.

Comments on the Standards for Foundational Skills

Early childhood teachers are an integral component in promoting literacy development for children. Each day they have opportunities to engage children in meaningful language and literacy experiences.

The National Association for the Education of Young Children (NAEYC) and the International Reading Association (IRA) emphasize birth to age eight as the most important period of literacy development (Neuman, Copple, & Bredekamp, 2000). These organizations have established recommendations for teaching practice and public policy in the literacy education of emergent learners to include: understanding and using vocabulary, developing sensitivity to sounds and their ability to make words, naming letters and sounds associated with those letters, and the overall emerging knowledge about print (Landry, Swank, Smith, Assel, & Gunnewig 2006) – all concepts found in the Common Core literacy standards.

Phonemic awareness has long been seen as important in preparing students for reading and writing. Development of phonemic awareness has been linked to reading comprehension, decoding skills, and verbal ability. The ability to decode words is strongly correlated with performance on reading comprehension in the elementary years, and as a result curriculum supporting fluent reading based on word recognition capabilities is important to include in early literacy standards. Fluency is important to reading comprehension because it allows the reader to quickly decode and make meaning at the letter and word level allowing the reader to then spend more time in the process of meaning-making (Duke & Carlisle, 2011).

Given the importance of these foundational skills, the CCSS are entirely appropriate and relevant as long as they are taught both explicitly and embedded in authentic literacy practices (e.g., balanced literacy).

Comments on the Standards for Speaking and Listening

After reviewing this section of the CCSS-ELA and related research, we believe this section is strong, but could be made stronger with some minor enhancements. First of all, we will relay information to the strengths of this section. The first point relates to the inclusion of multimodal literacies in speaking, listening and presenting.

“My claim here is that how knowledge is represented, as well as the mode and media chosen, is a crucial aspect of knowledge construction, making the form of representation integral to meaning and learning more generally. That is, the ways in which something is represented shape both what is to be learned, that is, the curriculum content, and how it is to be learned. It follows, then, that to better understand learning and teaching in the multimodal environment of the contemporary classroom, it is essential to explore the ways in which representations in all modes feature in the classroom” (Jewett, 2008, p. 241).

Jewett continues to describe what should happen in classrooms that embrace a multimodal lens:

> The interpretative work of students is reshaped through their engagement with a range of modes, image, animation, hypertext, and layered multimodal texts. In such a view, students need to learn how to recognize what is salient in a complex multimodal text, how to read across the modal elements in a textbook or IWB [interactive white boards], how to move from the representation of a phenomenon in an animation to a static image or written paragraph, and how to navigate through the multiple paths of a text. These complex tasks—as against traditional taxonomies of print skills—are central to multimodal learning and development. Learning increasingly involves students in working across different sites of expression, negotiating and creating new flexible spaces for planning, thinking, hypothesizing, testing, designing, and realizing ideas… (p. 258).

Do the existing CCSS-ELA address what Jewett recommends? The Speaking and Listening anchor standards include the following: "Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally" and "Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations" (p. 22).

This may be an area that may later be updated and revised according to the standards revision cycle, yet the existing standards do seem to address multimodal literacies. On the K-5 section of the CCSS-ELA, the "note on range and content of student speaking and listening" to the side of the ELA standards reads, "New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. Digital texts confront students with the potential for continually updated content and dynamically changing combinations of words, graphics, images, hyperlinks, and embedded video and audio" (p. 22).

For the grades 6-12 note, even more urgency is given to this section of the standards: "New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. The Internet has accelerated the speed at which connections between speaking, listening, reading, and writing can be made, requiring that students be ready to use these modalities nearly simultaneously. Technology itself is changing quickly, creating a new urgency for students to be adaptable in response to change" (p. 48).

Additionally, below are some specific speaking/listening standards that reflect this important facet:

- For grade 5: "Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes" (p. 25).
- For grades 9-10: "Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest" (p. 50).
- For grades 11-12: "Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data" (p. 50).

Additional support for the CCSS-ELA Speaking and Listening standards comes from a College Board research report on Arts and the Common Core--Of the 66 standards in Speaking and Listening, "there are 16 arts references, most of which are related to Standard 5 for Speaking and Listening: Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations" (p. I0).

What is not in the existing CCSS-ELA are what the NCTE Standards for English Language Arts calls, "literacy communities," where students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities. The CCSS-ELA do include standards for "engaging effectively in a range of collaborative discussions with diverse partners," then with sub-standards of preparation, asking questions, following rules, and engaging in conversations. The review team may want to consider elaborating within this section. Here is some extended language from the NCTE standards on literacy communities:

> "Students should develop an awareness of their own participation in various literacy communities and their roles within them.... Connecting their experiences in these communities with their in-school study of language strengthens students' competency as language users and their awareness of the power and versatility of literacy. By developing awareness of their own roles within different literacy communities, students can see how language usage varies across different contexts and audiences. Much like language conventions, literacy communities emerge within a social context which may be geographically defined, or, as in the case of many online communities, widely dispersed. As students discover their connections to such communities, they learn to think of themselves as knowledgeable participants in the process of using language to share ideas." (p. 31)

One last recommendation is to consider including what Gangi and Reilly (2013) call **"storytelling"** into standards in order to better meet the cultural literacy practices of Latino, African-American, and American Indian students (p. 15).

Comments on the Standards for Language

The CCSS-ELA include "conventions of standard English," "knowledge of language," and "vocabulary acquisition and use" as their anchor standards for Language. The sidebar "note on range and content for language use" acknowledges teaching all of these in context of the full spectrum of ELA content. "The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts" (p. 25).

From "Language and the Common Core Standards" (Van Lier & Walqui, p. 7): "The CCSS provide us with an opportunity to engage students in valuable actions, such as in English Language Arts, engaging with complex text and using evidence when interacting with others; and in Mathematics, maintaining high cognitive demand, developing beliefs that mathematics is sensible, worthwhile, and doable. A purely grammatical or functional progression will not get students to engage in these acts, or to become engaged, motivated, develop their autonomy, and succeed. It is essential that we do not miss this opportunity to integrate language, cognition, and action deeply and coherently."

From a descriptive section right before the grade-level expectations of the CCSS-ELA for Language: "The following standards for grades K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students

advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*). See the table on page 30 for a complete list and Appendix A for an example of how these skills develop in sophistication."

- Note the emphasis on "progressions" with descriptors like, "focus for instruction each year," and "adequate mastery," "expected to meet each year's grade-specific standards."
- Yet acknowledgements of "continued attention" will be needed in "increasingly sophisticated writing and speaking."
- The reference to a table in Appendix A for an example of the development in sophistication.

The NCTE Standards for English Language Arts includes additional enhancements to the study of language and its uses:

> "Students develop an understanding and respect for language use...across cultures, dialects, regions, ethnic groups and social roles. "Students bring into the language arts classroom not only values and beliefs but also ways of seeing the world. Ethnicity and culture go beyond visible markers of difference (such as speech, dress, interpersonal styles, food) to encompass larger issues of perception and interpretation. Students who explore linguistic diversity among their peers discover that language use, dialect, and accent are cues for other kinds of differences, and investigating these language features thoughtfully allows the discovery that different cultures' diverse ways of knowing the world are embodied in their languages. In this way, the study of language diversity opens onto subjects such as history, science, and social studies." (p. 29)

Is the existing format focus and the complexity of the "progressions" and grade-level expectations clear and relevant enough? We find little problem or difficulty with the progressions except the absence of what we describe above from experts in the field. We recommend that the language standards are situated in substantive experiences of cultural language use, word study housed in engaging inquiry experiences and linguistic diversity, and vocabulary development that serves as portals to understanding content concepts. Although the Appendix A of the ELA CCSS alludes to some of what we recommend, clear statements about our recommendations is not clearly embedded in the standards. Following are several notes from Appendix A (which is separate from the actual CCSS-ELA) in this regard:

- "… grammar and usage instruction should acknowledge the many varieties of English that exist and address differences in grammatical structure and usage between these varieties in order to help students make purposeful language choices in their writing and speaking (Fogel & Ehri, 2000; Wheeler & Swords, 2004)" (p. 29).
- "At the secondary level, learning the grammatical structures of nonstandard dialects can help students understand how accomplished writers such as Harper Lee, Langston Hughes, and Mark Twain use various dialects of English to great advantage and effect, and can help students analyze setting, character, and author's craft in great works of literature. Teaching about the grammatical patterns found in specific disciplines has also been shown to help English language learners' reading comprehension in general and reading comprehension in history classrooms in particular (Achugar, Schleppegrell, & Oteíza, 2007; Gargani, 2006)" (p. 29)

- "Developing in students an analytical attitude toward the logic and sentence structure of their texts, alongside an awareness of word parts, word origins, and word relationships, provides students with a sense of how language works such that syntax, morphology, and etymology can become useful cues in building meaning as students encounter new words and concepts (Beck, McKeown, & Kucan, 2008)" (p. 32).

There may be some changes to be considered with specific choices of grammatical terms or phrases to describe aspects of vocabulary. It is really a judgment or preference call for the review team to make. One example might be: Phrases like "nuances in word meaning" or "distinguish shades of meaning." Other terms such as "gradients" or "semantic gradients" may be preferable.

Comments on the Standards for Disciplinary Literacy, Grades 6-12

Since many of the standards here align with the previously examined Anchor Standards, we offer only the following suggestions:

We acknowledge the importance of reading and writing across the curriculum and the need for students to experience this across their school day and in the study of multiple kinds of concepts and disciplines. An NCTE Policy Research Brief (2011) states, "…discipline-based instruction in reading and writing enhances student achievement in all subjects. Studies show that reading and writing across the curriculum are essential to learning. Without strategies for reading course material and opportunities to write thoughtfully about it, students have difficulty mastering concepts" (p. 16).

We recommend heavily involving content-area teachers from all disciplines in the re-examination of this section of the CCSS-ELA so they can weigh-in and evaluate the varied ways literacy is integrated into their curriculum. These teachers could work within the parameters of the anchor standards to see if the existing standards for reading, writing, speaking and listening are beneficial and relevant to their content requirements. These teachers need to examine if and how these standards can be achieved given the required standards in their disciplines. "One reason teachers of subjects like science, math, or social studies don't see the importance of teaching reading and writing is that they have not had opportunities to consider what it would mean" (NCTE, 2011, p. 16).

The committee should consider that if this section of the CCSS-ELA is changed dramatically, that we could lose the intended percentage of informational texts read over the course of a year that was a key shift for the CCSS-ELA. Additionally, recommending professional development needs for disciplinary teachers should be considered as these standards are reviewed. As NCTE contends,

> To change instructional practice in ways that yield real gains in student achievement, professional development needs to: extend across 50 hours; connect to a school initiative; foster collaboration among teachers; and focus on the teaching and learning of specific academic content. Few teachers in subjects outside ELA have been trained to provide effective instruction in reading and writing across the curriculum, so any serious effort to establish this kind of teaching will require significant investment in the professional development of teachers" (NCTE, 2011, p. 18).

Comments Regarding Issues for English Language Learners

Most of what we need to comment on in regard to ELL learners involves the implementation of standards-based instruction and the involvement of ESL specialists or teachers in decision-making regarding testing and lesson development with language acquisition considerations, objectives and scaffolding. All of this may be separate from the standards, yet if it is not mentioned or included in an Appendix or supporting documents, we fear these students may not be supported in districts with few resources. Following are some recommendations:

- Provide advocacy for ELL's in content testing
- Embed Sheltered Content strategies for "Academic Language" Instruction in content classrooms with ESL teachers assisting and collaborating.
- Make language objectives necessary in daily content instruction so ELL students can master academic language involved in the CCSS-ELA.
- Plan for collaboration from ESL teachers with other faculty in making instructional plans and testing decisions about EL's.
- Recognize need for differentiation in lesson plans and goals based on student language proficiency.

Fenner and Segota (2012) share concerns about the success of second language learners:

> In a standards-based curriculum, all students — particularly English language learners (ELLs) — face demanding academic and cognitive requirements across content areas and grade levels. To fully and successfully participate in school, ELLs must simultaneously acquire English language proficiency (ELP) and achieve academically across content areas. In fact, two kinds of language proficiency are necessary for school success: the social and intercultural competence of using English in the classroom, and the academic language necessary to access the content areas such as English language arts, mathematics, science, and social studies.

Standards provide a tool for defining the language as well as the content that ELLs are expected to achieve. In order for ELLs to succeed academically in US schools, both ELP standards and professional teaching standards for English as a second language (ESL) teachers are needed to ensure achievement for ELLs.

Only the families and specialists in this area fully understand the support structures and approaches to teaching second language learners required for their success in a standards-based system, so we highly recommend involvement of such specialists in review of the standards in correlation to the TESOL and WIDA standards recommended by Fenner and Segota.

We think, like other states have done, that if key supports or web links for ESL teachers were featured in close proximity, on the same webpage as the Arkansas ELA Standards, more consideration and supports will be linked to curriculum development for standards-based integration. Direct links to RTI Supports or to other sites that provide pedagogical adaptations for ELL learners can prove helpful to teachers. One example is Expeditionary Learning (2014).

There are two additional key recommendations that may be of help. A resource for considerations of ELL students entitled, "Understanding Language: Realizing Opportunities for English Learners in the Common Core English Language Arts" was written as one piece of the collection from Stanford University intended as a support document for CCSS implementation. The reviewers may make some important connections from reading it. And, a practical example

of what Arkansas could do from Washington State--they developed ELP (English Language Proficiency) charts aligned with the CCSS-ELA, embedded with support and scaffolding tips for each of the 5 levels of language proficiency.

Recommendations

We offer the following recommendations to all stakeholders who are following, contributing, or providing voice to this movement to review and possibly revise the CCSS. In the spirit of transparency and in the interest of the children and teachers of Arkansas, we offer the following recommendations.

- Keep the CCSS-ELA as the English Language Arts Standards in Arkansas. We have presented highly favorable findings about the CCSS-ELA as they exist, and ultimately, they represent what students in Arkansas need for effective development in literacy practices across the grade spans. While minor revisions may be appropriate, they should only be included with input from ELA and 6-12 content teachers. These minor revisions can be guided by the "Review and Comments, Part 2" narrative above and include ideas such as (1) explicitly including language regarding learners' personal engagement with texts as a starting point for reading and writing about them, (2) allow student choice (including YA) and recommend time to independent reading, (3) include in the writing standards the idea of authentic writing across modes for a purpose to include technology supported digital writing, (4) allow for the possibilities of blended genre, multiple sub-genres, and even additional modes of writing to share thoughts, understandings and responses, (5) recommend foundational skills be taught both explicitly and embedded in authentic literacy practices (e.g., balanced literacy), (6) include speaking and listening standards that cross-reference the NCTE/ILA conceptions of viewing and representing (again including technology supported work), (7) include recommendations for literacy communities, (8) propose storytelling as a speaking and listening mode, (9) language standards situated in substantive experiences of cultural language use, (10) word study housed in engaging inquiry experiences and linguistic diversity, (11) vocabulary development that serves as portals to understanding content concepts, and (12) involvement of ESL specialists or teachers to plan for differentiation and culturally appropriate responses and scaffolds.
- Read the entire NCTE ELA Standards document (there are four chapters and resources; note vignettes for each level in Ch. 4). Note as well the process undertaken for the development of these long-lasting standards. Only three NCTE standards are not represented in the CCSS-ELA (standards 9-11) and we have provided some detail above how the language or ideas can be added or adjusted to include elements of these standards in our review comments for each section of the CCSS-ELA.
- Initiate a well-represented ELA teacher survey/questionnaire that details what ELA educators in Arkansas want from ELA standards. That survey could allow teachers in the state to craft a vision for *how* to meet the ELA and what they see as important for their teaching practice and for their students and help establish a mission/vision for what teachers in the state want in terms of implementing the CCSS and to inform future revision cycles of the standards. While we do not anticipate the content of the standards will be far removed from what teachers say they want in their classrooms, the voices of teachers could contribute to a shared vision for *how* to meet those standards using a pragmatic and professional lens.

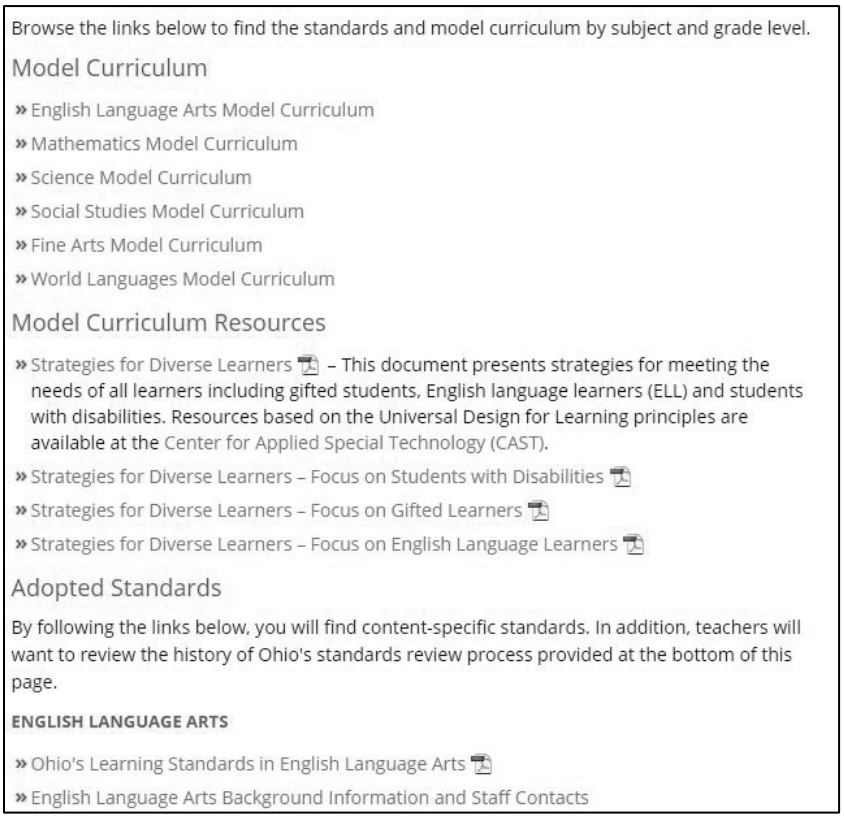
- Initiate a survey for community members and families, asking them what they want their children or students to gain from literacy instruction in order to formulate a Mission and Vision for ELA instruction in Arkansas. Do this also for ELA teachers and curriculum leaders. Avoid the "policy cascades" that marginalize the instructional choices of teachers (Pappolo-Ellis, 2014). "Teachers should take into account local knowledge of students' interests and social and cultural backgrounds" (Pappolo-Ellis, 2014, p. 180)
- Either add appropriate support documents or pedagogical language to the CCSS primary document in a more integrated manner so that teachers can see standard *and* context/recommendations OR place such documents and supplements side-by-side and in close relation to standards. Refer to support documents like Publishers' Criteria and PARCC's Content Model Frameworks, which were not easily visible to the public or to teachers during initial implementation--on a separate website. Also note the example from North Carolina (Figure 7).
- We would recommend building in the state a culture promoting schools creating context-specific curriculum based on CCSS. However, the state should provide a peer-review validation system for district-based curriculum to offer feedback and suggest revisions, clarifications, elaboration. This system could also be pulled into a central database so that districts across the state have access to the work of teachers responding to and implementing the CCSS in Arkansas (connect to and continue the work of the Literacy Design Collaborative, LDC).
- Work with teachers/ researchers in the field to advocate for teachers in Arkansas through appropriate publications and presentations so they can provide service around what ELA instruction can and should be for students in Arkansas. This could be connected to the developed AR database (see below). Focus on survey results and state system database (see above) for curriculum and text recommendations from the field. Grant-based networks like the National Writing Project who provide dedicated professional development for teacher leaders can assist with this.
- There was a misconception about the "list" in Appendix B which translated to it becoming the de facto text selection for many districts in Arkansas. That was not the intent of Appendix B. To work against this inclination, either eliminate such a list OR allow Arkansas educators to create their own listings relevant to the units of instruction they create. If such listings are made visible to all of us, we can analyze and provide feedback as to quality and rigor. Teachers often learn from the ideas and choices of other teachers.
- Content area teachers should be provided the opportunity to create their own "Literacy Curriculum" for their content areas, focusing on the specific processes and texts relevant to their particular disciplines (disciplinary literacy); this could mean reviewing and revising the "Literacy Standards for Science, Social Studies, and Technical Subjects." If content teachers are not allowed to form their own standards-based curriculum in literacy separate from the ELA committee, then they need to be included in this committee's process and decision-making.
- Support Arkansas' ELA teachers in districts across the state in developing an ongoing reference listing and research citation document that supports their curriculum choices and pedagogical decisions for literacy instruction. Example: *The Ohio Resource Center*

which contains a database of instructional ideas and curriculum support from a variety of quality resources, complete with summaries of each resource.

- Directly involve ELL teachers, special needs teachers, and gifted/talented teachers in the revision process so they can ascertain what language or ideas might be added to the CCSS-ELA so these students' needs are not marginalized.
- Involve educators who are using the standards and curriculum supports directly in decision-making as to how the resources, links, and instructional supports may be displayed or nested on ADE's website. See this example:

Figure 10

Model for displaying resources, links, and instructional supports



More general recommendations (based on 2012 ASCD report that includes research from Arkansas):

- Make sure educators deeply understand the standards and the key instructional shifts they require.
- Vet instructional resources for quality and alignment with the standards.
- Transform principals into instructional leaders.
- Listen to educators about their professional learning needs
- Maximize opportunities for collaboration and capacity building through professional learning.
- Engage higher-education partners.
- Understand and plan for the coming common assessments.

- Adopt technology with the priority being to meet teaching and learning needs but that will also work with the new assessments.
- Align initiatives into comprehensive reforms.

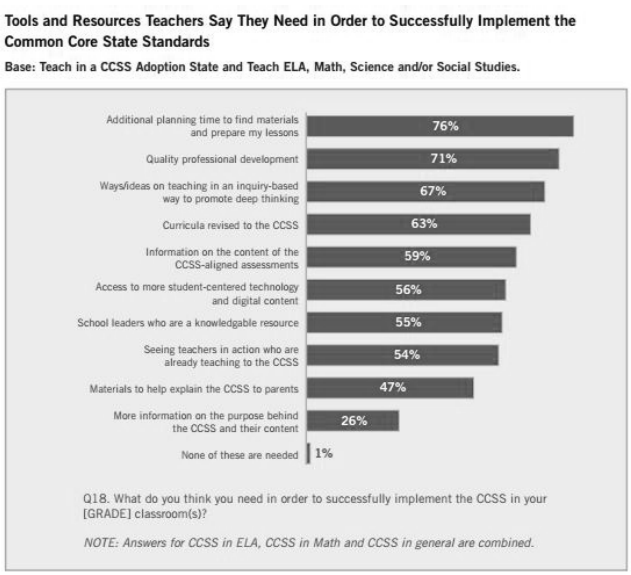
Although we knew this information was important to share, we want to acknowledge that the participant participation, results, tone and language of the ASCD report marginalizes teachers. Only 8% of the participants at the conference where this data were obtained were teachers. Although ASCD acknowledged the importance of teacher understanding and participation, there are no specific ideas or plans to provide teachers time for this.

"One barrier to teachers embracing these shifts is that they have been through cycles of standards adoption and implementation before. Even though these new standards are more rigorous and aligned to higher expectations, the mentality that 'standards are standards' persists" (p. 31). Many educators understand this point theoretically but are struggling to internalize it. Additionally, "Simultaneously, they urge more 'time' for teachers to move forward," yet it's not clear that this is time during the school day, an issue not addressed by the majority of participants (district administrators). "Not enough time has been dedicated to allowing educators to collaborate and engage one another in conversations to fully comprehend the standards and begin to outline the deeper level of knowledge and application that students will need to show to achieve mastery" (ASCD, 2012, p. 32).

Alternatively, we offer this data (Scholastic, 2013) from "America's teachers on teaching in an era of change" as we recommend we must find a way to change our paradigm of a teacher's day. In those countries that have the kind of achievement we compare ourselves to most often, teachers make more money and have more professional time to collaborate and prepare their curriculum. We just are not listening when teachers tell us what they need, as noted by the 76% of them who need additional planning time. After all, with the advent of the Teacher Evaluation System in Arkansas (TESS), teachers are the ones who are held the most accountable; if this is the case, we must offer them the increased capacity connected to such accountability.

Figure 11

Tools and Resources Teachers Say They Need in Order to Successfully Implement the CCSS:



Conclusion

Most notable from our review is the inquiry into what standards should do and how this is interpreted by practitioners. The CPRE report we cited earlier extends an idea that "standards efforts clearly have purposes and raise issues that extend beyond the seemingly narrow function encompassed by a term like 'framework development.' Standards processes raise difficult values questions and must deal with the controversies they unleash; they must provide for public understanding and support long-term capacity-building for professionals. Whatever the structures and mechanisms that states, districts and associations use for standards development, they must accommodate these varied and continuing needs" (no page numbers). In 1993 when most states were in the midst of standard development process, developers knew that standards served as the base for a system that was forthcoming—one that linked standards to professional development, curriculum design, and reporting to communities. Since then, though, education professionals and researchers serve as critics and provide prophetic caveats about this linkage, reminding us we need to consider resources, misconceptions of standards, fiduciary responsibilities, and implementation stumbling blocks.

Peter Hlebowitsh (a professor and Dean of the College of Education at the University of Alabama, and an expert in curriculum theory and development) in a book chapter that largely responds to the standards-based reform movement revived Dewey's "Criteria of Good Aims" from his 1916 work *Democracy and Education.* In this chapter, he re-earthed the three criteria of Dewey: 1) the formation of an aim must rise up from the educational situation "upon the resources and difficulties" of the schools, "what might actually be realizable in terms of resources and capacities" or what might be valued by the school's community" (p. 90); 2) Good aims must be "elastic enough to all for some range of interpretation and some flexibility for shifting course;" and 3) Good aims "produce a freeing or releasing of activities" in the school experience. He notes here, within standards, the "fine line between giving directions and allowing for professional judgment" (p. 91).

There is a paradox in terms of specificity here. The standards "should not shut down teachers' options but open them up in a focused and directive way" (p. 91). Grindon (2014), in her teacher research validated how this can happen. How the CCSS-ELA are understood and implemented by teachers will depend on how Arkansas teachers interpreted the mission and purpose of the CCSS-ELA--as content standards, as performance standards, or as proficiency standards that measure student outcomes and teacher effectiveness. All in all, the CCSS-ELA most likely meet Dewey's criteria for good aims (if the standards spoke more to resources and difficulties related to socioeconomic disparities).

However, we end this review and our recommendations, perhaps taking a step back in our seven-league boots to remind policy-makers and the review team that perhaps we should look back to the desired purpose and vision of our schools as we revisit the ELA standards, as well as to ways that educators can have strong, continuous input and feedback to any standards to ensure their empowerment in the process. This "better" and "more enriching approach" would not only heighten the educator's voice into this revision, but would also lessen or dissolve the tunnel-like "teach-to-the test" mentality that has disturbed our Arkansas communities and stakeholders.

> A better or more enriching approach to the design of the school experience is to look for ways to integrate our standards into our purposes. To see a standard outside of its

> moorings in a test frees teachers from a high-stakes teaching mentality. (Hlebowitsh in Jenlink, 2009, p. 94)

Our Arkansas teachers place their students front and center each day. Remembering this should remind us (policymakers; outsiders looking in; non-educator stakeholders; legislators; community members) that we should put teachers in the forefront of decision-making surrounding standards, accountability, and curriculum development. The narrative with which we opened this review (Grindon, 2014) serves as our touchstone--teachers know more about this than they have been allowed to voice. Their voices should now lead the way.

References

Achieve (2011). Strong support, low awareness: Public perception of the Common Core State Standards. Retrieved from http://www.achieve.org/PublicPerceptionCCSS.

Achieve (2011). Voter perceptions: Common Core State Standards & tests. Retrieved from http://www.achieve.org/PublicPerceptionCCSS.

Achieve (2014). Voter perceptions: Common Core State Standards & tests. Retrieved from http://www.achieve.org/PublicPerceptionCCSS.

Achugar, M., Schleppegrell, M., & Oteíza, T. (2007). Engaging teachers in language analysis: A functional linguistics approach to reflective literacy. English Teaching: Practice and Critique, 6(2), 8–24

Allen, J. (2014). *Tools for teaching academic vocabulary*. Stenhouse.

Beach, R. W. (2011). Comments on Parter, McMaken, Hwang, and Yang: Issues in analyzing alignment of language arts common core standards with state standards. *Educational Researcher, 40*(4), 179-182.

Beck, I. L., McKeown, M. G., & Kucan, L. (2008). *Creating robust vocabulary: Frequently asked questions and extended examples.* New York, NY: Guilford.

Blackburn, B. R. (2012). *Rigor is not a four-letter w*ord. London: Routledge.

Brandt, D. (2005). Writing for a living: Literacy and the knowledge economy. *Written Communication, 22*(3), 166-197.

Bunch, Kibler, & Pimentel. (nd). *Understanding language: Realizing opportunities for English learners in the Common Core English Language Arts*. Stanford University.

Burke, J. N. & Cizek, G. J. (2006). Effects of composition mode and self-perceived computer skills on essay scores of sixth graders. *Assessing Writing, 11*(3), 148-199.

CPRE Policy Briefs. (1993). Developing content standards: Creating a process for change. *The Consortium for Policy Research Education.* Retrieved on September 5, 2015 from https://www2.ed.gov/pubs/CPRE/rb10stan.html

Carmicheal, S.B., Martino, G., Porter-Magee, K. & Wilson, W. S. (2010). *The state of state standards and the Common Core in 2010*. Washington, D.C.: Thomas B. Fordham Institute. Retrieved from http://edex.s3-us-west-2.amazonaws.com/publication/pdfs/SOSSandCC2010_FullReportFINAL_8.pdf.

Caswell, L. J., & Duke, N. K. (1998). Non-narratives as a catalyst for literacy development. *Language Arts, 75* , 108-117.

Coleman, D. & Pimentel, S. (2012). *Revised Publishers' Criteria for the Common Core State Standards in English Language Arts and Literacy, Grades K-2*. Retrieved at: http://www.corestandards.org/assets/Publishers_Criteria_for_K-2.pdf

Coleman, D. & Pimentel, S. (2012). *Revised Publishers' Criteria for the Common Core State Standards in English Language Arts and Literacy, Grades 3-12*. Retrieved at: http://corestandards.org/assets/Publishers_Criteria_for_3-12.pdf on 9-12-15.

Condon, W. & Rutz, C. (2012). A taxonomy of writing across the curriculum programs: Evolving to serve broader agendas. *College Composition and Communication, 64*(2), 357-382.

Conley, D. T., Drummond, K. V., de Gonzalez, A., Rooseboom, J. & Stout, O. (2011). *Reaching the goal: The applicability and importance of the Common Core State Standards to College and Career Readiness*. Eugene, OR: Educational Policy Improvement Center. Retrieved from http://www.smarterbalanced.org/wordpress/wp-content/uploads/2011/12/EPIC-Reaching-the-Goal-Report.pdf.

Corbett, M. (2009). Rural schooling in mobile modernity: Returning to the places I've been. *Journal of Research in Rural Education, 24*(7). Retrieved from http://jrre.psu.edu/articles/24-7.pdf.

Cristol, K. & Ramsey, B. S., (2014). *Common core in the districts: An early look at early implementers.* Washington, DC: Thomas B. Fordham Institute. Retrieved from http://edex.s3-us-west-2.amazonaws.com/publication/pdfs/Common-Core-In-The-Districts-Full-Report_0.pdf.

Duke N. K. (2000). 3.6 minutes per day: The scarcity of information text in first grade. *Reading Research Quarterly, 35*(2) 202-224.

Duke, N. K., & Carlisle, J. F. (2011). The development of comprehension. In M. L. Kamil, P. D. Pearson, E. B. Moje, and P. Afflerbach (Eds.), *Handbook of Reading Research*, Vol. IV (pp. 199-228). London: Routledge.

Dymock, S. (2005). Teaching expository text structure awareness. *The Reading Teacher, 59*(2), 177-182.

Endacott, J., Wright, G., Goering, C. Z., Collet, V., Jennings-Davis, J., Denny, G. (2015). Robots teaching other little robots: Neoliberalism, CCSS, and teacher professionalism. *Review of Education, Pedagogy & Cultural Studies*.

Expeditionary Learning. (2014). *A guide to supporting English language learners in Expeditionary Learning's grades 3-8 ELA curriculum.*

Fenner & Segota (2012). *Standards that impact English language learners*. ¡Colorin Colorado! Retrieved 9-5-15 at: http://www.colorincolorado.org/article/standards-impact-english-language-learners#authors

Finkelstein, N. D., Klarin, B., Olson, M., Austin, K., Dadgar, M., Mundry, S., & Bugler, D. (2013). *Core to college evaluation: Implementing the common core state standards articulating course sequences across K-12 and higher education systems.* San Francisco, CA: WestEd.

Gallup and Edweek (2014). *Understanding perspectives on American public education: results of a Gallup-Education Week survey of K-12 school district superintendents*. Retrieved from http://www.gallup.com/services/178973/understanding-perspectives-american-public-education-survey.aspx

Gangi, J.M. & Reilly, M.A. (2013). Laying bare of questions which have been hidden by answers: The English Language Arts Standards of the Common Core, K-5. *The Language and Literacy Spectrum, Vol 23.*

Gargani, J. (2006). UC Davis/SCUSD Teaching American History Grant technical memo: Years 1 & 2 essay and CST analysis results. Unpublished report.

Gerde, H. K., Bingham, G. E., & Wasik, B. A. (2012). Writing in early childhood classrooms: Guidance for best practices. *Early Childhood Education Journal, 40*(6), 351-359.

Gibson, S. A. (2008). Guided writing lessons: Second grade students' development of strategic behavior. *Reading Horizons: A Journal of Literacy and Language Arts, 48*(2), 111-132.

Gruenewald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational Researcher, 32*(4), 3-12.

Finn, C. E., Jr., Julian, L., & Petrilli, M. J. (2006). *The state of state standards 2006*. Washington, DC: Thomas B. Fordham Institute. Retrieved from http://files.eric.ed.gov/fulltext/ED493851.pdf

Fogel, H., & Ehri, L. C. (2000). Teaching elementary students who speak Black English Vernacular to write in Standard English: Effects of dialect transformation practice. Contemporary Educational Psychology, 25, 212–235.

From adoption to practice: Teacher perspectives on the Common Core. (2014). Education Week Research Center. Retrieved from http://www.edweek.org/media/ewrc_teacherscommoncore_2014.pdf.

Grindon, K. (2014). Advocacy at the core: Inquiry and empowerment in the time of Common Core State Standards. *Language Arts, 91:4.*

Hart, B., Carman, E., Luisier, D., & Vasavada, N. (2011). *Common core state standards alignment: Advanced placement*. New York, NY: College Board. Retrieved from http://media.collegeboard.com/digitalServices/pdf/research/RR2011-8.pdf.

Heath, S. B., (2000). Linguistics in the study of education. *Harvard Educational Review, 70*(1), 48-49.

Hodge, E. & Benko, S.L. (2014). A "common" vision of instruction? An analysis of English/Language Arts professional development materials related to the Common Core State Standards. *English Teaching: Practice and Critique, 13:1*, pp. 169-196.

Israel & Duffy, Eds. (2009). *The handbook of research on reading comprehension*. New York. Routledge.

Hlebowitsch, P. (2009). The Criteria of Good Aims and the Idea of the Curriculum Standard in Jenlink, P. (Ed.), *Dewey's democracy and education revisited: Contemporary discourses for Democratic education and leadership*. Rowman & Littlefield.

Jewett, C. (2008). Multimodality and literacy in school classrooms, in *Review of Research in Education February 2008, Vol. 32*, pp. 241–267. AERA.

Juzwik, M. M., Curcic, S., Wolbers, K., Moxley, K. D., Dimling, L. M., Shankland, R. K. (2006). Writing into the 21st century: An overview of research on writing, 1999-2004. *Written Communication, 23*(4), 451-476.

Kendall, J., Ryan, S., Alpert, A., Richardson, A., & Schwols, A. (2012). *State adoption of the Common Core State Standards: The 15 percent rule.* Denver, CO: McREL. Retrieved from http://www.mcrel.org/products-and-services/products/product-listing/01_99/product-17.

Kamberelis, G. (1999). Genre development and learning: Children writing stories, science reports, and poems. *Research in the Teaching of English, 22*(4), 403-60.

Kober, N. & Rentner, D. S., (2011). *Common Core State Standards: Progress and challenges in school districts' implementation.* Washington, DC: Thomas B. Fordham Institute. Retrieved from http://cep-dc.org/displayDocument.cfm?DocumentID=374.

Kornhaber, M., Griffith, K., & Tyler, A. (2014). It's not education by zip code anymore - but what is it? Conceptions of equity under the Common Core. *Education Policy Analysis Archives, 22* (4). Retrieved from http://files.eric.ed.gov/fulltext/EJ1018842.pdf.

Landry, S. H., Swank, P. R., Smith, K. E., Assel, M. A., & Gunnewig, S. B. (2006). Enhancing early literacy skills for preschool children. *Journal of Learning Disabilities, 39*(4), 306-324.

Lenhart, A., Arafeh, S., Smith, A.,& Macgill, A.R. (2008). *Writing, technology and teens.* Washington, DC: The Pew Internet & American Life Project.

Machado, J. M. (1999). *Early childhood experiences in language arts*. (6 ed.). Albany, New York: Delmar Publishers.

Mathis, W. J., (2010). *The "Common Core" standards initiative: An effective reform tool?* Boulder, CO: National Educational Policy Center. Retrieved from http://nepc.colorado.edu/files/PB-NatStans-Mathis.pdf.

Matlock, K. L., Goering, C. Z., Endacott, J., Collet, V. S., Denny, G. S., Jennings-Davis, J. & Wright, G. P. (20150. Teachers' views of the Common Core State Standards and its implementation. *Educational Review,* DOI: 10.1080/00131911.2015.1070333.

McDonnell, L. & Weatherford, S. (2013). Evidence use and the Common Core State Standards movement: From problem definition to policy adoption. *American Journal of Education, 120*(1), 1-25.

McMurrer, J. & Frizzell, M. (2013). *Year 3 of implementing the Common Core State Standards: State education agencies' views on postsecondary involvement*. Center on Education Policy. Retrieved from http://cep-dc.org/displayDocument.cfm?DocumentID=424.

Moats, L, Foorman, B., & Taylor, P. (2006). How quality of writing instruction impacts high-risk fourth graders' writing. *Reading and Writing, 19*, 363-391.

Moss, B. (2004). Teaching expository text structures through information trade book retellings. *The Reading Teacher, 57*(8), 710-718.

Mullis, I. V. S., Martin, M. O., Kennedy, A. M., & Foy, P. (2006). *PIRLS 2006 international report.* Boston: TIMSS & PIRLS International Study Center, Boston College.

Murphy, P., Regenstein, E., and McNamara, K. (2012). *Putting a price tag on the common core: How much will smart implementation cost.* Washington, D.C.: Thomas B. Fordham Institute. Retrieved from http://www.edexcellencemedia.net/publications/2012/20120530-Putting-A-Price-Tag-on-the-Common-Core/20120530-Putting-a-Price-Tag-on-the-Common-Core-FINAL.pdf.

Nathanson, S. (2006). Harnessing the power of story: Using narrative reading and writing across content areas. *Reading Horizons: A Journal of Literacy and Language Arts, 47*(1), 1-26.

National Writing Project. www.nwp.org .

National Writing Project (2010). Writing project professional development continues to yield gains in student writing achievement. *Research Brief.*

Nauman, A.D., Stirling, T., & Borthwick, A. (2011). What makes writing good? An essential question for teachers. *The Reading Teacher, 64*(5), 318-328.

Neuman, S.B., C. Copple, & S. Bredekamp. 2000. *Learning to read and write: Developmentally appropriate practices for young children.* Washington, DC: NAEYC

Olinghouse, N. & Wilson, J. (2012). The relationship between vocabulary and writing quality in three genres. *Reading and Writing Research Quarterly, 26*, 45-65.

Partnership for Assessment of Readiness for College and Careers. www.parcconline.org

Pardo, L. S. (2006). The role of context in learning to teach writing: What teacher educators need to know to support beginning urban teachers. *Journal of Teacher Education, 57(4),* 378-394.

Porter, A., McMaken, J., Hwang, J, & Yang, R. (2011). Common Core Standards: The new U.S. intended curriculum. *Educational Researcher, 40*(3), 103-116.

Porter, A. C., Polikoff, M. S., Smithson, J. (2009). Is there a de facto national intended curriculum? Evidence from state content standards. *Educational Evaluation and Policy Analysis, 31*(3), 238-268.

Price, L. H., Van Kleeck, A., & Huberty, C. J. (2009). Talk during book sharing between parents and preschool children: A comparison between storybook and expository book conditions. *Reading Research Quarterly, 44*(2), 171-194.

Ravitch, D. (2010). *Reign of error: The hoax of the privatization movement and the danger to America's public schools*. New York: Random House LLC.

Rentner, D. S., Kober, N. (2014). *Common Core State Standards in 2014: Districts' perceptions, progress, and challenges.* Center on Education Policy. Retrieved from http://cep-dc.org/displayDocument.cfm?DocumentID=440

Rentner, D. S., (2013). *Year 3 of implementing the Common Core State Standards: An overview of states' progress and challenges*. Washington, D.C.: Thomas B. Fordham Institute. Retrieved from http://cep-dc.org/displayDocument.cfm?DocumentID=421.

Rosenblatt, L. (1938). *Literature as Exploration*. New York: Appleton-Century; (1968). New York: Noble and Noble; (1976). New York: Noble and Noble; (1983). New York: Modern Language Association; (1995). New York: Modern Language Association.

Scholastic and Bill & Melinda Gates Foundation (2013). *Primary sources: America's teachers on teaching in an era of change.* Retrieved from http://www.scholastic.com/primarysources/PrimarySources3rdEditionWithAppendix.pdf

Scholastic and Bill & Melinda Gates Foundation (2014). *Primary sources: Update: Teachers' views on the Common Core State Standards.* Retrieved from http://www.scholastic.com/primarysources/PrimarySources-2014update.pdf.

Schroeder, K. (2006). Raising writing skills. *Education News In Brief*, 74-75.

Schwartz, K. (2015). *Does Common Core ask too much of Kindergarten readers?* Mindshift: How We Learn. Retrieved from http://ww2.kqed.org/mindshift/2015/04/27/does-common-core-ask-too-much-of-kindergarten-readers/.

Singer, N. & Scollary, D. (2005). *Increasing student achievement in writing through teacher inquiry: An evaluation of professional development impact*. University of Missouri, St. Louis: Gateway Writing Project. Retrieved 9-5-15 at: http://www.nwp.org/cs/public/download/nwp_file/15446/Gateway_LSRI_Cohort_II.pdf?x-r=pcfile_d

Stokes, L. (2011). *The enduring quality and value of the National Writing Project's teacher development institutes: Teachers' assessments of NWP contributions to their classroom practice and development as leaders*. Inverness Research. Retrieved on 9-5-15 at: http://www.nwp.org/cs/public/print/resource/3909

Swaim, S., Graves, R.L., & Morse, D. (2006). *The effect of Mississippi Writing/Thinking Institute professional development on the writing achievement of ninth-graders*. Mississippi State University: Mississippi Writing/Thinking Institute. Retrieved on 9-5-15 at: http://www.nwp.org/cs/public/download/nwp_file/10563/Mississippi_Writing_Thinking_Institute.pdf?x-r=pcfile_d

Swain, S. & LeMahieu, P. (2012). Assessment in a Culture of Inquiry: The Story of the National Writing Project's Analytic Writing Continuum. In *Writing Assessment in the 21st Century: Essays in Honor of Edward M. White*, edited by Norbert Elliot and Les Perelman, 45-66. New York: Hampton Press.

Sweeny, S. & Mason, P. (2011). *Research-based practices in vocabulary instruction: An analysis of what works in grades Prek-12.* Massachusetts Reading Association.

Tienken, C. H. (2008). Rankings of international achievement test performance and economic strength: Correlation or conjecture? *International Journal of Education Policy and Leadership, 3*(4), 1–15.

Tiffany-Morales, J., Astudillo, S., Black, A., Comstock, M., & McCaffrey, T. (2013). *Preparing for the Common Core: Using performance assessment tasks for professional development.* Center for the Future of Teaching and Learning at WestEd. San Francisco, CA: WestEd.

Van Lier, L & Walqui, A. Language and the Common Core State Standards. *Understanding Language*. Stanford University. Retrieved on 9-5-15 at: http://ell.stanford.edu/sites/default/files/pdf/academic-papers/04-Van%20Lier%20Walqui%20Language%20and%20CCSS%20FINAL.pdf

Wake, D. (2009). Teaching expository text structures: Using digital storytelling techniques to make learning explicit. In S. Szabo, M. B. Sampson, M. M. Foote, & F. Falk-Ross (Eds.), *Literacy issues during changing times: A call to action* (pp. 164-188). Commerce, TX: Texas A&M University.

Wake, D. & Whittingham, J. (2013). *Digital writing in the early grades: What emergent writers can teach us.* Proceedings of the Society for Information Technology and Teacher Education (SITE) 2013 Annual Conference, New Orleans, LA.

Watt, M.G., (2011). *The Common Core State Standards initiative: An overview*. Retrieved from ERIC database. (ED522271).

Weaver, C. (1996). *Teaching grammar in context.* Heinemann.

Wheeler, R., & Swords, R. (2004). Code-switching: Tools of language and culture transform the dialectally diverse classroom. *Language Arts, 81*, 470–480.

Whithaus, C., Harrison, S.B., & Midyette, J. (2008). Keyboarding compared with handwriting on a high-stakes writing assessment: Student choice of composing medium, raters' perceptions, and text quality. *Assessing Writing, 13*(1), 4-25.

Wiggins, G. (2011). A diploma worth having. *Educational Leadership, 68(6*), 28–33.

Wixson, K. K., Valencia, S. W., Murphy, S., & Phillips, G. W. (2013). Study of NAEP reading and writing frameworks and assessments in relation to the Common Core State Standards in English Language Arts. In F. Stancavage, G. W. Bohrnstedt, S. Rosenberg, & T. Zhang (Eds.), *Examining the content and context of the Common Core State Standards: A first look at implications for the National Assessment of Educational Progress*. A publication of the NAEP Validity Studies Panel, San Mateo, CA: American Institutes for Research.

Wohlstetter, P., Buck, B., Houston, D., & Smith, C. (In Press). Common Core, uncommon theory of action: CEOs in New York City. In A. Daly & K. Finnigan (eds.) *Thinking systematically: Improving districts under pressure.* Washington, DC: American Educational Research Association.

Wolf, M. K., Wang, Y., Huang, B.H., & Blood, I. (2014). Investigating the language demands in the Common Core State Standards for English language learners: A comparison study of standards. *Middle Grades Research Journal, 9*(1), pp. 35-52.

Whyte, A. (2011). *Alabama secondary school English teachers' National Writing Project participation and own writing in relation to their organization of the classroom and to student achievement in writing*. Retrieved 9-5-15 at: http://www.nwp.org/cs/public/download/nwp_file/15428/auburn.pdf?x-r=pcfile_d

Yoo, M. S. (2015). The influence of genre understanding on strategy use and comprehension. *Journal of Adolescent and Adult Literacy, 59*(1), 83-93.

Yopp, R.H. & Yopp, H.K. (2000). Sharing informational text with young children. *The Reading Teacher, 53*(5) 410-423.

APPENDIX A

Questions Developed to Guide Review of ELA CCSS—September 2015

As we found and organized research, policy briefs, and studies in order to review the ELA CCSS, several questions arose that could serve as guidelines for potential educator review and revision of the ELA CCSS:

1. Do Arkansas educators need to formulate a mission and a vision for English Language Arts in our state? Should this be a precursor prior to revising or developing standards? How do the ELA CCSS already address the questions below?
    - What do we want our students to know about writing, K-12?
    - What do we want them to understand about literature, K-12?
    - What do they need to gain from the study of language, conventions and words?
    - What experiences do they need in listening, speaking, presenting, and research?
    - What literacy-based digital skills do they need, K-12?
2. What do Arkansas teachers want from the ELA standards?
    - Should each school/district be given the freedom to determine their "curricular frameworks" that extend from the standards?
    - When considering the purpose the purpose and content of the existing ELA CCSS, should schools and districts have a curriculum development process led by teachers that extends from the ELA CCSS?
    - How specific or flexible should the Arkansas ELA standards be? How much space should teachers have to customize, create and differentiate for students in their context and communities?
3. What should the purpose of the ELA standards be?
    - Are the standards the curriculum framework? If so, should we extend the "standards" to include more curricular guidelines, more details and pedagogical approaches?
    - What pedagogical supports or alignment documents might be needed (like the PARCC Content Model Frameworks and the Publishers' Criteria)?
    - Is there an appropriate balance between skills and literacy processes?
4. Do teachers and administrators understand that any set of state or national standards does not completely serve as the whole of curriculum for the students? (ie the "Introduction" to the ELA CCSS says this explicitly…. "While the standards focus on what's most essential, they do not describe all that can or should be taught" (p. 6 of ELA CCSS). If this is not widely understood, are introductory comments before each main content (R,W, S/L,L) section needed as a reminder of this?

5. What do teachers want when it comes to choosing or coordinating specific titles or kinds of texts throughout the curriculum? Should our state standards do this *for* the teachers? (ie Appendix B in the ELA CCSS was a source of controversy because of its explicit listing, by grade spans, of "recommended" texts).

    - Do teachers want to develop text listings in their own schools/districts?

    - Given the wide array and availability of digital texts and resources, and the expanded definition of texts to include multimedia, would an explicit listing just focus on novels, chapter books, print books and poetry? Does Appendix B do an effective job at including these kinds of texts, considering the background work CCSS has done on copyright and fair use policies·

6. Should content area teachers be provided the opportunity to create their own "Literacy Curriculum" for their content areas, focusing on the specific processes and texts relevant to their particular disciplines (disciplinary literacy)?

7. What Appendices are needed or wanted to the ELA CCSS? The existing appendices to the ELA CCSS include research behind: language standards, text complexity, the shifts toward enhanced informational text, vocabulary and word study for academic terminology; writing models with citations.

    - Could Arkansas teachers create their own research support/references for the curriculum decisions they make (that surround any set of standards)? These could be accessible by all schools in the state, in digital form and promote the expertise of teachers as they make curriculum and pedagogical decisions.

8. How should ELL educators be involved in revisions that may include pedagogical considerations for second language learners? Consider WIDA English Language Development Standards https://www.wida.us/standards/eld.aspx (Rhode Island adopted these as part of their implementation of the ELA CCSS).
    - Should there be embedded sub-categories within the categories addressing "Language Acquisition" needs/standards for ELL students so teachers know to address or add in differentiated "standards" so any gaps in reaching other standards doesn't occur?

Name	School District or Institution	School	Current Teaching Assignment
Vickie Beene	Nashville	Nashville Elementary	Literacy Specialist
Amy Becker	Hamburg School District	Noble/Allbritton Elementary	4th Grade
Becky Whitley	Harmony Grove	Harmony Grove Elementary	5th Grade
Carol Foster	Nevada School District	Nevada High School	7th Grade, 8th Grade
Keri Hamilton	Magnolia School District	Magnolia High School	10th Grade English, 12th Grade English
Karen Harris	Fouke	Fouke High School	Literacy Specialist
Jennifer Kirkland	Rogers	Grace Hill Elementary	Literacy Facilitator K-5
Tammy Schulz	Harrisburg School District	Harrisburg Elementary School	3rd Grade
Janet Hagood	Pocahontas Public School	Alma Spikes Elementary	Kindergarten
Carolyn Rhinehart	Scranton School District	Scranton High School	9th Grade English, 12th Grade English
Jennifer Glover	McGehee School District	McGehee Elementary	6th Grade
Rebecca Perrin	Valley View Public Schools	Junior High/Senior High	Literacy Specialist, Strategic Reading and ELL services
Sandra Newton	Texarkana Arkansas School District	Trice Renaissance Magnet Elementary School	Kindergarten, 1st Grade, 2nd Grade, 3rd Grade, 4th Grade
Kelsey Riley	Helena-West Helena	Central	11th Grade English, 12th Grade English
Kelly McLaughlin	Guy Perkins	Guy Perkins High School	10th Grade English, 11th Grade English, 12th Grade English, Advanced Placement Literature
Julya Gandy	Cabot Public Schools	Mountain Springs Elementary	4th Grade
Lynn Parker	Crossett School District	Crossett Middle School	Literacy Specialist
DeeDee Walker	Star City	Jimmy Brown Elementary	5th Grade
Kyla Lawrence	North Little Rock School District	Meadow Park Elementary	Literacy Coack PK-5
Paula Richardson	Harrison	Harrison Middle School	6th Grade

Debra Brown	eStem Public Charter	eStem K-12	Literacy Specialist
Regina Poteete	Nemo Vista	Nemo Vista Elementary	1st Grade
Vernita E. Lee	Pine Bluff School District	Jack Robey Junior High School	Literacy Specialist
Kathy Powers	Conway Public Schools	Carl Stuart Middle School	5th Grade
Shatrina "Trina" Williams	Bryant Schools	Bryant Middle School	7th Grade
Kathryn Robinson	Fort Smith Public Schools	Chaffin Junior High	9th Grade English
Natalie Trower Greenfield	Batesville Public Schools	Batesville Junior High School	8th Grade, 9th Grade English
Claire Dearing	Forrest City School District	Lincoln Middle Academy of Excellence	Instructional Facilitator
Tracy Dean	Pulaski County Special School District	Chenal Elementary	2nd Grade
Stephanie VanHouten	Hazen	Hazen	1st Grade
Jennifer White	Little Rock School District	Gibbs Magnet	3rd Grade
Gerri McCann	Manila	Manila High	10th Grade English, 12th Grade English
Rachel Mosier	Southside School District	Southside Middle School	4th Grade
Cori Curtis	Salem School District	Salem Elementary School	2nd Grade
Britt Humphries	Fort Smith Public Schools	Fairview	4th Grade, 5th Grade, 6th Grade, Special Education
Jill Stephens	Jasper School District	Jasper Elementary	5th Grade
Steve Snow	Searcy Schools	Searcy High	10th Grade English
Mamye Gill	Hamburg	Wilmot Elementary School	3rd Grade
C. Jordan Goodwin	El Dorado School District	El Dorado High School	10th Grade English
Kiley Henderson	Hot Springs School District	High School	10th Grade English, 11th Grade English
Dianna Flippo	Arch Ford Coop	Virtual Arkansas	9th Grade English, AP Language and Composition
Lisa Collins	Dover Public Schools	Dover Elementary	3rd Grade

Dr. Roger Guevara	Southern Arkansas University	Southern Arknasas University	Higher Education
Heidi Tolin	Smackover School District	Smackover Elementary	2nd Grade
Angela Donner	Marion School District	Marion Intermediate School	5th Grade
Teresa Holsclaw	Henderson State University		Higher Education
Tiffany Shumpert	West Memphis District	Academies of West Memphis	11th Grade English, Pre(AP)
Eric Christensen	Russellville School District	Russellville Middle School	7th Grade
Michael Warren	Prairie Grove	Prairie Grove High School	11th Grade English, 12th Grade English
Tara Nutt	Bentonville	Old High Middle School	5th Grade
Donnielle Embry	Waldron School District	Waldron High School	10th Grade English
Jeremy Kennedy	Greenbrier	Greenbrier High School	11th Grade English
Dedra Riggs	Hoxie	High School	10th Grade English, 11th Grade English
Alex Vernon	Hendrix College		Higher Education
Tonisha R. Burton	Emerson-Taylor-Bradeley	Emerson	4th Grade
Valerie Stavey	North Little Rock School District	North Little Rock High School	9th Grade Critical Reading
Carie Hogan Green	Junction City	Junction City High	9th Grade English, 11th Grade English
Elizabeth Reece	Clinton	Clinton Elementary	Kindergarten
Elizabeth Gehring	Brinkley	Brinkley High	9th Grade English, 11th Grade English
Carrie Appleberry	Dumas Public School District	Reed Elementary	3rd Grade
Susan Coles	Sheridan	Sheridan High School	12th Grade English
Jessi Thompson	Prescott Public Schools	Prescott Elementary School	Kindergarten
Ikela Frazier	Camden Fairview	Ivory	3rd Grade
Sabrina Rodgers	DeWitt Public Schools	DeWitt High School	10th Grade English
Ashley Hughes	Bismarck School District	Bismarck Elementary	Kindergarten
Mindy Williams	Mountain Home	Nelson Wilks Heron	Literacy Specialist

Tonya Williams	Division of Child Care and Early Childhood Education		Pre-K, Administration
Meredith Cox	Springdale School District	Professional Development Center	K-5 Teacher on Special Assignment
Krystal Shipp	Monticello	Monticello Elementary School	Kindergarten
Gary Dwayne Inzer	Hermitage School District	Hermitage High School	8th Grade, 9th Grade English, 10th Grade English
Crystal Watson	Fayetteville Public Schools	Fayetteville High School	9th Grade English, 10th Grade English, 11th Grade English, 12th Grade English, Instructional Facilitator
Marsha Saul	Stuttgart School District	Stuttgart Junior High, Stuttgart High School	Literacy Specialist
Kelle Meeker	Siloam Springs School District	Siloam Springs High School	Literacy Specialist
Suzanne Kesterson	Cossatot River School District	Cossatot River High School	7th Grade
Michelle Hastings	Benton Public Schools	Benton High	10th Grade English, 12th Grade English
Sarah Sullivan	Fayetteville Public Schools	Root Elementary	4th Grade
Stefanie Hatcher	Paragould School District	Paragould Primary	1st Grade

Analysis of Common Core State Standards for Mathematics

A Report to the Arkansas Department of Education

Authored by:

Dr. Allan Cochran
Department of Mathematical Sciences
University of Arkansas
cochran@uark.edu

Dr. Shannon Dingman
Department of Mathematical Sciences
University of Arkansas
sdingman@uark.edu

Introduction

We hear the statistics all the time, so much so that they become numbing:

- nearly 60% of high school graduates in the state of Arkansas are not college ready in mathematics (Madison et al., 2015);
- over half of 18-34 year olds find themselves regularly saying they can't do math, while three out of ten Americans consider themselves bad at math, with women more likely to agree with this statement than men[1];
- American students lag behind their international counterparts in mathematics achievement.

While these statistics are not startling, they are also not new. For much of the 20th century and now into the 21st century, U.S. students have struggled to learn and understand mathematics. As part of the Trends in International Mathematics and Science Study (TIMSS) during the mid-1990s, American researchers looked closer at the aspects of what separated the U.S. and international counterparts and came to an interesting conclusion. Although cultural and contextual differences existed and cannot be discounted, much of the school structure in the U.S. was similar to that in high-performing countries with regards to mathematics education with the exception of two variables: what we teach (i.e., the curriculum), and how we teach it (i.e., the pedagogy) (Schmidt, McKnight & Raizen, 1997; Schmidt, McKnight, Valverde, Houang, & Wiley, 1997). The TIMSS work highlighted the "mile wide and inch deep" U.S. mathematics curriculum, where teachers tried to cover so much material in a limited amount of time that students could not master it all.

Changing the pedagogical approach of generations of teachers would be a monumental undertaking. However, recent reform efforts have been geared toward taming this "mile wide and inch deep" curriculum. Throughout the past three decades, the use of educational standards by state policymakers and education professionals has served as the lever of choice to affect change in schools. The most recent effort is the Common Core State Standards for Mathematics (CCSSM), a set of learning goals outlining the knowledge and skills students should attain as a result of their mathematical education. Initiated in 2009 by the National Governors' Association and the Council of Chief State School Officers, the mathematics standards were written with extensive input from experts in the field: mathematicians, mathematics educators, and classroom teachers with superb knowledge of the subject. Within a couple of years of its 2010 release, 45 states along with the District of Columbia, the Department of Defense Education Agency, the American Samoan Islands, US Virgin Islands, Northern Mariana Islands, and Guam adopted the mathematics standards.

In our view, this is a remarkable and unheard of consensus among such a wide swath of stakeholders. Although many experts (if asked) would find something they didn't like about the Common Core, there was generally more they liked in comparison to past standards than they disliked, and given the teams of experts commissioned to write the standards, the overwhelming consensus was positive. The remarkable beginning of the Common Core, however, has devolved over the past few years, as critics have taken aim at the standards and a number of connected issues, including the Common Core-aligned

[1] Survey results from changetheequation.org

assessments, teacher evaluations, student privacy and data mining, and the perceived federal role in the standards. Though some of the criticisms of these peripheral issues may have merit and deserve consideration, the focus of this report is **solely on the mathematics standards**. Consideration of the Common Core Standards is now an immense task because so much has been written about the topic, including perceptions, opinions and truths along with misinformation and only partial (or no) results from actual classrooms. We have organized our report around the various issues that critics have raised about the standards, namely the coverage of key mathematical content, rigor, developmental appropriateness and progression, level of specificity, clarity and coherence, alignment with international and national standards, and the acquisition of mathematical proficiency. We close with our overall recommendations regarding the revision of the Arkansas mathematics standards. First, we outline why common standards are critical in mathematics education across the U.S.

Why Common Standards?

The U.S. has long prided itself in "local control" of issues pertaining to education. Although curricular recommendations have often been issued by national organizations, dating back to the *Committee of Ten* report in 1894 up through the National Council of Teachers of Mathematics standards documents of the 1980's, 1990's and early 2000's, the decisions regarding what, how, and when mathematics should be taught were often made at the local district level with input from teachers, school administrators, and others interested in the topic. However, over the past 30 years, there has been a steady movement away from local control of education and towards state and federal agencies. This movement has been attributed to both the poor performance of schools on national and international assessments as well as the varying opportunities to learn mathematics provided from district to district. Throughout the 1980's and 1990's, many states initiated or refined their school accountability practices, creating curriculum standards that specified what a student should know and be able to do at the end of each grade level/grade band and creating aligned assessments that would measure student progress. In this realm, standards were created for two reasons: to guide the development of curriculum to be taught to students at various grade levels, and to specify benchmarks for student achievement through state assessments. This movement culminated in the 2001 passage of the federal *No Child Left Behind Act (NCLB)*, which specified that states must develop content standards and annual assessments for grades 3-8 and hold schools accountable for student achievement.

NCLB set off an unprecedented effort of standards writing across all 50 states, as each state either created or revised its mathematics standards to meet the demands of the new law. However, except for one instance where a group of three New England states (RI, VT, NH) worked together to create standards and assessments, there was little collaboration across states on this effort. Therefore, each state spent its own money to write standards and develop assessments, and the result was predictable. In two analyses of state standards written in this period (Reys, 2006; Smith, 2011), researchers found that states varied wildly with regards to grade level placement of common mathematical ideas. For example, Figure 1 highlights the grade placement of standards for the topic of addition and subtraction of fractions across the 42 states under analysis. As seen in the figure, state

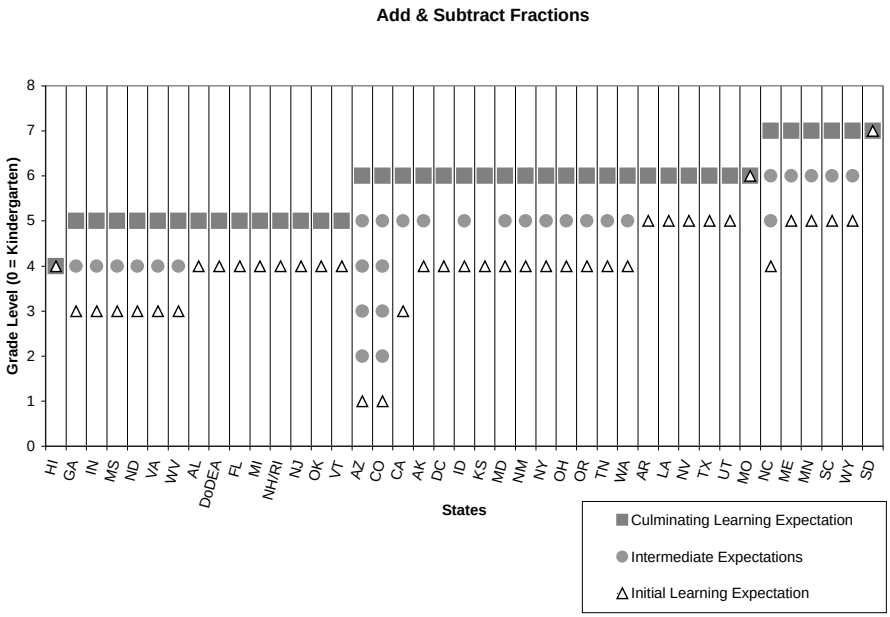


Figure 1: Progression of standards, by state, pertaining to student learning of addition and subtraction of fractions (Reys, 2006)

standards varied considerably regarding when this topic should be taught, with some states beginning as early as 1st grade (AZ & CO) and other delaying the introduction until 3rd, 4th, or 5th grade. Additionally, the grade level at which students were expected to be fluent with adding and subtracting fractions (with unlike denominators) varied from as early as grade 4 in HI to as late as grade 7 in six other states. This phenomenon was not unique to adding and subtracting fractions: across all mathematical strands and for all mathematical content, states standards were wildly disparate in their expectations. In fact, another analysis of 4th grade mathematics standards from the ten most populous states (Reys et al., 2007) found that, out of 108 different standards found in 4th grade in these ten states, only 4 were common to all ten states. 28 of the 108 standards were unique to just one state, meaning that textbook authors would need to develop lessons for those standards, knowing that the majority of states did not call for these mathematical ideas. In addition to the variance across grade levels, state standards varied in terms of their quality, clarity and specificity in articulating what students should learn as a result of their mathematical education. The Fordham Institute conducted a series of analyses of state standards during this period, providing grades to various aspects of state standards and finding that "the vast majority of states have failed even to adopt rigorous standards in the first place, much less take the actions that give them traction in thousands of classrooms." (Thomas B. Fordham Institute, 2010, p. 2).

Beyond the poor quality of state standards, the interesting irony was that, although mathematical content was being taught at varying grade levels across states, often times the same textbook would be used to teach different sets of standards. These textbooks served as a "de facto" national curriculum in that, even though standards differed, teachers across state lines would be pulling from the same material to create lessons for their

classroom. Textbook publishers would create one version of their product and sell it in multiple states (as it was too costly to produce a singular state edition), purporting to align with various state standards by including any and all potential standards that could be taught at that grade level. The end result became mammoth textbooks with much more content than any teacher could cover in one year. Adding to this frustration for teachers was the need to "pick and choose" to meet their state standards, which provided a disjoint, incoherent, and jumbled picture of mathematics education.

It was into this environment that the Common Core State Standards were born. Although Common Core is still in its first years of implementation, anecdotal evidence suggests that textbook publishers have been working to tame the unwieldy size and coverage of textbooks. With greater agreement concerning the question of when mathematical content is to be taught, authors can now work to create a more focused product towards a common set of goals that can truly (and more accurately) be used across the country. Teachers can now focus on the critical question of how mathematics should be taught (which we would argue is a much more challenging yet intellectually stimulating task). With regards to student learning, the Common Core now brings about an environment much more equitable in terms of opportunities to learn mathematics than those seen a decade earlier. Shouldn't the 2nd grade mathematical education of a student in, say, North Dakota, be roughly similar to the 2nd grade mathematical education of a student in Florida? Shouldn't a student who moves from California to Arkansas have had similar opportunities to learn the same mathematics and therefore not be too far ahead or behind his/her new classmates? Wouldn't it be nice for teachers across state lines to be able to collaborate on lessons or share experiences stemming from their teaching of common material? One beneficial aspect of the past five years has been the ability for teachers and teacher educators to use materials developed in other states (i.e., professional development opportunities, curriculum resources) for use in their classroom. For example, we know of teachers in Arkansas who have struggled with interpreting some of the math standards and have thus turned to North Carolina and their work "unpacking" the standards for their teachers in order to provide meaning and explanation to the standards. And finally, from our perspective in higher education, the need for uniformity in students' mathematical education at various checkpoints in their academic career was (and still is) axiomatic. How can post-secondary education place students pursuing mathematically-impacted subjects in an efficient way if there is no common basis to begin the journey? Mathematical studies form a tightly built discipline that builds on previously mastered concepts and ideas. Colleges and universities have grappled with the placement problem of what tool or tools to use in placing entering students into the mathematical part of their education for a very long time. As course and educational experiences vary across state lines, the comparison of student data (HS courses taken, GPA, state assessment scores) has been challenged by the non-uniform structures in place.

We believe the Common Core Standards for Mathematics are worthy of the efforts being made to develop them into a useful, efficient, and coherent set of goals for the education of our students in mathematics. **This does not mean that the current state of the standards has achieved perfection.** It does mean that working toward perfection has been given a boost with the inception of a process and starting point to move us toward a useful system giving optimal outcomes. In talking with experts and reviewing research conducted on the Common Core, we feel there are a number of tangible ways that the

standards can be improved upon, and we urge the standards revision committee to consider these possibilities in its work. In addition, as part of our work, we have conducted a survey of K-12 teachers in the state of Arkansas regarding what strengths they see in the Common Core, and what areas of weakness they feel should be addressed in the standards revision process. This feedback can be found in Appendix B of this report. We feel strongly that the thoughts and words of K-12 teachers—the ones who have been implementing Common Core, those who know the subject, who live it, who breathe it, who walk it everyday—should weigh heavily in the revision process.

Areas of Analysis

In this section, we outline our analysis of various aspects of the Common Core that have been criticized and include potential ways to improve upon the existing standards.

Content Coverage

In addition to serving as mathematics faculty at the University of Arkansas, we have worked with mathematics teachers in grades 3-12 over the past six years to understand the Common Core and study instructional approaches that researchers have illustrated make positive contributions to student learning. In our work, we have heard from teachers across the spectrum that feel strongly that the Common Core is a large step forward in comparison to its predecessor the Arkansas Frameworks, and we agree that the Common Core approach as a major step forward. We have had some involvement in the development and implementation of secondary level Arkansas state standards (such as Algebra II and the EOC document for CC), and it is our opinion that the improvement is clear and very positive. The Common Core was written by teams of experts in the field of mathematics and mathematics education, with draft input provided in the spring of 2010. In fact, as part of our NSF-funded *College Ready in Mathematics and Physics* workshops during that spring, we encouraged teams of middle and secondary mathematics teachers to review and critique the early drafts of the standards and consider the implications of the new standards on their practice. We feel strongly that professional development that explains and equips teachers with research-based instructional strategies as well as stronger mathematical content knowledge has assisted them with their implementation of CCSS. If our teachers can't teach the standards, then certainly we have a problem. If some professional development is needed to reach competent teaching, policymakers should be certain it is available and used.

With regards to the various mathematical content, we feel strongly that the approach to developing student number sense taken at the elementary grade levels is appropriate and reflective of what we know about how students learn arithmetic. From our viewing of the videos of the testimony for the Governor's Council on Common Core, we were heartened at the positive stories illustrating the power of Cognitively Guided Instruction (CGI) and what teachers are doing at the elementary level. The research conducted by this project over the past 25+ years (Carpenter, Franke, & Levi, 2003) has revolutionized the way the field of mathematics education views arithmetic instruction, and we feel the state's commitment to training teachers across the state in this research-based instructional approach is commendable. In addition, we feel positively that the eight Standards for Mathematical Practice are quite possibly the strongest part of the CC. These

eight standards represent what we desire for an educated citizen and what we would want our students to take away from our mathematics classes.

Given that Common Core represents minimal (foundational) standards for mathematics, there is always room for additional standards. We feel strongly that, given our analysis and reading of the Common Core, all major and fundamental mathematical concepts students must learn are represented. However, there are improvements that can be made. For example, although the Standards for Mathematical Practice are pillars of the Common Core, their connection to the content standards at each grade level is not clear. It is our understanding that the authors' intent was to have the "understand" standards assist in making these connections, but it not clear that this has occurred. One positive improvement in the next iteration of standards may well be the connection of the content standards with the practice standards, potentially in a supplementary document to the standards. In addition, greater care could be taken to the organization and structure of the secondary mathematics standards, which has placed unusual content in secondary courses (for example, statistics in Geometry).

When the Common Core was released, many mathematicians and mathematics educators, as well as teachers and administrators, reviewed the document, and presumably did not agree with it 100%. For example, in my first reflection of the CC, I was surprised at the complete absence of statistics and probability from grades K-5. Beyond minimal attention to data analysis in the realm of measurement, this strand that had become such an integral part of elementary mathematics was absent. In discussions with members of the writing teams as well as members of the Common Core Validation Committee, I've learned that this was a compromise position, one that was made to focus on number sense and arithmetic operations as a foundation for mathematical understanding before branching off into the field of statistics in grade 6. In all actuality, the Common Core represents considerable compromise in mathematics education in comparison to the Math Wars of the 1990's. Although many can find things they wish were in Common Core or that were changed, many would also agree that there is more to like than to dislike, and that given that Common Core represents a starting point rather than an exhaustive list, content can always be added to enhance the standards. This opportunity, however, must be balanced with the "fewer but deeper" approach of Common Core, as adding substantially more standards will move all involved back toward the "mile wide and inch deep" curriculum so disliked previously.

That being said, prominent researchers and stakeholders in the field have thoughtfully analyzed what the next iteration of Common Core should include. Usiskin (2014) outlined a series of content that should be included in a revision of CC, including quantitative literacy and discrete mathematics in secondary standards as well as data in grades 1-4 and attention to the metric system. Overall, based on our survey (Appendix B) as well as our reading and understanding of teacher perception about the placement of ideas, the mathematical concepts and level of mastery in the Common Core are all very much doable and appropriate. Some tweaking probably is needed after a little more experience, but we strongly discourage a complete overhaul or restart. Building from the Common Core would be in the best interest for all Arkansas students.

Rigor

The question of rigor (logical proofs, explicit details, etc.) in the curriculum has been around since mathematics teaching and learning have been part of our experience. We have seen attempts to leave out rigor all together (failed in our opinion), attempts to include full rigor (failed in our opinion) and attempts to find the appropriate approach to rigor. At its most basic level, rigor is simply gaining an understanding of mathematical ideas and results with a rationale explaining why things work. Within education reform, rigor describes the educational experiences that are academically, intellectually and personally challenging.[2] For most problem solving, there are several approaches that solve the problem. A good teacher knows and recognizes this fact and is able to guide students in a productive way to develop a workable solution. The quote from Liping Ma's (1999) book to "know what, but also know why" seems appropriate when discussing the shift to the Common Core. The usual secondary school topic which is most known for imparting the ideas of a mathematical system and rigor is Geometry. In Arkansas alone, we have traveled the gamut from having a proof-based course to having basically no proofs and back to at least some rigor. The CGI approach we have used recently with elementary students is based on students gaining understanding of how to solve problems, explaining the solutions they obtain with logical and cogent arguments. This approach still has the hope of better long term retention of ideas and the development in the student of a way of thinking conducive to transferal to all area of life and thought (Boaler, 2002). Geometry instruction has swung back toward including proofs and rationale for problem solving. Abraham Lincoln is said to have studied geometry in order to "learn to think logically" and to be able to express his ideas to others in a coherent and rationale manner.

The eight Standards of Mathematical Practice include an attempt at age-appropriate rigor from K-12. We may not yet have a full understanding of what is "age-appropriate rigor" but it seems clear that this aspect is important and crucial to the mathematical education of students. In a similar vein, the curriculum may not yet have the optimum place for various levels of rigor, but having the standards expressed in the Common Core gives an opportunity to test various aspects to find the best place and best way to include mathematical rigor. Surely, an "educated person" is a person who can explain why s/he believes something to be true and to examine the factors making up the thought process.

In summary, the insistence of some rigor in both the Mathematical Practices and the remainder of CCSS is a strength. We may find that some tweaking is needed to find the exact place and ability of student for different levels of rigor but that should be part of the on-going process. Although there is no exact "measure" for rigor in the standards, we agree with the great many teachers who can testify that Common Core indeed does represent increased rigor for students across grades K-12.

Developmental Appropriateness and Progression

One of the complaints levied against the Common Core is that some standards are "developmentally inappropriate" for students, particularly at the early elementary grade levels. In fact, these critics often point to the absence of early childhood educators (K-3) from the standards writing process as well as statements from early childhood professionals as evidence that the Common Core standards are developmentally

[2] http://edglossary.org/rigor/

inappropriate. We openly admit that we are a mathematician/mathematics educator by training, and thus do not have extensive experience working with early childhood learners (our own children notwithstanding). However, in our reading of these complaints, the absence of specific standards with which critics object is stark. Much of the critiques center on the important role of engagement with the learning process, that children learn through active experiences and play, and that children develop at different paces and learn skills at different ages (Strauss, 2014). We would agree with these sentiments, but would add that these critiques are pedagogical in nature—how a teacher might choose to enact the standards. There is nothing that we read in the K-3 standards that implies a teacher must teach the standards in a specific way. We believe that instruction of the Common Core mathematics standards can in fact engage learners in these active manners though games, active learning experiences, and play in order to provide learning experiences with the standards. In fact, early childhood experts have written about methods teachers can use to incorporate the Common Core standards into their classroom (Biggam & Hyson, 2014; Clements, 2015).

Douglas Clements, a mathematics education colleague at the University of Denver with preschool and kindergarten teaching experience who has conducted a number of research studies on the mathematical learning of young children and who served on the Common Core work group, echoes the sentiment that young children are perfectly capable of solving challenging problems and deserve the opportunities to show what they can do. He states that the "concern of 'developmental appropriateness' is a misunderstanding" (Clements, 2015) stemming from the belief that these negative evaluations are based on the assumption that all children of a certain age can or cannot do certain things. Yet he argues that much of what a child can or cannot do stems from the types of learning environments provided to that child. Overall, we agree with this sentiment, and in the absence of concrete standards to which critics object to as "developmentally inappropriate," in our reading of the standards and in our discussion and survey with teachers at this grade level, nothing in the standards stands out to us as being deemed "developmentally inappropriate."

With respect to the progressions of mathematical topics throughout the standards, the writers of the Common Core utilized existing research where it was available to write standards progressions for particular grade levels (see http://math.arizona.edu/~ime/progressions/ for the learning progressions that mapped out a variety of subjects across grade levels). However, the release of the Common Core has also launched a number of efforts to better document the learning progressions students travel as they learn particular mathematical topics. One of the more innovative progressions can be found at https://turnonccmath.net, where a group of researchers from North Carolina State University led by Dr. Jere Confrey, who served on the Common Core Validation Committee, created an interactive map to describe the learning progressions of the Common Core and how the standards fit together across strands and across grade levels. This map illustrates the connections across the grades K-8 Common Core standards and provides teachers with "bridging standards" that "fill in gaps in the LTs [learning trajectories] that the CCSS-M standards don't cover, but that are instructionally necessary for conceptual coherence and continuity." These progressions highlight the interconnected nature of the standards and the importance of building off of earlier grade level standards to more sophisticated learning in later grade levels. These progressions also serve as a

stark warning for those revising standards, that altering or removing standards at one grade level will have an impact on later grade levels that use those standards as a foundation upon which to teach their standards.

Along with the "bridging standards," other learning trajectories research has determined areas where gaps exist in the standards. Appendix A provides a proposed progression for measurement in K-5 oriented around the big ideas of measurement and connections to fractions. The progression, created by Dr. Richard Lehrer from Vanderbilt University, provides stepping-stones for connecting the ideas of measurement across the grade levels as well as potential activities to illustrate such concepts. Additionally, the National Council of Teachers of Mathematics (NCTM) has published a number of books in the *Developing Essential Understanding* series. These books articulate the important aspects of the major strands of mathematics (Number & Operations, Measurement, Geometry, Statistics, etc.), and we would highly recommend that any standards revision incorporate this important research as the foundation of the revised standards.

Level of Specificity

Whereas the Common Core is based on research on student learning in mathematics education, at points there is not enough specificity in the standards, and at other points there is too much specificity that has led to confusion and problems with implementation at the classroom level. For example, standards 4.NBT.5, 4.NBT.6, and 5.NBT.6 all ask students to "Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models." These strategies are incorporated into the standards requiring students to use place value and properties of operations to complete multiplication and division problems. Unfortunately in some cases, teachers have interpreted this standard so that students are required to solve such problems using ALL different solution strategies. These strategies are all legitimate solution strategies, but are more effectively used when arising from student work. Students who don't feel comfortable with a particular solution strategy should not be forced to use such a strategy, but as a result of forcing all strategies on students, it has done nothing but frustrate and confuse parents, students and teachers.

Conversely, some standards suffer from a lack of information. For example, 5.NBT.5 states students should "fluently multiply multi-digit whole numbers using the standard algorithm." Although it is generally interpreted that the "standard algorithm" is the traditional "multiply and carry" algorithm, the phrase "standard algorithm" insinuates that everyone knows and uses this same algorithm, which we know is not the case. Some students regularly use the Partial Product algorithm (on which the "standard algorithm" is based), while others use non-traditional algorithms such as the Lattice method. Standards writers should be clear with regards to the tools and procedures that are acceptable (and conversely not acceptable) in meeting such a standard, or as in the first example, leave the method to the teacher and student's preference. Therefore, a similar standard could read "Fluently multiply multi-digit whole numbers."

Where standards writing suffers from difficulty regarding specificity, a danger results in always providing an example to illustrate the standard. While examples can serve to clarify what is being meant by the standard, it can also serve to narrow the standard beyond its original intent. A teacher may interpret the standard only through the example and, in instructing students on that example, may feel he/she has taught the standard. In this regard, we agree with the recommendations of Reys and Lappan (2006),

who suggest limiting the use of examples within statements but rather urge authors to "strive for clarity" within their writing of the standard. However, if additional information is needed to illustrate or explain the standard, they suggest creating a supplemental or companion document for this purpose.

Clarity and Coherence

Much has been made of the Common Core State Standards being "fewer and deeper" in nature in comparison to past state standards. It is true that, on average, there are fewer standards articulated per grade level than in the past, and the degree to which understanding is stressed surpasses that of past state standards. However, there are a number of examples throughout the Common Core standards where a standard is "packed" with a number of ideas that a teacher must make sense of before planning instruction. For example, standard 6.EE.9 states:

> Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

An example follows in the standard, but this represents a standard that contains a number of items that need to be addressed and that can be overwhelming to a teacher. In fact, several of our survey respondents discussed clarity as a concern about the existing standards. One respondent stated:

> "Clarity: Some of the standards are very broad which makes them difficult to understand. Many of the standards cover several concepts within one standard, so teachers must spend a lot of time dissecting the standard in order to truly understand what the students are expected to learn. This is also a strength because it has led to many rich discussions about the true intent of the standard."

Standards must be clear and concise in the direction they give to stakeholders regarding what a student should know and be able to do. There are a number of examples in the standards similar to 6.EE.9 listed above, yet there are also well-written standards that are short and to the point. For example, standard 4.NBT.4 states "Fluently add and subtract multi-digit whole numbers using the standard algorithm." In places, where a standard outlines a number of ideas students should learn, the standard is broken up into "sub-standards", or smaller subsets of knowledge and skills students must attain or demonstrate. For example, standard 3.MD.7 states:

> Relate area to the operations of multiplication and addition.
>
> a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
> b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
> c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

d. Recognize area is additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Although there are still "packed" components of the sub-standards, this method of articulating standards should help alleviate clarity issues and still preserve the various aspects the standard writer aims to capture in the standard. We recommend that during the revision process, the writers of the new standards look to improve upon the clarity issues seen in the standards.

With respect to the coherence of the standards, we discussed previously regarding learning progressions that holes do exist in the standards. For example, with regards to standards for linear measurement (measurements of length), the standards begin nicely in grade 1, as students

> express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps" (1.MD.2)

while in grade 2, students measure lengths using different tools (2.MD.1), different units (2.MD.2), using estimation (2.MD.3) and in comparison to other objects (2.MD.4). However, after this mention, linear measurement appears to end without any extensions to fractions, except as a tool for line plots and collecting data, or as a number line. A natural extension in grade 3 is to allow kids to measure with partial units, motivating not only the development of fractions (also a grade 3 concept) but also their use in measurement. Similar concerns exist for the elementary grades geometry standards, where standards for students to reason with shapes and their attributes are articulated across grade levels, but with little connection year-after-year to previous content learned.

Despite these concerns, the writers of the Common Core have done a nice job of creating a coherent view of mathematics, where topics build upon one another year after year. A common complaint of previous state standards was an over-use of the spiral approach to learning, where content was taught year after year with a gradual development over multiple years of learning a specific topic. The effect was the repetitive coverage of the same material with minimal extension to deeper content. The Common Core approach reduces spiraling for a greater and more sustained attention at any grade level. This approach, seen often in high-performing countries in Asia, may lead to deeper learning at a particular grade level that can then be used as the foundation for further studies at subsequent grades.

Alignment with Internationally and Nationally-Recognized Standards

When the Common Core was released in 2010, it was purported to be internationally benchmarked against the standards and curriculum guides produced in the highest achieving countries in the world. Schmidt and Houang (2012) applied methods previously used in their analysis of TIMSS results to compare CCSS to international standards. In their analysis, they analyzed CCSS through two dimensions, looking to highlight content focus (or the number of topics covered at each grade level) and coherence (the coverage of topics at grade levels that reflect the internal logical structure of mathematics). The authors concluded that CCSS is similar to the standards of the highest achieving TIMSS countries, and that in some cases the focus and coherence of CCSS is

higher than those same TIMSS countries. In another study, Porter et al. (2011) used the Survey of Enacted Curriculum (SEC) to compare CCSS with international standards, as well as previous state standards, the NCTM Standards and the NAEP framework. Standards were compared using the focus of the content outlined as well as the level of cognitive demand of the standards. Their analysis illustrated that CCSS reflected a "considerable change from what states currently call for in their standards and in what they assess" (p. 114) and are somewhat more focused in mathematics than past state standards. However, the researchers found poor alignment between CCSS and international standards from countries such as Finland, Japan and Singapore (FJS). The poor alignment was attributed to a greater emphasis in FJS on "perform procedures" and lower-level cognitive demand standards than in the CCSS, while CCSS placed a greater emphasis on higher-order cognitive demand standards than FJS. To our knowledge, the Schmidt and Houang (2012) and the Porter et al. (2011) represent a limited body of research that compares CCSS to international standards.

Several research studies have also compared CCSS to state standards, whether it is standards previously used across the country or specifically those previously deemed rigorous. The Education Policy Improvement Center (EPIC) studied the comparison of CCSS to other rigorous state standards. The researchers studied not only the cognitive demand of the standards but also the coverage of standards at the high school level (Conley et al., 2011). The researchers found that there was a strong alignment between CCSS and the set of exemplary state standards, with CCSS highlighting important content for HS students at a level of cognitive demand consistent with college and career readiness levels. In a study co-authored by one of the authors of this analysis, Dingman et al. (2013) studied CCSS in comparison to state standards used prior to the release and adoption of CCSS with respect to the coverage of specific mathematical content, reasoning processes, and use of technology. The results of the study highlighted four major shifts occurring in CCSS, which included content shifting grade levels, the increase/decrease of the number of grade levels at which specific content appeared, the change in emphasis for certain mathematical content, and the change in nature and level of reasoning expectations. Overall, the analysis illustrated that CCSS represented a major shift in the mathematics curriculum landscape. This shift was highlighted also in an analysis of middle grades math standards in CCSS and in past state standards (Tran et al., 2014). In this study, the research team traced the movement of mathematical content at the middle grades level, and found that over 50% of the CCSS content pertaining to geometry and to probability & statistics at the middle school level would be considered new content for the eight states under study.

Overall, the results of research comparing CCSS with international standards are somewhat mixed, with CCSS judged similar to international standards of high-achieving TIMSS countries with regards to content coverage and coherence yet different with regards to cognitive demand of the standards. The results comparing CCSS with state standards, however, seem to show consensus in that CCSS represents a marked shift and improvement from past state standards. This reflects the grades found in the Thomas Fordham Foundation report[3], which found CCSS similar to a handful of states in mathematics and superior to most states in comparison to past mathematics standards.

[3] http://edexcellence.net/publications/the-state-of-state-of-standards-and-the-common-core-in-2010.html

Acquisition of Proficiency in Mathematics

What does it mean to be proficient or fluent with a mathematical topic or operation? This question may be a long-standing issue for which we do not have an answer or approach. All too often our students do strive to learn an algorithm or process to solve a particular type of problem, but they learn manipulation rather than gain understanding so that when they see the same things later, maybe in another course, there is no connection made and they cannot apply something they actually have done with a different setting involved. In other words, is our teaching and learning actually a mastery of topics with transference to another setting possible or is it just a short manipulation to solve a "textbook problem" with no long-term value? For example, a student may remember the formula for the roots of a quadratic equation but have little concept of what those roots mean or the geometric interpretation of their answer or how to apply to a problem to glean what is needed. The tight sequential nature of mathematics is extreme among the disciplines. The assessment process comes into question in trying to determine the proficiency a student has gained (or not gained). We think this is an area that needs further work and study as we move forward.

Fluency is also more than the speed at which an answer is reached and the accuracy of the response. The NCTM publication *Principles and Standards for School Mathematics* (NCTM, 2000) defines computational fluency as

> …having efficient and accurate methods for computing. Students exhibit computational fluency when they demonstrate *flexibility* in the computational methods they choose, *understand* and can explain these methods, and produce accurate answers *efficiently*. The computational methods that a student uses should be based on mathematical ideas that the student understands well, including the structure of the base-ten number system, properties of multiplication and division, and number relationships." (p. 152)

The Common Core states the following standards for fluency:

- Fluently add and subtract within 5. (K.OA.5)
- Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums (1.OA.6)
- Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers. (2.OA.2)
- Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. (2.NBT.5)
- Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. (3.OA.7)
- Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. (3.NBT.2)

- Fluently add and subtract multi-digit whole numbers using the standard algorithm (4.NBT.4)
- Fluently multiply multi-digit whole numbers using the standard algorithm. (5.NBT.5)
- Fluently divide multi-digit whole numbers using the standard algorithm. (6.NS.2)
- Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. (6.NS.3)

As illustrated in this list, Common Core adequately develops arithmetic and computational fluency across the elementary grade levels. Critics might quibble that, for example, students only need to commit to memory addition and multiplication basic facts, and only up through 9's. Given the stressing of the inverse relationship between addition/subtraction and between multiplication/division, one can infer that students will also commit to memory subtraction and division basic facts as well. Additionally, by stressing the standard algorithm for each arithmetic operation, students would only need to commit to memory single-digit facts, as computation with all two-digit or greater numbers can be derived either from single-digit facts or properties of arithmetic. However, standards for subtraction and division basic facts could easily be added on to these existing standards, while the size of the numbers to which students work could easily be raised so that students know their basic facts through 10 or 12's. Noticeably absent from this list is fluency with fraction computation. Although Common Core specifies that students should add, subtract, multiply and divide fractions in grades 4-6, nowhere in our reading does the term "fluently" exist.

Final Comments

We hope that this report breaks down some of the areas of criticism of the Common Core and provides a glimpse at a potential way forward. The promise of Common Core to bring together the K-12 preparation to produce a coherent list of necessary skills and conceptual understandings is applauded by most educators at all levels. However, most would also acknowledge shortcomings with the standards, and we hope we have provided tangible steps that may be taken to improve our standards. We write this not just as mathematical experts who have spent years studying our field, but also more importantly as parents (and a grandparent) of children who have studied or are studying in Arkansas public schools. We have a vested interest in working to ensure our children have a better mathematical preparation than we did, and we feel strongly that a high-quality, rigorous and stimulating mathematics curriculum inspired by the standards of the Common Core will do just that.

There is one point we wish to stress strongly: **any revision of the Common Core standards should start with the Common Core. To throw out CCSS in favor of a completely new and different set of standards would be lunacy to the highest degree.** Those voices that support every state and every school district going its own way with respect to mathematical content and curriculum are, in our opinion, missing the value of having a coherent approach to a fundamentally crucial and necessary piece of a universally educated person. To start over completely would be turn our back on the progress of the past 5 years. To look at what the scenario of starting over would look like, we have to look no farther than our neighbors to the west. In 2014, Oklahoma dropped CCSS and returned

to their previous standards for the 2014-15 school year, which were widely acknowledged to be weaker than CCSS. In doing so, Oklahoma was in essence on an island—all textbook development over the past few years has been geared towards alignment with the Common Core and many schools had purchased these products. Teachers were teaching to standards without materials to assist, forcing some to use Common Core-aligned materials to teach their non-Common Core standards, while others searched websites and other sources for materials to use. As in the past, no textbook publisher will create an Arkansas-specific textbook to align with standards wildly different from Common Core, so Arkansas teachers would be in a similar predicament as their Oklahoma colleagues should the new standards deviate considerably from Common Core.

States that have "de-adopted" Common Core or that never adopted Common Core to begin with give us hope. In many of these scenarios, the revised and adopted standards are not called Common Core, but a close read suggests striking resemblances to the Common Core. In Indiana, the Common Core was repealed, but the new standards were essentially Common Core with small changes. Similar stories are seen in South Carolina and Missouri, where the revision process is yielding a state-specific set of standards with a heavy Common Core flavor. Even states that never adopted Common Core have revised their standards to align with Common Core. For example, Texas' standards were revised after the release of Common Core, and analysis of the new standards reveal a definite shift toward the grade placement of topics to those of CCSS in comparison to previous TX state standards. Similar situations have occurred in Alaska and Nebraska, where formal adoption of CCSS never occurred but a review of their current math standards would find strong Common Core alignment. What this represents is movement towards uniformity and agreement with regards to what the central components of a student's mathematical education should look like in the United States, something that has been long sought after. It also represents a victory for a better mathematics education and for the best interests of students. Is the Common Core perfect? No, but with a prudent and considerate revision, we can work to make it stronger and more effective for all Arkansas students.

References

Biggam, S. C., & Hyson, M. C. (2014). *The Common Core State Standards and developmentally appropriate practices: Creating a relationship.* National Association for the Education of Young Children. Retrieved from http://www.naeyc.org/files/naeyc/image/public_policy/Focus%20Kinder_chapter5_copyright_RS%20(3).pdf.

Boaler, J. (2002). *Experiencing school mathematics: Traditional and reform approaches to teaching and their impact on student learning.* Lawrence Erlbaum Associates: Mahwah, NJ.

Carpenter, T. P., Franke, M. L., & Levi, L. (2003). *Thinking mathematically: Integrating arithmetic & algebra in elementary school.* Heinemann: Portsmouth, NH.

Clements, D. (2015, April). *What is developmentally appropriate math?* Retrieved from http://preschoolmatters.org/2015/04/15/what-is-developmentally-appropriate-math/.

Conley, D. T., Drummond, K. T., Gonzalez, A., Seburn, M., Rooseboom, J., & Stout, O. (2011). *Lining up: The relationship between the Common Core State Standards and five sets of comparison standards*: Educational Policy Improvement Center.

Dingman, S. W., Teuscher, D., Newton, J. A., & Kasmer, L. (2013). Common mathematics standards in the United States: A comparison of state and common core standards. *Elementary School Journal, 113*(4), 541-564.

Ma, L. (1999). *Knowing and teaching elementary mathematics.* Lawrence Erlbaum Associates: Mahwah, NJ.

Madison, B. L., Linde, C. S., Decker, B. R., Rigsby, E. M., Dingman, S. W., & Stegman, C. E. (2015). A study of placement and grade prediction in first college mathematics courses. *PRIMUS, 25*(2), 131-157.

Porter, A., McMaken, J., Hwang, J., & Yang, R. (2011). Common Core Standards: The new U.S. intended curriculum. *Educational Researcher, 40*(3), 103-116.

Reys, B. J. (Ed.) (2006). *The intended mathematics curriculum as represented in state-level curriculum standards: Consensus or confusion?* Greenwich, CT: Information Age Publishing, Inc.

Reys, B. J., Chval, K., Dingman, S., McNaught, M., Regis, T., & Togashi, J. (2007). Grade-level learning expectations: A new challenge for elementary mathematics teachers. *Teaching Children Mathematics, 14*(1), 6-11.

Reys, B. J., & Lappan, G. (2006). Recommendations for future development of K-8

mathematics curriculum standards. In B. J. Reys (Ed.) *The intended mathematics curriculum as represented in state-level curriculum standards: Consensus or confusion?* (p. 111-115). Information Age Publishing: Greenwich, CT.

Schmidt, W. H., & Houang, R. T. (2012). Curricular coherence and the Common Core State Standards for Mathematics. *Educational Researcher 41*(8), 294-308.

Schmidt, W. H., McKnight, C. C., & Raizen, S. A. (1997). A splintered vision: An investigation of U.S. science and mathematics education. Boston: Kluwer Academic Publishers.

Schmidt, W. H., McKnight, C. C., Valverde, G. A., Houang, R. T., & Wiley, D. (1997). Many visions, many aims. Volume 1. Boston, MA: Kluwer Academic Publishers.

Smith, J. P. (2011). *Variability is the rule: A companion analysis of K-8 state mathematics standards.* Information Age Publishing: Charlotte, NC.

Strauss, V. (2014, May 2). *6 reasons to reject Common Core K-3 standards—and 6 rules to guide policy.* Retrieved from https://www.washingtonpost.com/blogs/answer-sheet/wp/2014/05/02/6-reasons-to-reject-common-core-k-3-standards-and-6-axioms-to-guide-policy/.

Tran, D., Teuscher, D., Dingman, S., & Reys, B. (2014). *The changing landscape of middle grades mathematics: DRAFT report of a study.* Available at http://matheddb.missouri.edu/ppt/MidSchAnalysis-DRAFT.pdf.

Usiskin (2014, April). *What changes should be made for the next edition of the Common Core Standards?* Paper presentation at the National Council of Teachers of Mathematics, New Orleans, LA. Retrieved from http://ucsmp.uchicago.edu/resources/conferences/2014-04-10/.

Appendix A

Overview of K-5 Measurement Progression — K

Kindergarten

!

Big Ideas

- Defining multiple measurable attributes of the same object.
- Direct & representational comparison of magnitudes of one or more attributes (i.e. length, weight).
  - Order magnitudes of length
  - Symbolize ordered relations (e.g., gt, lt, eq for greater than, less than or equal to)
- Nature of unit
  - Tile
  - Identical unit
  - Measure-magnitude distinction (e.g., anticipate that a given length has different unit measures)

Related Common Core

K.MD 1, 2; *K.CC* 3, 4, 5

Supporting Unit-Lessons

UNIT 1 *Which Pumpkin is Biggest?*

Students decide which attributes of a pumpkin can be measured. They define each attribute, especially height and circumference, so that everyone can know what it is. Paper strips are cut to stand in for height and for circumference, so that heights and circumferences of multiple pumpkins can be ordered from least to greatest.
Extension: Compare pumpkin weights with balance scale.

LENGTH UNIT 2 *Comparing Path Lengths via Units*

Two different straight paths are marked with tape on the floor, oriented so that students cannot compare their lengths directly. Crayons or markers are used as units to measure distance traveled. After establishing the measure of each path, teachers re-measure with the same unit but leaving gaps. Children explain why the measure changes. Teacher repeats for overlapping units. Teacher or students employ different units to establish that each path's measure varies with the unit used (e.g., pencils, crayons, edge of square)

TEACHERS CORNER
See *Teachers Corner* for extension to science (e.g. heights of growing Amaryllis bulbs)

Big Ideas

- **Length**: Nature of Unit
  - Tile and explain why
  - Identical unit
  - Unit iteration
  - Composite unit iteration (e.g., with a 6 unit ruler, measure an object's length by iterating the ruler, counting on from 6 units)
  - Compensation, unit length and measure (e.g., shorter unit, greater measured quantity compared to measure of same magnitude with longer unit.)
  - Multiplicative comparison (× as long
- Partial unit based on equi-partitioned, 2-split, with each split named $\frac{1}{2}$.
- Coordination of counting schemes with measure, so that forward number word sequence is used to determine measure of length as in $1u, 2u, 3u$.
- Extensions of FNWS (forward Number Word Sequence) to include $\frac{1}{2}$ so that the distance of $1\frac{1}{2}u$ is counted as $\frac{1}{2}, \frac{2}{2}, \frac{3}{2}$.
  - Represents 2 levels of unit simultaneously so that $1\frac{1}{2}u = \frac{3}{2}u$
- Symbolization of units on scale
  - 0 as starting point
  - $1u, 2u$, etc. as marking distance traveled (endpoint of segment)
  - $\frac{1}{2}u$ as midpoint of unit segments
- **Angle** as turn
  - Turn angles of path measured as 4-split of whole turn (1/4)
  - Similar figures preserve angles

Related Common Core

1.MD 1, 2; *1.G* 3

Supporting Unit-Lessons

LENGTH UNIT 2 *Comparing Path Lengths via Units*

(Repeated if not experienced in K or revisited to establish baseline understandings). Two different straight paths marked with tape on the floor, oriented so that students cannot compare their lengths directly. Crayons or markers are used as units to measure distance traveled. After establishing the measure of each path, teachers re-measure with the same unit but leaving gaps. Children explain why the measure changes. Teacher repeats for overlapping units. Same paths are measured with different unit. Why does the measure change?

LENGTH UNIT 3 *Measuring, Comparing, & Constructing Paths*

Students use units to measure and to construct line segments that other students try to reproduce using only the written measure provided by the constructor of the line segment. Students re-use a single unit to promote unit iteration and construct line segments that are 2 or 4 times as long as a given unit and Students design a standard person-foot tape measure (usually their teacher's foot) and use it to measure the distances traveled between two landmarks in large-scale space and other shorter distances. Along the way, students encounter the need to measure lengths exceeding the length of the ruler and to measure lengths that are less than the length of a whole unit. Students "travel" path lengths using units and $\frac{1}{2}$ units (and even fourths for those ready to explore the composition of 2-splits) to coordinate accumulation of units, distance traveled and equivalent locations, such as 3/2u and 1 1/2u.

TEACHERS CORNER

See *Teachers Corner* for Unit 3 extensions establishing properties of unit, practices of unit iteration, and multiplicative comparisons.

LENGTH & ANGLE UNIT 4 *Ribbon Paths 1*

Students write directions to construct a path with lengths measured in yards and at least one turn angle measured as ¼ whole –body turn. Students consider how to revise their directions to create "bigger" or "smaller" (similar) versions of the path.

Overview of K-5 Measurement Progression 2

Grade Two

Big Ideas

- **Length**: Nature of Unit
  - Unit iteration
  - Composite unit iteration
  - Compensation, unit length and measure
  - Multiplicative comparison (× as long, including partial units)
  - Standard units
- Partial units
  - 2-split structure to 8
  - Fractions named to 8
- Extensions of FNWS to include $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$, including counting beyond 1 (e.g., $\frac{9}{8}, \frac{17}{8}$)
  - Represents multiple levels of unit (e.g. $1\frac{1}{2}u = \frac{3}{2}u = \frac{6}{4}u = \frac{12}{8}u$)
- Symbolization of units on scale
  - 0 as starting point
  - Whole unit and fractional units marked to indicate distance traveled
  - Number line representation of distances traveled.
- Measure Arithmetic
  - Sum joins 2 lengths
  - Subtraction is difference between 2 lengths or as continuation of travel.
  - (Scalar) multiplication is split-copy unit iteration as in *a* x bu.
  - (Scalar) multiplication is 1D dilation
- **Angle** as turn
  - Turn angles of rectangle measured as split of whole turn
  - Similar figures preserve angles (path-based dilation as in 2 × a length of rectangle)
- **Weight**
  - Recapitulate nature of unit and scale

Related Common Core

2.MD 1, 2, 4, 5, 6; *2.OA* 2,4; *2.G* 3

Supporting Unit-Lessons

LENGTH UNIT 5 *Measuring Distance*

Students revisit properties of units of length measure by measuring the straight distance traveled between two landmarks. They represent distance traveled on a numberline.

LENGTH UNIT 6 *Tape Measure with Standard Units*

Students design and label standard foot rulers (same person's foot length, usually the teacher's foot) with whole and partial units ($\frac{1}{2}$).

LENGTH UNIT 7 *Measure Arithmetic*

Addition as joining lengths, subtraction as difference between lengths, multiplication as repeated iteration of composite units (e.g. 3 x 2u).

LENGTH UNIT 8 – 10 *Partial Unit-Fraction Arithmetic*

Partial units of $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$ by composing 2-splits, naming of partial units, partial units as distances from zero (closed eye travel along the partial unit creases of paper strips), multiple levels of unit measure (e.g., $\frac{3}{4}u = \frac{6}{8}u$; $\frac{5}{4}u = \frac{10}{8}u$) multiplicative comparisons including partial units (e.g., $\frac{1}{2}u$ is 4 times as long as $\frac{1}{8}u$), composing 2-splits to 8, copy-split operator interpretation of multiplication with fractions (e.g., $\frac{3}{2} \times 1u$ as 3 copies of 1/2u,or as 2-split of 3 copies of 1u).

LENGTH AND ANGLE UNIT 11 *Ribbon Paths 2*

Students create rectangle paths with yard length units and ¼ turns of their bodies to construct rectangles and squares. Students write directions so that others will construct the same figure. Students consider how to construct larger or smaller rectangles/squares.

TEACHERS CORNER

See *Teachers Corner* for extensions to weight measure in science.

Overview of K-5 Measurement Progression 3

Grade Three

Big Ideas

- **Length**: Nature of Unit
  - Conventional standard units
  - Multiplicative comparison
  - Zero point
- Partial unit
  - 2-split structure generalized
  - 3-split to 81
  - Compositions of 2 and 3 splits for length to produce 6ths, 12ths, etc. and relate to convention of inch, foot.
  - Coordinated with counting schemes to establish equivalent locations of partial units.
  - Landmark fractions and numberline representations
- Measurement Arithmetic
  - Multiplication as iteration (split-copy)
  - Scalar multiplication as dilating length
  - Reversible relation between subunit-unit as $n \times \frac{1}{n}$ unit = $\frac{n}{n}$ unit (or $1u$).
- **Area:** Nature of unit
  - Tiling
  - Unit structuring of shape given lengths
  - Multiplicative comparison
- Measurement Arithmetic
  - Multiplication as sweeping lengths.
  - Symbolization of $1u \times 1u = 1u^2$
  - Differentiate symbolically scalar and area multiplications (e.g., $\frac{1}{2} \times 1u$ vs, $\frac{1}{2}u \times \frac{1}{2}u$)
  - Area model for fraction multiplication (e.g., $\frac{1}{2}u \times \frac{1}{2}u$).
  - Area model of distribution of multiplication over addition
- **Angle** as Turn
  - Degree as $\frac{1}{360}$ whole turn
  - Design of Protractor

Related Common Core

3.MD 4, 5, 6, 7, 8; *3.NF* 1, 2, 3; *3.G.* 1,2

Supporting Lessons

LENGTH UNIT 12 *Reverse Engineer Ruler*
Reverse engineer a conventional ruler to construct a ruler that is twice as long as the conventional foot-ruler. Develop 3-split, composition of 2, 3 splits, symbolization of unit and scale on ruler. Split-copy interpretation of multiplication. Zero point: Any point on a ruler can serve as zero.

LENGTH UNIT 13 *Investigating Multiplication*
Relates iteration of unit to dilation as students investigate and compare the effects of $\frac{a}{b} \times 1u$ on the length of $1u$ for different values of $\frac{a}{b}$.

LENGTH UNIT 14 *Finding Common Measures*
Investigates how to find a common partition and re-expressing a fractional quantity in that common partition. For example, $\frac{1}{2}u + \frac{1}{3}u$ as $\frac{3}{6}u + \frac{2}{6}u$. Methods include finding a common multiple and composing $b \times d$ in $\frac{a}{b} + \frac{c}{d}$.

LENGTH UNIT 15 *Relating Measured Lengths*
Investigates the reciprocal relation between measured lengths, as in: the length of B is $\frac{4}{3} \times$ the length of A implies that the length of A is $\frac{3}{4}$ times the length of B ($B = \frac{4}{3}Au$ implies $A = \frac{3}{4}Bu$).

LENGTH AND ANGLE UNIT 16 *Designing Protractors for Triangle Paths* Students design protractor with degree measure and construct triangle paths. Compare to rectangle.

AREA UNIT 1 *Partitioning and Comparing Rectangles*
Students compare the space covered by three rectangles by partitioning (folding) and re-arranging partitions. In an extension activity, students construct different shapes composed of the same number of unit squares.

AREA UNIT 2 *Comparing the Areas of Our Hands*
Students investigate properties of units of area measure by rank ordering the area of each person's handprint. Students decide how to represent partial units of area measure.

AREA UNIT 3 *Sweeping Area*
Using physical tools and/or a digital application, students create areas by sweeping lengths, to aide development of a product conception of area. Investigations include dissections of the resulting areas by units, modeling the distributive property, and exploring Cavalieri's principle.

AREA UNIT 4 *Comparing Zoo Enclosures.*
Students compare the areas of different rectangular enclosures, dissect the areas with square units by coordinating units of length and find the perimeter and area of each enclosure.

Big Ideas

- **Length**: Measure Arithmetic
  - Guided invention of algorithm for multiplication of rational numbers
  - Guided invention of algorithm for division of rational numbers
- **Area**
  - Derive and justify formulas for area measure of parallelogram, triangle, regular hexagon, circle
- **Angle**
  - Polar coordinates and maps
  - 360 theorem for polygons
- **Volume**
  - Differentiating surface area and volume

Related Common Core

4.MD 3, 4, 5, 6, 7; *4.NF* 1, 2, 3, 4; *4.G* 2
5.NF 1, 2, 3, 4, 5, 6, 7

Supporting Lessons

LENGTH (&ANGLE) UNIT 17 *Polygon Paths*
Building on previous experiences walking paths for rectangles, squares, and triangles, students construct other polygons, starting with hexagons, and any other n-gon that they choose. Students conjecture and justify the 360 theorem.

LENGTH UNIT 18 *Making Sense of Multiplication.*
The split-copy metaphor of multiplication by a rational number is extended first to composite units (e.g., $4u$ lengths) and then to other rational number lengths (e.g., $\frac{3}{4} \times \frac{3}{2}u$). A multiplication algorithm is introduced by guided re-invention to generalize multiplication of fractions.

LENGTH UNIT 19 *Measurement Model of Division*
Division of whole and fractional numbers is modeled as re-measuring the same magnitude with a new unit, with the result of a scalar multiple. This scalar multiple, when applied to the new unit of measure, restores the original measure.

LENGTH UNIT 20 *Polar Coordinates: Mapping with Compass and Protractor*
In a context of mapping a large-scale space, such as the school's yard, students use paces and an orienteering compass to create a map. Places on the map are located by distance (e.g., paces) and angle from the origin—a polar coordinate system.

AREA UNIT 5 *Justifying and Using Formulas to Find the Area Measure of Triangle, Regular Polygon, and Cylinder.*
Building from formulas for the area of rectangles and parallelograms as base × height, students engage in guided invention of formulas for the area measure of triangle, regular hexagon, and circle. Cavaleri's principle.

VOLUME UNIT 1 *Which Building Contains the Most Space?*
Students compare the surface areas of three different buildings (prisms), each of which is composed of 12 cubic "apartments." Students then compare the space enclosed or occupied by each building.

Overview of K-5 Measurement Progression 5

Grade Five

Big Ideas

- **Length/Area**
  - Scalar multiplication of length, area
  - Rectangular coordinates
- **Volume**
  - Structuring a prism as cubic lattice
  - Volume generated by sweeping an area through a length
  - Deriving and justifying volume measure formulas for right and oblique prisms, pyramids, cylinders

Related Common Core

5.MD *3, 4,* 5.G. *1,2*
NOTE: Units

Supporting Lessons

VOLUME UNIT 2 *Structuring Cubic Volumes.*
Working with nets, students first investigate all possible nets of a cube and try to explain why (prove) that there are only 11 possible nets. They then use nets to predict the surface area and volume of four different buildings to encourage visualization of the dissection of a volume into cubic units of measure.

VOLUME UNIT 3 *Structuring Cubic Volumes: Net of an Open Box (Prism).*
Students use a net of an open top box to predict its volume and test their predictions. The intention is to support structuring volumes as cubic lattices.

VOLUME UNIT 4 *Deriving a Formula for the Volume Measure of a Prism, Cylinder.*
Students use physical cubes and partially completed layers of these cubes to find the volumes of a set of right prims. They propose and test a formula for the volume of any right prism and generalize this to oblique prims via Cavaleri's principle. Sweeping of area through height is employed to find the volume measure of right cylinders.

Appendix B

To supplement our report, we wanted to hear what teachers thought—in their own words. We created a short survey regarding their impressions of Common Core—both what they feel are the strengths of CC, as well as areas where the standards could be improved.

The survey was emailed to mathematics teachers (K-12) throughout the state using contacts with regional Educational Services Cooperatives, University Math/Science Centers, and contacts from our local PD efforts. We received 97 replies to the survey during the week it was available to teachers. All results are anonymous, with only the grade level/subject taught used to attribute the quote to the teacher. We hope that these comments provide evidence for both what is working with CC as well as what revisions of the CC could improve.

List up to 3 strengths of CCSSM you have seen at your grade level as you have implemented and taught with the standards.

Grades K-5 Responses

"#1 on my list is the Standards for Mathematical Practice. If that remains unchanged – that FOCUS – then I think I wouldn't mind if other things changed. PLEASE continue those! Please keep the rigor!
Teaching for MEANING. " **(K-5 Math Instructional Facilitator)**

"1. The progression of the standards across the grade levels is coherent and takes into consideration students thinking about these ideas.
2. It is focused, so that we give students an opportunity to develop the mathematical concepts.
3. it will develop higher level thinking skills with our students." **(K-5 Math Instructional Facilitator)**

"Students thinking much deeper in math and understanding number relationships, exploring and developing strategies for computation that make sense to the students, teachers valuing and noticing students' thinking and process rather than focusing on students' right or wrong answers, the 8 mathematical practices, focus on base ten understanding in order for students to use properties of operations." **(K-5 Math Instructional Facilitator)**

"Since the implementation of CCSSM I have seen an immense improvement in number sense, which is the foundation for all mathematics. Not only have I witnessed an improvement in the number sense of K-5 students, but I have also seen teachers begin to shift their instructional emphasis from "answer getting" to helping students develop number sense and explore properties of operations that help students be more flexible in their thinking. I did not see this widespread shift until CCSSM was introduced. This has

been a tough journey for teachers because many of us did not have mathematical experiences in school that valued number sense - we had experiences that valued speed and accuracy - "answer getting". CCSSM has been the window of opportunity we need as a nation to help teachers make a shift in their own mathematical mindsets, which is necessary if we want to improve the mathematical success of our students." (**K-5 Math Instructional Facilitator)**

"number sense, problem solving skills, addition and subtraction skills" **(Kindergarten teacher)**

"Simplified the skills needed so we have more time in each area" **(Kindergarten teacher)**

"I love the focus on number sense in the primary grades.
CCSSM focuses a lot on kids being able to make sense of and explain their thinking. Many times misconceptions can be identified by listening to a child's rationale in how he/she solved a problem." **(1st grade teacher)**

"1. Standards are deeper not broader.
2. The fluency standard (allowing 1st graders to develop fluency within 10) is developmentally appropriate and allows students to truly understand and use properties to figure out facts and not just memorize them.
3. Flows well through the year. It lends itself to teaching kids to be problem solvers." **(1st grade teacher)**

"The standards are deeper and allow for a better understanding. Students have time to grapple with mathematical ideas. They have the time to develop an understanding that builds upon itself. I have been teaching first grade for 12 years; I always knew math should be taught differently than what we were doing. Worksheets and flashcards were not allowing students to truly understand the mathematical concepts but we had to quickly move to the next idea or they would get behind.
The CCSSM are developmentally appropriate. Students in first grade could memorize what a dime looked like but until you understand the concept of 10, you really don't understand that a dime is worth 10 pennies. Working on fluency within 10 allows students to understand the properties of addition while learning to be fluent rather than memorizing a set of numbers. Learning to tell time to the hour and 1/2 hour goes quickly, as first graders are ready to learn these ideas. These are just three examples of developmentally appropriate standards within the CCSSM.
The CCSSM lend themselves to real life problem solving, hands on learning, and integration of various mathematical ideas." **(1st grade teacher)**

"1. The standards allow for deeper understanding of math concepts.
2. They are vertically aligned.
3. Students that move frequently are less likely to experience "gaps" when they move from schools/states that have adopted the common core.
4. I LOVE CGI math and CC fits right in with CGI." **(1st grade teacher)**

"1. The students are not required to know as many things in first grade
2. We are able to go deeper into the standards they are required to know
3. The problem solving has helped them with critical thinking in all areas of the curriculum" **(1st grade teacher)**

"My students leave first grade more than ready for second grade. They are able to apply their knowledge and explain their thinking, not just giving me an "answer" to a math problem. Students don't just know vocabulary, they understand it and use it. I believe that students' spelling skills have improved. We are teaching them how to spell and not just how to memorize words." **(1st grade teacher)**

"Allowing us to focus a lot of time on foundational number sense concepts and place value Removing skip counting, odd/even, money, days/months, etc." **(1st grade teacher)**

"place value, number sense" **(1st grade teacher)**

"A) focus on base ten knowledge;
B) word problem solving dominant in the CCSSM's;
C) multiple strategies encouraged" **(1st grade teacher)**

"1. Curriculum goes deeper not broader. There is a nice progression such as from Kindergarten to First grade and First to Second.
2. It is developmentally appropriate. For instance, in First grade, the standard focusing on fluency within 10. This standard is very specific and enables students to understand how numbers work while being flexible with their thinking. Students are also able to use multiple properties of addition when becoming fluent within ten." **(1st grade teacher)**

"Clearly defined goals to teach" **(2nd grade teacher)**

"Deeper, more meaningful conversations. Students have a better understanding of what and why they learn what they are learning." **(2nd grade teacher)**

"I feel the strengths of Math Common Core are that students are understanding the basis for the math concept.
Students also have more strategies to use to solve word problems.
Students are required to understand and explain their thinking, which helps the teachers understand how they think." **(3rd grade teacher)**

"The standards support various strategies which helps all students feel more successful at problem solving. They are grouped appropriately in their various subheadings so it's easy to determine which math topic to focus on for the day or week." **(3rd grade teacher)**

"*builds a deeper understanding of the content
*lends itself to differentiation" **(3rd grade teacher)**

"– I am able to focus on smaller areas of content which allows me to make sure all my

students understand the concepts.
- I haven't experienced this personally, but I like the idea that a student could move to another state and not slip through the cracks with new standards. " **(3rd grade teacher)**

" ~Students can solve problems their own way instead of being told to solve them a certain way like with the algorithm.
~They have a stronger understanding of place value because we are introducing concepts like algorithm later because we are letting that understanding develop.
~ They are much more advance in their mathematics than what they were previously with the old Arkansas mathematics standards." **(3rd grade teacher)**

"Number sense
Problem solving" **(3rd grade teacher)**

"-Geometry (shapes, parallel, perpendicular, intersecting, ray, line, line segment)
-Measurement and Data (measuring angles)
-Number and Operations (multiplication, division, addition, subtraction)" **(4th grade teacher)**

"1) Better understanding of fractions instead of rote memorization (if at all).
2) Students are open to trying more strategies, however these results may also be directly linked to CGI math." **(4th grade teacher)**

"1. I have seen more thinking in my students than ever before. It teaches students how to think critically and prepares them for this type of thinking in college.
2. The standards are deeper not broader which allows students to dive deeply into the content, understand it, and apply it to everyday life.
3. These standards allow more collaboration between teachers because we are all teaching the same standards. Teachers from all over the country can share ideas with each other which lessens the burden of "feeling alone" in this career path." **(4th grade teacher)**

"*Higher level thinking because there is no "cap" on what we are exposing them to. They can think to the moon and back if their brain takes them there. And we (the teachers) get to sit back in awe of their amazing minds.
*Every child makes an effort because there is not "right way". If their way can solve the problem then the "how" doesn't immediately penalize them. Of course our goal is efficiency but it's always good when they can start off a new concept on a "positive".
*Their depth of knowledge is much deeper. Their understanding of each operation is deeper and more concrete.
*Their mental math is amazing and better than I would have ever imagined for the little boogers." **(4th grade teacher)**

"Rigor, content coverage, how each grade level sets the next one up with additional content learning." **(4th grade teacher)**

"Students have a deeper understanding of math concepts

Students develop strategies that make sense to them
Students know they can sometimes can be wrong but will persevere to get correct answers" **(4th grade teacher)**

"a. Better number sense
b. More flexibility in problem solving
c. Teacher builds a deeper understanding of concepts because you have to understand the concept beyond the algorithm to use and make sense of alternative strategies (students too)" **(4th grade teacher)**

"Increased number sense, increase conceptual understanding, students willing to take more risks with problem solving" **(4th grade teacher)**

"Able to spend more time on difficult concepts, Less standards=more time, clear progression from grade to grade" **(4th grade teacher)**

"The CCSS in Math have given my students the ability to understand more deeply and be able to answer the question, "Why?" with more precision and detail. Many have become more global in their thinking processes and better prepared to see multiple perspectives to problem solving. Teaching with CCSS has allowed for more discussion, argument and interaction than may have been traditionally seen in public school classrooms." **(5th grade Teacher)**

"Students must "think" about the mathematics behind problems rather than just working an algorithm.
Students enjoy the hands-on approach to learning that CCSS offer.
CCSSM are aligned and provide the teacher with a wonderful framework to follow." **(5th grade teacher)**

"1. The students are coming into 5th grade with a deeper understanding of math.
2. Fewer standards allows depth in knowledge of content
3. Students becoming more algebra ready." **(5th grade teacher)**

"1) students able to solve problems in multiple ways & use their own strategies 2) students analyze problems & communicate better within their groups 3) creates multiple opportunities for students to be successful" **(5th grade teacher)**

"*I'm not sure that it is because of Common Core or because our district is trained in and applies Cognitively Guided Instruction models, but our children seem to be becoming better problem solvers and better at showing their thinking.
* I feel like by the time that they leave 5th grade, they are extremely strong in working with fractions and decimals.
* I like the idea of Common Core going more in depth into an area of math instead of skimming through many, many areas." **(5th grade teacher)**

"Students are able to develop their own strategies and analyze them to solve problems rather than being told by the instructor what to think and do. This helps students apply their knowledge to real world situations because they have a better understanding of the concept. It also helps students to become better problem solvers and to use resilience in a situation." **(5th grade teacher)**

"1. Students are exposed to the conceptual and/or pictorial math concept. (although, good teachers have always done this)
2. Some students benefit and enjoy discovery learning.
3. Students are encouraged to discuss and share their conclusions about solving math problems." **(5th grade teacher)**

"In 5th grade the students are exposed and learn fractions. There is an understanding of fractions required to perform the calculations required to be at college and career ready in the 5th grade.
5th grade require working multiplication and division with the algorithm. They have been exposed to place value and strategies and now get to use the algorithm, where it should make sense from prior CCSS.
Students can put together some Geometry skills with the understanding of decimals and powers of 10. CCSS has a complete understanding of powers of 10 that are needed in future classes like Chemistry. " **(5th grade teacher, 3-8 Math Instructional Facilitator)**

"a. challenging course work with more thought provoking assignments
b. detailed standards that cover a broad spectrum of learning
c. "raises the bar" for student expectation" **(5th grade teacher)**

"Strengths of CCSSM in grades 3 – 5.
Rigor: These standards require students to understand how mathematics works, not simply know steps to solve problems. With fewer topics at each grade level, teachers are able to guide students into deeper understanding of the concepts. It is amazing what students know, understand, and can communicate about solving math problems.
Mathematical Practice Standards: These 8 standards guide how students think about solving problems. They guide teachers as they help students learn to discuss strategies for solving problems. We have spent a lot of time discussing how the mathematical practice standards look in the classroom. This has led to great discussions about structuring lessons, classroom environments that allow students to talk about math without feeling bad about a "wrong" answer.
CGI: Now that the teachers have been trained in CGI or student centered learning, they refuse to teach any other way. This has been the biggest strength of implementing CCSSM." **(grades 3-5 math instructional facilitator)**

"CCSSM are fewer in number!
Using the CCSSM has provided teachers time to allow students to develop concepts with a deeper meaning - fewer concepts with deeper understanding
CCSSM is allowing teachers to make connections / weave concepts together so students can apply learning in new ways

Teachers are seeing the connections from grade level to grade level....relevance to the vertical alignment of topics
Use of Mathematical Practices that help students understand math as a way of seeing the world around them" **(grades 3-5 math instructional facilitator)**

"Three strengths were real world knowledge of math situations, movement of students from various districts being in the same unit/ lesson, and students' ability to manipulate numbers in various ways" **(3rd-6th grade teacher)**

"Higher rigor from old standards. Less standards per grade level. Realistic expectations for the most part." **(5th/6th grade teacher)**

Grades 6-8 Responses

"-deeper understanding of concepts
-deeper thinkers" **(6th grade teacher)**

"One strength that I see in the classroom learning is the sixth grade students response to Algebra. I honestly did not think my students would be able to understand Algebra. I thought it would be to abstract for the students. They catch on and do really well with Algebra." **(6th grade teacher)**

" - Students are able to use multiple strategies for problem solving
- It gives more flexibility in how we teach the curriculum
- Students are more involved in the learning process instead of being "taught to" " **(6th grade teacher)**

"Deeper understanding of concepts. Students are problem solvers. " **(6th grade teacher)**

"My students are becoming better prepared for upper level math earlier in their math education.
Problem posing has become more of a common strategy used within the classroom.
Students are becoming more familiar with the ideas that are being presented to them, as well as, becoming comfortable with probing questions.
Students absolutely have a better understanding of the "whys" and "hows" when problem solving." **(6th grade teacher)**

"rigorous, but reasonable; when teachers actually adhere to it, students learn concepts - not just an algorithm; requires teachers to possess a deeper understanding of the material - I thought I was a pretty good teacher before...I'm even better now (214% of expected student growth)!" **(6th grade teacher)**

"Children have a better understanding of numbers instead of just rote memorization of algorithms.
They are able to justify their answers and critique others because of this understanding. " **(6th grade teacher)**

"the mathematical practices, depth of the standards, kids are better equipped to critically think" **(6th grade teacher)**

"Math practices
We go way deeper which is better
Kids are coming to us in better "shape" to learn. They are definitely smarter." **(6th grade teacher)**

"1) stronger number sense/ability to decompose numbers
2) students are able to truly explain their thinking using math vocabulary
3) connections between what I teach at my level and why they need to know it for the next grade level (how it builds) are easy to see and understand through the progressions.
4) students are loaded with tons of strategies for attacking problems, even problems containing new content" **(6th grade teacher)**

" I have had the unique pleasure of moving up with my students for the past 3 years. I have taught 4th grade math, 5th grade math, and now 6th grade math. This is my first year to teach 6th grade math so I do not feel I can answer this question adequately. However, overall I have seen that with CCSSM my students are better problem solver. They also have a better understanding of math concepts and vocabulary. They are also able to see mathematical relationships better." **(6th grade teacher)**

"Common core allows time for a concept to be taught in depth.
Common core ensures that all students are taught the same thing. I know that a student who moves in from a CC state has studied the same material as my students which, in theory, eliminates gaps in instruction." **(6th grade teacher)**

"Ratios and relational thinking" **(6th grade teacher)**

"it does have my students see math in a different way" **(6th/7th Resource Math teacher)**

"1. The mathematical practices – I think they encourage teachers and students to think like mathematicians.
2. Depth of understanding – especially in regards to ratios and proportions, before CCSS was implemented in Arkansas I spent exactly 3 days on proportions in 6th grade. I did not understand that reasoning with ratios was a stepping stone to algebraic reasoning.
3. Emphasis on the mathematical properties!!!" **(6th/7th grade math instructional facilitator)**

"1. Emphasis of the usefulness of the properties (this could be more explicit for teachers - but where this mathematical idea is being incorporated into daily discourse, kids are excelling).
2. 6th grade standards are well written and contain attainable targets, which allows for depth. (Our district has 90 minute daily blocks - I wonder if other districts that have 45 minute blocks feel the same way?) 7th grade standards are a bit broader. What I mean is,

7th grade has no room for more standards - especially to maintain the idea that depth is better than breadth.
3. The statistic standards for both 6th and 7th are definitely appropriate to ensure all students are college and career ready." **(6th/7th math instructional facilitator)**

"A. One strength of CCSSM is the mathematical practices that emphasize teaching for understanding over students learning to mimic steps taught to them by their teacher.
B. The progression of standards from 6th to 7th grade is very natural. Students easily build upon what they learned in 6th grade as they move to 7th grade." **(6th/7th math instructional facilitator)**

"1) The K-8 standards are clearly written, cohesive and organized in a way that makes sense when writing units.
2) I wouldn't change anything about 6th-8th standards except 7.G.3 would fit better with geometry.
3) The standards are written in such a way that rigor or depth of mathematics occurs when teachers truly understand the standards. It's way beyond a skill and requires a different type of teaching, which is a good thing." **(6-12 Math Instructional Facilitator)**

"The consistency of the standards across the school districts. For example a student moves from Bentonville to Springdale and they are at the same place in math and are not left behind. 2. The ability to small group with individual students who need extra help. 3. Common Core teaches the students to know the why behind the math, not just how to do the math." **(7th grade teacher)**

"Students will draw bar models and circles to make sense of fractions. In the past, if they didn't know they would sit and write nothing.
Students have a deeper understanding of integers. Students can give examples and be able to explain using a number line or 2-color counters.
Students work together in small groups well. They are willing and able to help each other - even when grouped with students they didn't know before." **(7th grade teacher)**

"proportional reasoning, using proportions" **(7th grade teacher)**

"• Solid foundation as we build towards Algebra 1.
• Love the connections across standards.
• The standards truly draw students to conceptual understanding." **(7th grade teacher)**

"*develops a greater understanding of the content
*connections prior learning experiences
*allows for collaboration and sharing ideas" **(7th grade teacher)**

"The CCSS problems do have a significant larger slant towards real world applications in math. This is a benefit for students with special needs, as it becomes less abstract and can be presented in a more concrete manner. This is wonderful for them, as they struggle with basic comprehension of clearly stated facts, and are often unable to grasp any level of

abstract thinking. SO - real life application is concrete - and for many of my students, is the best approach to learning." **(7th/8th Resource Math teacher)**

"Overall students in the 7th and 8th grade are more versed in the vocabulary before entering junior high and I have noticed a decrease in time that I am needing to spend reteaching basic elementary vocabulary. The calculators have been an aid in reaching more higher level thinking skills without the irritability of students not knowing their simple operations, however, if taught frequently with modeling and a proper curriculum structure students begin to see connections. A spiraling curriculum with a map would be preferred." **(7th/8th grade Inclusion Math teacher)**

"1) It encourages kids to think at a higher level 2) The emphasis is on the math concepts and 3) The increased level of rigor helps kids prepare for college and the global level of competition that will occur there." **(7th grade through AP Calculus teacher)**

"When implemented properly in all grades to be the same these standards will be appropriate. If the younger grades would ensure the concepts are taught completely then the higher grades concepts would be more achievable.
I like Common Core. I hated PARCC testing. I like the students being tested on the computers so the skills are there for future use.
Working with the 7th grade teacher to work on 8th grade standards after testing really has helped for this years students. So better verticals alignment with the standards would help significantly!!" **(8th grade teacher)**

"I like the rigor that common core provides. I like that common core emphasizes depth of understanding rather than rote memorization. I like that common core provides lots of overlap between the grade level, allowing for ample student exposure to content over the years. " **(8th grade teacher)**

"A. I have seen an increase in overall student engagement as a result of more hands-on application of mathematics in activities that are both fun and interesting to them.
B. I see each new group of students coming up to my classroom more willing and able to tackle application problems instead of groaning at the dreaded "word problems"." **(8th grade teacher)**

"1)Teachers understanding their content at a level that is much deeper than before through PD focused on understanding why mathematical algorithms work instead of just doing them from rote memory. 2)Students success with transitioning from one grade to the next is more fluid. 3) Less standards per grade means time to go deeper for more understanding. 4*) Specifically for my grade area is the implementation of algebra at an earlier stage than before." **(8th grade teacher)**

"1) Standards are well defined
2) Standards set up well for Alg 1" **(8th grade & Algebra I teacher)**

" I see my students thinking more critically. I've been guilty of strictly teaching an algorithm in the past and not deriving where it comes from. The results are significant in the long run when students derive their learning. They remember things better/more. They persevere through problem solving. The curriculum is deep and not wide." **(8th grade & Algebra I teacher)**

<u>Grades 9-12 Responses</u>

"Emphasis is more on understanding the math concept than on imitating the teacher. Students are required to explain their work and critique the work of others which requires deeper thinking than just solving a problem." **(Algebra I teacher)**

"The strength that I have seen and taught in CCSSM 9th grade geometry and algebra i is the emphasis again on proofs and justifying your reasoning. Also the focus on problem solving applications." **(9th grade teacher—Algebra & Geometry)**

"providing a smaller amount of standards and allowing the teacher time to provide quality instruction to the slower learners.
The CCSS give opportunities for the quicker learner to expand on the subject" **(9th grade Resource Algebra, 10th grade Resource Geometry teacher)**

"a. A requirement of a deeper understanding of mathematical skills
b. More emphasis on the logic of mathematics- Proofs
c. The duality of synthetic and analytic approaches and the connections between them" **(9th-11th grades/Geometry and Pre-AP Geometry)**

"Student problem solving ability seems to have improved under common core." **(HS Algebra I and Geometry teacher)**

"The goal of having the nation work from the same standards in the same order is good, but to accomplish it, requires to much politics.
The driving down of the curriculum to earlier grades is good for those who have met the earlier goals, but becomes over whelming to the ones struggling." **(9-12 Algebra & Geometry teacher)**

"a. The Standards for Mathematical Practice are the heart of CCSSM for me…good problem solving strategies imbedded in them.
b. The CCSSM-Geometry standards seem to make more sense utilizing rigid motions as the basis for understanding congruence. " **(10-12 Geometry, PreAP Geometry, Algebra II teacher)**

"Verbal communication in math has been stressed and improved, a push to relate math to real world application has increased, and a desire for students who are highly mobile to not experience such big gaps has emerged " **(9th-12th grade teacher, Algebra II, Precalculus)**

"1) bringing back constructions and points of concurrency to Geometry. This adds so

much meaning to the vocabulary of geometry, and also points to a Euclidean proof thought process.
2) making proof have a bigger presence in the curriculum, yet also allowing proofs other than 2-column. This includes the frequency of the, WHY? questions. Yet proof does not overwhelm the standards.
3) The depth of the circles standards, and triangles in circles." **(Geometry teacher)**

"The standards target the deeper understanding of a topic as opposed to a giant checklist of facts, which I like." **(10th grade Geometry teacher)**

"a. The standards made me, as a teacher, think about why I teach certain topics in a certain way. We used to teach transformations as a stand-alone unit half way through the year. Now, we teach transformations at the beginning of the year and use the build up everything else in geometry and in our proofs. We also spend more time on similar figures now. I use the relationships of similar triangles in proofs and in Trigonometry. Overall, the standards helped me reorder/rethink our curriculum in a way that leads to more connections among topics.
b. Since the standards/topics are linked together now, instead of segmented, the students seem to understand more. They are more willing to try to figure out a new concept based on prior knowledge because they understand that what we are learning most likely relates to something else that we have already learned.
c. Finally, we now give more difficult tests, but are seeing higher class averages. I believe that this is proof that we are doing is working because students are scoring better on tougher material." **(Geometry teacher)**

"1. Like the fact that the Geometry curriculum is aligned similarly to the NCTM standards.
2. Lots of technology applications for Alg. 2
3. I like the order of the Geometry curriculum./ I like the parent functions early on in Alg 2." **(Geometry & Algebra II teacher)**

"1) The sheer depth of the standards. If a student could really learn to these standards, would they ever be prepared for higher level math!
2) The emphasis on number sense without a calculator. Been a real need ever since 1989 NCTM standards came up with the "give them a calculator early on and don't worry about number sense" idiocy.
3) The multiple representations piece that is throughout the standards. Really gets students to think about what a model is doing. And how different representations are useful for different purposes." **(Algebra II teacher)**

"I love the discussion, and getting to the heart of the reasoning behind the mathematics in my classes. I appreciate having fewer topics to "cover" in Geometry, which allows more time to exploration and discovery -which is vital in in sense making." **(9-12, Geometry, Precalculus, Calculus & SREB Math Ready teacher)**

"Students are beginning to use reasoning skills to transfer knowledge. Students are becoming mathematical critical readers." **(10th-12th grade/College Algebra/Precalculus/Calculus teacher)**

"They are deeper!
They can create more interaction between the students.
It gives a different perspective and to persevere." **(10th-12th grade teacher)**

"1. CCSS recognizes math topics such as graphing functions crosses several function families.
2. Divisions used for the "frameworks."
3. Separation of Algebra 1 and Algebra 2" **(Algebra I, Algebra II, AP Statistics teacher)**

"Having more focus on proofs, The focus on the 8 standards of practice has resulted in more attention to units, precision, and analyzing work of others and self. The student reflections I am getting are much more informative. It seems to also be easier for the students to make connections in the Science classroom." **(Algebra I, II, III, Precal, Geometry, Statistics and AP Calculus teacher)**

"1. Mathematical Practices: Focus of CCSS and they exist in all grade levels.
2. Focus on mathematical understanding and skills vs pure computation
3. Focus on problem solving and thinking rather than rote memorization of procedures." **(Fourth year math, 11th and 12th grade teacher)**

List up to 3 areas of weakness of CCSSM you see at your grade level (or subject taught) where the CCSSM might need improvement.

Grades K-5 Responses

"1. I think where we, as a state, dropped the ball with implementing the Common Core State Standards was that we didn't have a core committee of people to look at them from the get go and put together some sort of map for teachers to follow. Many teachers were not prepared to make the changes necessary for implementing the CCSS with no textbook to follow or training to back them up. While I understand that we need to be taking the lead from our students, to teach this way requires that teachers really understand math and how students learn. The first few years of implementation have left a lot of people floundering and then going back to what they DID know to know, or at least felt successful with. What I think we should learn from this is to look at the existing CCSS and make clarification statements about them, include some loose guidance on where to start, and have a common area (DOE website?) from which all school districts can access resources. I know that Rogers has been very generous with allowing teachers to access their resources, and there are probably other big districts who have done a lot of work that we all don't know about. There is NO REASON for everyone to create the wheel – and the expectation that everyone has the resources to do that has been ridiculous. I also think we need to increase a statewide focus on implementing CGI. This training is invaluable for implementing the CCSS.
2. The fluency expectations are not equitable. Kindergarten should know +/- facts to five, First should know +/- to ten, Second should know +/- to twenty, then when they get to Third grade, students should be able to do mental math +/- with double-digit addends AND all single-digit multiplication facts. Idea: move x/÷ facts 0, 1, 2, 5, 10 to second grade then extend the facts to 12 for 3rd grade.
3. Since teaching base 10 is all about grouping, K-2 SHOULD include presenting students with multiplication and measurement division problems with 10 as a factor." **(K-5 Math Instructional Facilitator)**

"1. Difficult for traditional teachers to change. (but that could be any change)
2. New teachers may have a difficult time teaching the standards with rigor, if do not have support in understanding the standard and how in depth he/she needs to go.
3. Younger students learn more at a quicker pace than they ever have before. With the increased rigor and higher level thinking skills, it is not always appropriate for the age that it is intended for. Every grade is a building block, so if they fall behind becomes very difficult to close that achievement gap." **(K-5 Math Instructional Facilitator)**

"in the beginning teachers did not have the understanding of the standards and needed time to dig deeper to understand the math standards, but in our building teachers have invested lots of time, energy, and resources to understand and implement the standards with fidelity. While we all are continuing to grow in our learning and understanding of the

standards, I feel our teachers are better prepared to teach the math standards and will only become better prepared as we hopefully continue with the current math standards. I think only allowing one year for students to develop multiplication fluency as stated in 3rd grade is unrealistic and needs more time in order for students to develop." **(K-5 Math Instructional Facilitator)**

"I am not sure exactly where the "content emphases" piece originated (Achieve the Core, PARCC Model Content, Engage NY..) but I worry that some of the "supporting" and "additional" standards messages have taken away from opportunities for coherence. I have seen teachers zoom in on the "major" standards, which improve the focus of the standards but often leads to many of the Geometry and Measurement & Data standards being pushed aside rather than used as a vehicle to help strengthen the major work of each grade. This may be more of a implementation/professional development problem than a true standards problem, so feel free to delete this if so! I guess that I am wishing for some way to help teachers and students to see these domains of mathematics as connected rather than separate. We have worked hard to understand our grade level standards and even vertical connections, but I feel that there could be more clarity on coherence among domains.
I really have not seen a true weakness of the standards. **Positive press** & helpful advice for educating parents on the standards would sure be helpful when/if a revised version of standards are issued!" **(K-5 Math Instructional Facilitator)**

"Patterns (recognition, building, continuing)" **(Kindergarten teacher)**

"I question whether time on an analog clock is still a relevant standard in the primary grades. Most kids no longer have these devices in their homes and only see digital time." **(1st grade teacher)**

"1. Some of the standards are not bad standards. They are just easily misunderstood. Examples: 1.G.3, and 1MD1" **(1st grade teacher)**

"1. The biggest area I see as a problem is the implementation of the standards. Common Core seems to get the blame when teachers/parents don't like the curriculum chosen to teach CC. I don't care for the curriculum we are using and it is very difficult for our parents to assist their children with the math homework (CC gets unfairly labeled for this).
2. We should all use the same academic vocabulary when teaching math.
3. Students who transfer to a Common Core school/state should be at an advantage but huge differences in curriculum can pose problems." **(1st grade teacher)**

"1. We don't spend as much time on facts fluency
2. The standards do not line up with any of our testing instruments (IOWA or MAPS)
3. The lessons are hard to plan because the assessments are very subjective and the parents are in the dark about what we are doing in math." **(1st grade teacher)**

"There are gaps. Skills that first graders should know are taught until later grades.- recognizing coins and counting mixed coins." **(1st grade teacher)**

"*Student math foundational skills are weaker than before CCSSM.
*There is no "program" to teach with - it is left up to districts/teachers how to address each skill - no consistency." **(1st grade teacher)**

"money, calendar" **(1st grade teacher)**

"Some of the CCSSM are poorly written in that they are difficult to understand. It requires working in a district where sufficient time is spent in professional development to truly understand what the standards are saying. In my district we've spent a great deal of time "unpacking" the standards as our administration likes to call it. This time is well spent, but I seriously doubt all districts allow for this time in their teachers' professional development. An example would be 1.OA.5 Relates addition to subtraction(counts on 2 to add 2)." **(1st grade teacher)**

"A) there too many CCSSM's for 6 year olds;
B) necessary for mastery of prior grade level CCSSM's to succeed in next grade level;
C) standardized testing happens before final unit information can be covered, due to amount of CCSSM's in a year." **(1st grade teacher)**

"1. The language that is used when writing standards. For instance, in First grade, one example, includes using the inverse to relate addition to subtraction.
2. Both the HOW and WAY standards are written is easily misunderstood." **(1st grade teacher)**

*Parents do not understand and cannot help students with CGI math. " **(2nd grade teacher)**

"Not all schools are teaching the common core skills equally
A few concepts, including number lines, are confusing to some students.
Elapsed time and improper fractions are too advanced for some students at this grade level." **(3rd grade teacher)**

"The standards are very ambiguous to those teachers who were taught math by learning algorithms. I still have to do a lot of conferring with my coworkers to know what each standard should look like from the kids. Also, I don't know how to extend the most important standards. If I have introduced and taught 3OA.1 in the first quarter, how am I going to extend that and teach it again when we revisit it in the other quarters?" **(3rd grade teacher)**

"Students have a better, deeper understanding of number sense and problem solving." **(3rd grade teacher)**

"Not having a book or on hand resource for daily math work and practice." **(3rd grade teacher)**

"gaps between grade levels" **(3rd grade teacher)**

"-Sometimes it feels like the standard needs to be deciphered.
-I can spend much of my planning time deciding what aspect to teach within the standard." **(3rd grade teacher)**

"~ The main weakness I see is just informing parents about the standards and CGI/ECM. Parents didn't learn that way so it is hard for them to help their children. Also, many parents think Common Core is CGI/ECM which it is not because CCSSM is standards. Common Core standards align well with CGI/ECM teaching strategies. Since CGI/ECM became popular at the same time CCSSM came out, parents think that CGI/ECM is Common Core.
~ It just will take time to see the benefits of CCSSM. Now that I have students that have had Common Core since Kindergarten I can really see a difference. I know it will just take a while for middle school and high school teachers to see the benefits because they haven't had students yet that have had Common Core or CGI/ECM all the way through." **(3rd grade teacher)**

"-Geometry
- Time
- Fractions" **(3rd grade teacher)**

"-Number and Operations (place value)
- Measurement Data (area and perimeter)
-Measurement and Data (metric units, customary units)" **(4th grade teacher)**

"1) Students are relying on their peers too much; however this may be due more to the change in teaching styles than the standards.
2) Too much disagreement on exactly what is meant by teaching the algorithm in math. Teachers will disagree is this means the old school method or any efficient strategy, hence the argument affects what the students learn exactly." **(4th grade teacher)**

"1. The wording of the standards can be misleading to some teachers.
2. Teachers think they are only to look at their grade level's standards rather than the whole picture to see where their students should be at the end of the year. I think more training should be given to teachers in regards to this." **(4th grade teacher)**

"*Some kids are just designed to be "step followers" and have a terrible struggle understanding how to attempt to problem solve without being given the steps to do it. what makes it very frustrating for them. So, it's hard to find a balance between letting them try to work it out and giving them just the right amount of time to attempt the problem solving process without waiting so long that they get too frustrated and shut down.
*We are going deeper using the CGI method of teacher/facilitating. Therefore, they get approximately 3-4 problems a day and we really study those problems. Sometimes I think that isn't enough rote practice.
*It's my understanding that "memorizing facts" is frowned upon by CCSSM. I can't disagree with that more. Yes, I feel the kids needs to understand the "whys" of things but just like the "standard algorithm" there is a time and place for them to memorize those facts. If they

have to spend 5 minutes figuring out a math fact only to use it on ONE part of the procedure they'll never become efficient in their work and THAT is our goal." **(4th grade teacher)**

"Not sure yet. I don't have much to compare it to. How does it differ from other countries? Is everything in the CCSSM essential at each level. You tell me. ;o)" **(4th grade teacher)**

"Everyone needs to believe this is best for students" **(4th grade teacher)**

"a. Multiplication and long division are still challenging because so many rely on the algorithm and alternative strategies can be cumbersome and hard to pull out of kids
b. Continued meaningful professional development is needed in questioning techniques and in mathematical concepts (see point c above) we need to have a deeper understanding ourselves and that takes time and resources
c. Communication and education of parents on common core, what it means, and how to be supportive of alternative strategies" **(4th grade teacher)**

"Subtraction continues to be difficult for many students – not a new issue – just a continued one.
It is difficult to assign appropriate homework that doesn't scare parents" **(4th grade teacher)**

"Less credible resources available" **(4th grade teacher)**

"However, this broadening of my students' perspectives and problem solving has come with some trade-off. Their automaticity with math facts and formulas often is slowed down. But that is a trade off well worth the price, in my opinion." **(5th grade teacher)**

"It is extremely hard to find the time to complete all of the in-depth standards in one year. Certain aspects have been pushed in earlier grades, and, at least in my observation, some students are not cognitively ready to complete some of these complex mathematical concepts in lower grades.
I like how students have to think to develop the algorithms or processes rather than the students be given the shortcuts up front; however, it is very difficult to get the majority of the students to "discover" these shortcuts on their own." **(5th grade teacher)**

"1. Older teachers that are not confident in math are finding it harder to teach in depth. They don't know how.
2. Younger/new teachers need to be getting this in depth teaching in college
3. Veteran teachers need getting to the core and the state should be paying for this at all the coops. The state needs to leave the Common CORE alone!!!!" **(5th grade teacher)**

"variation of math vocabulary form grade levels, abstract skills, knowing what they should know, and know it/retaining info after the test" **(5th grade teacher)**

"* Students do not seem to be as strong in basic math facts. They can figure them out, but it takes them so long that it is frustrating for them and for me." **(5th grade teacher)**

"At this age level they are very concrete thinkers and some of the ideas are more abstract to them." **(5th grade teacher)**

"1. Students are not fluent with basic multiplication facts. They barely know them. Students are not encouraged to "memorize" or "practice" their facts. Students are encouraged to use "strategies" to solve basic multiplication facts. When students reach the fifth and sixth grade they should have fact fluency. Many teachers feel that if they require students to "memorize" their facts then they are forcing a "Drill and Kill" approach. What a mistake. Nobody is getting killed by practicing their facts. Current research clearly points out that "If fluent retrieval does not develop then the development of higher-order mathematics skills . . . may be severely impaired." Experts agree that the ability to recall basic math facts fluently is necessary for students to attain higher-order math skills. . The idea of "drill" also implies something negative. The best basketball players in the world practice drills. The best musicians in the world practice drills (scales) Why? So they can attain and demonstrate higher-order skills.
2. Students are unable to do calculations and/or can't remember how to do them from one grade to the next. They don't spend time focusing on the "symbolism" for the concepts. Algorithms are the symbols for the conceptual and pictorial understanding. Students are not practicing the symbolic calculations to mastery. The word "rote" seems to imply something negative since Common Core was adopted. The word rote means practice.
3. Students are expected to "discover" the math concepts instead of receiving direct instruction. This method of learning is not what is best for all students. Many do not grasp the objectives. It is too subjective and/or the math concept itself is too difficult or not appropriate for the students' stage of development.
When the state adopted Common Core they threw the baby out with the bath water. It would have been smarter to include research-based and proven standards and techniques. The states were coerced into adopting the standards. The state needs to govern the curriculum in accord with the state laws, not Federal. Common Core math is a repeat of "New Math". This method has been popping up and going away for decades. The argument has been made that the Common Core is merely a set of standards. This is untrue. Those that have required the schools districts to adopt CC have also dictated "how" to teach it. Districts have adopted these methods and require teachers to conform." **(5th grade teacher)**

"The major weaknesses so far have been from the gaps of moving from AR Frameworks to CCSS. I cannot truly assess the weaknesses until I have a class that has been started with CCSS." **(5th grade teacher, 3-8 Math Instructional Facilitator)**

"a. not much spiraling/reviewing of content from year to year
b. some of the information is not developmentally on target for the age group

c. assignments/test questions can be very overwhelming. So much information is required from one question, that students become overwhelmed and do not answer all parts of questions." **(5th grade teacher)**

"Areas of weaknesses of CCSSM
Clarity: Some of the standards are very broad which makes them difficult to understand. Many of the standards cover several concepts within one standard, so teachers must spend a lot of time dissecting the standard in order to truly understand what the students are expected to learn. This is also a strength because it has led to many rich discussions about the true intent of the standard.
Implementation: The implementation of CCSSM was very "messy" which led to a lot of confusion, both in teachers and parents. The teachers in my district have now completely embraced CCSSM and would be very disappointed if they had to go back to teaching the way they taught before. I guess this has been both a negative and a positive." **(grades 3-5 math instructional facilitator)**

"not so much a weakness of the CCSSM as teachers possibly needing more professional development offered at area co-ops on some topics." **(grades 3-5 math instructional facilitator)**

"Three weakness are lack of student maturity for the more advanced concepts (specifically grade 3/4), the lack of consistency from grade 5 to grade 6 within the standards (6th grade standards are more in line with a junior high grade level), and students understanding of five or more step problems." **(3rd-6th grade teacher)**

"Some standards are unclear. Example 5.NBT.5 Multiply using standard algorithm. Define the standard algorithm. Partial Products follows much of the same steps as the American Algorithm. Is it acceptable?
It also suffers from bad publicity. Parents need to understand it better." **(5th/6th grade teacher)**

Grades 6-8 Responses

"-more emphasis on statistics" **(6th grade teacher)**

"My main concern with my students is that they do not understand how to multiply, divide, or know their math facts. This area really slows down the math process in our learning. I have to constantly show and re show how to multiply and divide in the standard manner. I don't understand where the break down is in this concept. The students should have this down after at least three years of learning." **(6th grade teacher)**

"- Some teachers get rigid about having only one right way to solve and students get frustrated when only one way is accepted
- Because of broad verbiage in the standards, the interpretation of the standard is widely translated into different meanings (less consistency)" **(6th grade teacher)**

"Need more emphasis on statistics" **(6th grade teacher)**

"Students have more difficulty knowing the algorithm that used to be readily taught in the lower grades.
Parents are unfamiliar and uncomfortable with helping their students with math homework because of the change in the structure of the instruction.
Better alignment with the CCSS math and the NGSS science standards." **(6th grade teacher)**

"elementary frameworks need to be more explicit in terms of fluency and general number sense - fewer than half my students are fluent in basic multiplication and division facts...many have very weak understanding of place value" **(6th grade teacher)**

"I feel like there are holes in the standards. I rely on the district purchased math curriculum to help me identify some of the skills that need to be taught during/before a standard can be taught." **(6th grade teacher)**

"statistics standards are supporting rather than primary" **(6th grade teacher)**

" 1) Students are not as quick with recall of facts such as listing factor pairs of the whole numbers 1-100
2) Not enough time to get through all of the standards and do them all justice
3) Some content is still very abstract for the learners" **(6th grade teacher)**

"I feel that my students are not fluent in addition or multiplication facts. They do not seem to be able to fluently add, subtract, multiply, or divide. They struggle to do even basic facts and want to rely on using a calculator." **(6th grade teacher)**

"Common core assumes that students have mastered basic multiplication and division facts and have a firm foundation in multiplying/dividing multi-digit numbers prior to entering 6th grade. In my experience, a large number of students woo enter sixth grade are still struggling with basic facts and are not yet ready to immediately begin with dividing multi-digit numbers with and without decimals. I spend a lot of time building up these basic facts before I can complete the first unit on multi-digit multiplication and division with and without decimals." **(6th grade teacher)**

"CC does not address the needs of the learning disabled student. The writing and reasoning component really is the hardest for them. **" (6th/7th Resource Math teacher)**

"1. The PARCC areas of emphasis on (major, supporting or additional clusters) seem incorrect in grades 6 and 7. These designations have major weight with teachers, although they don't appear to be part of the actual standards. Specifically, the statistics and probability standards are crucial to preparing students for the real world, but rank lowest in importance. Meanwhile the geometry standards seem disjointed, almost an after-thought, but weigh heavier.

2. Lack of professional development on the statistics standards fails to adequately prepare teachers. In general statistics were not taught for understanding prior to CCSS, and teachers have major content knowledge deficits.
3. No example problems, I often pull the "Unpacking the Standards" from North Carolina for my PLC to look at. Teachers need clear examples of what the standard expects, and maybe even some assessment boundaries, like is provided in the NGSS for what the standard is not expecting of students." **(6th/7th grade math instructional facilitator)**

"1. We, as teachers, seem to have lost a bit of the importance of the practice standards over the last 2 years - so let's make sure we hold tight to those in the new standards.
2. Stat standards should receive more emphasis. Because they are listed as a supporting standard (or whatever it's called), they are viewed by many as not important. The assumption that science teachers will support these mathematical ideas through their classes is an **incorrect** way to ensure that students are equipped to look at data critically and make decisions based on their interpretation of that data. Odds, chance, variability, shape of data, measures of center, etc. is what daily life is all about.
3. Arkansas state standards could attach a sample problem and student work sample that indicate proficiency for each standard - this would help provide a consistent interpretation by teachers of each standard" **(6th/7th grade math instructional facilitator)**

"A. There are still a lot of standards (many of them packed full of varied components) in each grade level, and teachers struggle to teach all standards, to the depth at which the standards require, within the time constraints of the school year.
B. Overall, I have found the standards to be developmentally appropriate. However, in standard 6.SP.5c, the interquartile range and mean absolute deviation pieces seems to be beyond what 6th graders are ready for, especially considering there is little to support this level of understanding of statistics and probability in previous grade levels. 7.SP.1 & 2 seem more developmentally appropriate for 6th graders rather than the pieces of 6.SP.5c mentioned above." **(6th/7th grade math instructional facilitator)**

"1) High School standards are organized in such a way that teachers, not fully understanding the standards, have a hard time integrating them together into units that make sense. (meaning how to teach function standards and algebra standards together in a cohesive manner)
2) By not choosing to go integrated path, Algebra 1 teachers and Algebra 2 teachers have an enormous amount of material to teach resulting in a loss of depth due to breadth. Is it possible to consider an integrated path at this time?
3) Not really a weakness, but how do we get the mathematical practices back in a place of emphasis. We need to make sure the practices are as important as the standards themselves." **(6-12 Math Instructional Facilitator)**

"1. I feel some of the standards don't flow well with others, seems like there could be a better flow. 2. Whenever the standards are re-aligned their is a gap that certain students get due to the realignment that has to be caught up somewhere down the line." **(7th grade teacher)**

"I still think there is too much material to cover. We struggle to get all the skills & concepts taught.
Students still enter 7th grade not knowing their times tables. So much more learning could be accomplished if we just had those basic skills in place." **(7th grade teacher)**

"geometry, basic skills" **(7th grade teacher)**

"Some geometry standards are quite difficult from the developmental perspective for this age group." **(7th grade teacher)**

"*struggle with parents trying to help their student
*hard when students are used to direct instruction" **(7th grade teacher)**

"I have found that the CCSS are even more challenging for my students. Especially when they are expected to read a paragraph problem. The old style of a couple sentences word problem was hard enough. Now with a paragraph, they either give up, can't read all the words, or can't comprehend what is being asked, because it is too complex, and they do not have the skills to break it apart - which defeats the purpose of a complex (Higher level thinking) problem. Once broken down into steps, then CAN attempt to tackle the problem. But the scaffolding and support needed for a special needs student, who struggles with reading/comprehension AND math, to successfully complete the CC style problems breaks the problem back to basics. So, I really struggle with this in my classroom." **(7th/8th Resource Math teacher)**

"I would like to see more detailed standards that are not as broad that can be broken down into sub-parts. Including but not limited to the areas of:
Connections between solving algebraic equations and geometric equations
Differentiating and finding similarities vocabulary such as positive and plus, negative and minus, squares and square roots." **(7th/8th Inclusion Math teacher)**

"1) The level of rigor is too high for some students 2) We often don't have enough time to cover all the standards for a class with common core and 3) kids who don't have plans to go to college should not have to learn via a common core curriculum." **(7th grade through AP Calculus teacher)**

"The standards are written with the idea that the students truly grasped all the concepts of the previous grades - which we all as educators know does not happen.
Too many concepts to cover and too much depth to cover in too little time.
Too vague. I teach the standards and then when I give the TLI test it is way harder than what I covered in class. My district looks at the tests results and judges my teaching ability based on those results. I felt PARCC was the same way. We may need to work more closely with book publishers to improve the lessons in the textbook to be as rigorous as the test." **(8th grade teacher)**

"I think that the common core standards for 8th grade have a few random topics thrown in that do not fit with the theme of the grade level. For example: angles, transversals, and volume. I also think that the high school standards could be more clearly broken up for the various classes. I only recently learned that in the appendix of the common core standards, the high school standards are broken up into the various classes (i.e. algebra I, geometry, algebra II, etc.) . I also would like to see the overall wording and tangibility of the standards to be improved." **(8th grade teacher)**

"1) Adding some form of the mathematical practices into the standards for teachers to refer back to in class with students. 2) Adding some sort of technology aspect to certain areas that apply. " **(8th grade teacher)**

"The instruction methods being implemented and insisted upon are restrictive." **(8th grade & Algebra I teacher)**

<u>Grades 9-12 Responses</u>

"Algebra 1 seems to be teaching most of the high school math standards. It is too much material to cover in one high school course. Plus 9th grade students struggle to understand solving quadratic equations by completing the square and the quadratic formula. 9th graders can understand solving quadratic equations by graphing, factoring and isolating x (taking square roots of both sides)." **(Algebra I teacher)**

"The weaknesses of CCSSM is pushing math down to much grade level for the majority of students. In my years of teaching math over a 40 year span I have always seen that majority students are not ready to grasp abstract algebra concepts until 9th and 10th grades. By teaching important basics of linear equations in 8th grade we are perpetuating background weakness. This weakness makes it impossible to teach true CCSSM 9th grade Algebra I." **(9th grade teacher—Algebra & Geometry)**

"Even CCSS reverts back to Basics, the current JH and HS students fell into the transition period and did not master the skills needed to be able to move on a transition period needs to be developed for the students who need extra time to master the skills" **(9th grade Resource Algebra, 10th grade Resource Geometry teacher)**

"I would like the stat dropped from geometry" **(9th-11th grades/Geometry and Pre-AP Geometry)**

"Completely meeting common core standards requires a high degree of literacy, making them difficult for some ELL students." **(HS Algebra I and Geometry teacher)**

"Evaluation method. As testing is switching from straight multiple choice to computerized evaluation, what we are teaching is getting thrown under the bus as well. We can't teach goals that are getting evaluated in a different format than what is taught." **(9-12 Algebra & Geometry teacher)**

"The 4th year courses have the same frameworks attached to them…not sure there is a good delineation between them and quite possible there are too many of them." (**10-12 Geometry, PreAP Geometry, Algebra II teacher)**

"I do not think the standards in Algebra II were lessened and deepened; there are way too many standards in Algebra II to be able to go to the depths in each unit to prepare students well for the next level - Calculus. I also do not feel that some students are physically mature/ready for the level of math that has been pushed upon them. I feel it is necessary to have a Precalculus (including trigonometry) course between Algebra II and Calculus." **(9th-12th grade teacher, Algebra II, Precalculus)**

"A. I think some of the standards, particularly statistics and geometry standards - across grade levels, seem a bit forced and out of place. The standards themselves are good... but could use some rearranging.
B. I think some of the standards are a bit vague and could use more clarification.
C. I think some of the standards are too broken up between grade levels and this can stifle extensions into higher grade level standards. " (8th grade teacher)
"1) The obsession with transformations. I kind of get it, but I think it's over the top.
2) The presumption that there is a need for a set of volume standards but no area standards. And the lack of practical measurement application in those standards.
3) Along with #2... a curriculum that just does not speak to the needs of students that are not headed towards college. What an opportunity missed to get kids headed towards the construction industry to really work with measurement! Or for that matter, to get future calculus students headed towards accumulated area." **(Geometry teacher)**

"The broad nature of the standards leaves a lot open to interpretation which can lead to confusion. The way I see for teaching a standard may not be the way another teacher sees it. Not that I want to be told how to best teach my subject." **(10th grade Geometry teacher)**

"One weakness would be that CCSS promised more depth and less breadth. I believe that we have more depth now (or more opportunity for it), but the breadth of material does not seem to have decreased. While some things, such as surface area and naming the polygons have moved down to 6th – 8th grades, we added more on similarity and circles. The impact of this puts our classes into a pace for concept coverage that does not always allow for the deep exploration that is our goal." **(Geometry teacher)**

"1. Allows for no review time for Alg 2 . students. The kids that are taking Alg. 2 are not ready for that level of mathematics. 40% of my students coming into Alg. 2 do not remember how to graph a line, write the eq of a line , solve a system, or factor. There is no time built in for review.
2. I don't like the flow of the Alg 2 curriculum. Stats unit should not be first and quadratics are all over the place. Why are we not teaching Linear Programming?

3. The test was a "nightmare" to take on the computer. My daughter took the Geometry and the Alg 2 test last year so I got to hear all the problems with the computer that she had. " **(Geometry & Algebra II teacher)**

"1) The sheer depth of the standards. Pretty much impossible for students who have not experienced prior success. (like the dominance of "completing the square" as a strategy for solving equations.. is it that important? And so beyond our weaker students' comprehension).
2) The dispersed standards about conic sections in different courses. I think this leads to no one covering them very well because no course feels "ownership" of those standards. Or, how can students really master such a narrow set of standards that have no "friends" to add to the unit?
3) I am not sure where this fits, but someone in our state is truly promoting the idea that a good Algebra II course means no need for Pre-Calculus because so much is being taught in Algebra II. Which is #1: not true because no one is getting that much taught yet, #2: not true because there is not enough trig, no vectors, no polar, not enough math in Algebra II to prepare for Calculus BC &/or AP Physics or college entrance level engineering and physics classes, #3: not supported by the college engineering/science community but already happening in some of our strongest school districts that provide students for those college programs. [Also] the new PSAT and SAT are pure high school common core standards-based. If we seriously alter our high school math standards away from common core, public schools will not be producing our National Merit Finalists. The new test is no longer a test that finds smart kids; it is a test that finds students who have learned a lot of Common Core High School Math." **(Algebra II teacher)**

"The CCSSM leaves many gaps between where my students are and what they are ready to learn. While there is value in high expectations, my students are not immediately ready for higher levels of reasoning. I wish there were standards built in for more basic geometry knowledge while we build to higher levels of reasoning. It is a stretch to find standards to support the foundational knowledge I need to build at the beginning of the year." **(9-12, Geometry, Precalculus, Calculus & SREB Math Ready teacher)**

"Students have gaps in their learning due to how the standards were implemented.
A student in Algebra II or Pre-Calculus is lacking algebraic skills that were taught in Algebra I that may not have been supported in Geometry. Students who were inept mathematically, struggle with the material taught in Algebra II. Then in turn, struggle with a fourth math above Algebra II." **(10th-12th grade/College Algebra/Precalculus/Calculus teacher)**

"They are confusing at times.
They do NOT have an order that works well.
Time it takes to do it! Prep and time in class.
Shows kids' weaknesses!" **(10th-12th grade teacher)**

"1. Too many "standards" in Algebra 1 and Algebra 2 each.
2. Crams statistics into Algebra 2.

3. Reflects an educational approach within the math practices and standards within CCSS." **(Algebra I, Algebra II, AP Statistics teacher)**

" The major weakness I see is the gaps of knowledge from rearranging. Our school had to spend a significant amount of time addressing these issues. It has also been a challenge to address the moving of topics down to lower level classes in high school when they haven't been a part of the transition all the way through their math classes. In my opinion we need to double block the students in ALG 2. If they are to leave the class with the knowledge needed to be successful, about 60% of our kids need more than one period each day. But, this is an issue with credits." **(Algebra I, II, III, Precal, Geometry, Statistics and AP Calculus teacher)**

"1.Implemenation – only tried for one year. High school not able to see benefits of students who were taught CCSS throughout their school years.
2. Not enough emphasis on the relationship between practices and grade level standards. I don't know if this was because of the way they were written or the way they were trained.
3. High School classes: Should Arkansas have explored the High School Math I, II, III versus Algebra I, Geometry, Algebra II model more indepth?" **(Fourth year math, 11th and 12th grade teacher)**

9th-10th Grade English Language Arts

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
42	89.36%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
5	10.64%

These are great and I'm glad we are focusing on citing text

a bit wordy

Too wordy.

I don't think 10.2 is written appropriately... I think determining the theme/central idea of a text and analyzing its development is different from being able to provide an objective summary. I think those should be two separate standards.

I teach high school resource English. We are expected to follow the same standards as others. Needless to say this is an unreasonable expectation. I also teach sections of regular English but often find the standards have to be "watered" down to be complete. This is due to expectations of administrators. Instead of watering down, wouldn't it be more realistic and beneficial to present goals that complement the student's skills and plans? Many of these skills are not needed for success in college. I teach in a high school college prep program every Saturday with the local colleges. Many of the teachers I work with are college professors. Most of them want the students to be able to write and read competently. When high school teachers spend so much time spreading out time on so many goals there is little time to do anything at an advanced level. If standard RL.9-10.3 is taught thoroughly the others are covered.

The problem I see with all common core standards (I taught them from when they were introduced in Arkansas until last school year) is that they are not at all user friendly unless you have a background in education. A normal parent reads them and does not a clue what all that means. They sound like they were written by tenured college English professors who like to hear themselves talk with nothing better to do. If Arkansas is going to stay with the CCSS they need to be rewritten for the every day person to understand.

Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	91.49%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
4	8.51%

9th-10th Grade English Language Arts

Too wordy.

In RL.9-10.6, "point of view" should be changed to "author's perspective" as not to confuse with point of view (1st, 2nd, 3rd person).

The first standard is adequate for this section. If this standard (RL.9-10.4) is done correctly and thoroughly all skills needed for college English will be mastered. The others are just "verbage". When teachers have administrators who want different content for EACH standard there is not much time to spend on each standard.

See above

Integration of Knowledge and Ideas

I have read the above standards and think they are appropriate as written.

Number	Percent
40	85.11%

I have read the above standards and think they are not appropriate as written.

Number	Percent
7	14.89%

Why is RL.9-10.8 not applicable to literature? There is still a purpose

Way too confusing.

These standards are a bit confusing to understand; wording is confusing.

Is RL.9-10.9 - Is this intended to reference "allusion?" If so, add that term to the standard.

I see no academic subject for these standards. Few students plan to become writers straight out of high school. They need a college education, usually.

Range of Reading and Level of Text Complexity

I have read the above standards and think they are appropriate as written.

Number	Percent
40	85.11%

I have read the above standards and think they are not appropriate as written.

Number	Percent
7	14.89%

These are pretty vague.

Interpretation of texts? More than just a basic understanding.

9th-10th Grade English Language Arts

I believe it would be helpful to have examples of grades 9 and 10 text complexity

Reword the second statement for clarity. It is awkward and wordy. Focus on the intended result.

These standards require a complexity and faster pacing that many students are not able to master and keep up with. The faster pace does not allot enough time to scaffold appropriately. Many students are not at the text complexity level that is required for mastery.

These standards require a complexity and faster pace that many students are not able to keep up with. The faster pace does not allot for enough time to scaffold appropriately. Many students are not at the text complexity that is required.

These are appropriate but probably will not be mastered by very many high school students since many average high school students do not read on grade level, even A/B students.

Key Ideas and Details

I have read the above standards and think they are appropriate as written.

Number	Percent
43	91.49%

I have read the above standards and think they are not appropriate as written.

Number	Percent
4	8.51%

Too wordy.

Change wording of RI.9-10.1 to read "explicitly and implicitly" so structure is parallel. Could say in parenthesis (directly stated vs implied).

This is repeated from earlier standards.

Craft and Structure

I have read the above standards and think they are appropriate as written.

Number	Percent
43	91.49%

I have read the above standards and think they are not appropriate as written.

Number	Percent
4	8.51%

Change language in RI.9-10.6 from "point of view" to "perspective" - see argument from RL band comment.

Standard RL.9-104 covers all needed skills.

9th-10th Grade English Language Arts

Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
44	93.62%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
3	6.38%
All of this information is covered in oral communications and American history classes. Those are required by ADE. Once again English is expected to present proof and documentation of mastery,	
Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
40	85.11%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
7	14.89%
Again, too vague I believe examples of grade level complexity would be useful. These are not needed. They have already been covered in previous standards. One standard can easily cover several skills including fiction and nonfiction reading.	
Text Types and Purposes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	91.49%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
4	8.51%
Writing Modes: argument, Expository, narrative, descriptive Writing purposes: to explain, to entertain, to define, to persuade, etc. Some of the standards are actually purposes for writing. Please use modes with purposes incorporated into them. Mostly what I am hearing from high school counterparts is that narrative writing can be used in argument and other modes but not as a stand alone form at this level. W.9-10.3A - Change "point of view" to "perspective."	

9th-10th Grade English Language Arts

Why do we need so many standards to tell us to teach students how to write different types of papers such as essays, narratives, expository and persuasive. I see no need to have a standard of every detail that goes into a competent paper. Again, when we are given this many standards we are expected to produce as many lessons.

Production and Distribution of Writing

I have read the above standards and think they are appropriate as written.

Number	Percent
44	93.62%

I have read the above standards and think they are not appropriate as written.

Number	Percent
3	6.38%

But technology is still just a tool.

W.9-10.5 - Clarify what is meant by "trying a new approach."

Standard W.9-10.4 is the only one needed here.

Research to Build and Present Knowledge

I have read the above standards and think they are appropriate as written.

Number	Percent
44	93.62%

I have read the above standards and think they are not appropriate as written.

Number	Percent
3	6.38%

W.9-10.9A - Is this allusion? If so, reference. If not, clarify distinction. W.9-10.9B - Very confusing. Please restate instead of referencing. What is the goal?

Only one standard needed.

Range of Writing

I have read the above standards and think they are appropriate as written.

Number	Percent
43	91.49%

I have read the above standards and think they are not appropriate as written.

Number	Percent
4	8.51%

Peer-based revision?

W.9-10.10 - Please clarify "a single sitting or a day or two writing." Is this cold-writing without scaffolding and/or revision, or is this just a short piece with same parameters as extended writing. This has been confusing to our district when creating common assessments.

9th-10th Grade English Language Arts

Comprehension and Collaboration	
I have read the above standards and think they are appropriate as written.	
Number	Percent
42	89.36%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
5	10.64%

DIALOGIC DISCUSSIONS--less teacher led more student based

These are standards covered in oral communication classes and are being duplicated in English classrooms because English teachers are not always aware of what Oral Communication teachers are teaching. The responsibility for teaching these standards needs to be clarified. I teach both English and Oral Com. and have often questioned the duplication but have never received a clarification from anyone.

SL.9-10.1 - Clarify "persuasively." Is this "argumentative writing" or "persuasive writing?" SL.9-10.1D - from "when warranted" on, this should be its own sub-band. There is a big jump in thought organization from responding to verses qualifying/justifying. Also, need wording for opportunity to disagree with. SL.9-10.3 - Change "point of view" to "perspective" to keep away from confusion of 1st, 2nd, 3rd POV.

The first one is only one needed to cover the skill.

Presentation of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	91.49%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
4	8.51%

These are standards covered in oral communication classes and are being duplicated in English classrooms because English teachers are not always aware of what Oral Communication teachers are teaching. The responsibility for teaching these standards needs to be clarified. I teach both English and Oral Com. and have often questioned the duplication but have never received a clarification from anyone.

SL.9-10.4 - This is a run-on sentence. Need to correct it.

Again, only first one is needed.

Conventions of Standard English	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	91.49%

9th-10th Grade English Language Arts

I have read the above standards and think they are not appropriate as written.	
Number	Percent
4	8.51%

I feel like this list is not long enough, honestly. If you think about what they are asked to do on the ACT, a lot is missing here.

I believe there should be a list of skills introduced in kindergarten and progressing through 12th grade, detailing where each grammatical rule and expectation should be taught and mastered.

Only L.9-10.1 and L.9-910.2 are necessary. They cover all needed.

Knowledge of Language

I have read the above standards and think they are appropriate as written.	
Number	Percent
44	93.62%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
3	6.38%

Is this standard really needed? What is the intent so that it's not already been said in other standards?

Vocabulary Acquisition and Use

I have read the above standards and think they are appropriate as written.	
Number	Percent
44	93.62%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
3	6.38%

L.9-10.4B - "word changes?" vague - do you mean "word forms"? L.9-10.4D - awkward wording - consider revising for clarity

Two of these cover the others.

11th-12th Grade English Language Arts

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	84.31%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
8	15.69%

CCSS.ELA-LITERARCY RL.11-12.3 - "provide an objective summary of the text" is a separate skill from determining themes/central ideas and their development over the course of the text. It needs to be separated.

Appropriate for many, perhaps most, students, but not all. Some are simply not going to be capable of citing strong evidence, analyzing, or inferring. I think these are noble goals, but probably not realistic in their practical application.

11-12.3 needs greater clarification. In my experience it has been used for setting, all literary elements, etc. but that is not actually clear in the wording. The wording implies setting, plot, and characterization.

With RL.11-12.2 (and RI.11-12.2) I get the feeling that the writers of these standards were grasping at straws to figure out what else they could do with the anchor standard.

12.2 Change to: Determine themes or central ideas of a text....

Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
42	82.35%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
9	17.65%

CCSS.ELA- Literacy.RL11.12.6 "Analyze a case" .... reworded to "provide an example"

If we're trying to establish common ground for all students, why just name Shakespeare and not others? Is he the only author that everybody should have read? What exactly is meant by "other authors?"

I like that the vocabulary focus is on context clues and figuring it out, rather than rote memorization of word lists. However, overall I think Common Core is hampered by it's insistence on Anchor Standards that are then adapted to different types of writing. Anchor standard 5 works for informational text, but not nearly so well for literature.

11-12.4 "fresh, engaging, or beautiful"--vague and subjective

11th-12th Grade English Language Arts

I find the phrase "...fresh, engaging, or beautiful" to be strange.

I feel the language is vague.

RL11-124 should NOT use the term "beautiful" as it is too subjective and is thus open to too many interpretations.

12.6 Change to: Analyze a point of view which requires.....

Integration of Knowledge and Ideas

I have read the above standards and think they are appropriate as written.

Number	Percent
41	80.39%

I have read the above standards and think they are not appropriate as written.

Number	Percent
10	19.61%

I don't like the focus on specific types of texts at specific grade levels.

Appropriate for some, possibly even many students, but not all.

Why are the texts limited to American Literature when we also focus on British lit?

I don't like that RL.11-12.9 is solely limited to American literature. When I'm making my unit plans, if my seniors aren't reading American literature, I don't have a standard to check that says the work has value.

RL.11-12.8 (not applicable to literature) is a miscarriage of education. All literary texts contain worldviews, themes, and outlooks upon life. To ignore the arguments made in such literature, whether the arguments are implied or explicit, is to render literature a pastime with little relevance to real life.

Less emphasis needs to be placed on literary pieces.

RL.11-12.8 is mysteriously not applicable and yet remains in the standards. It's should be explored, and then either reinstated or removed.

Standard 7 requires a play by Shakespeare and a play by an American, but the focus in CC is American Lit ONLY in 11th and European Lit in 12th. The standard is unclear in whether these can be done in separate years to meet the standard. As it's written, it requires both to happen in 1 year to really meet the standard. Standard 9 is oddly specific when the rest of the standards are so broad. It's not a bad standard to meet in 11th grade, but oddly specific (and it can't be met in 12th grade, because, again, its focus is European Lit).

11th-12th Grade English Language Arts

Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	84.31%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
8	15.69%

Our schools have many smart and capable students who will be unable to do this.

Basically, students will be able to read.

"Read and comprehend literature" is not a measurable objective. It is very vague and allows a teacher to document that she has taught this standard when there is no way to determine if she has or not.

The "text complexity band" is set too high for the average student

I think that many students (even AP ones) would struggle with reading text completely independently. There must be some guided modeling/scaffolding. I think the skills are too difficult for the average student. I think that all students can benefit from AP-like strategies without necessarily having to completely engage with such rigorous texts.

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
45	88.24%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
6	11.76%

CCSS.ELA - LITERACY. RI 11-12.2 "provide an objective summary of the text" should be a separate skill/section

Isn't the point of a central idea that there's one?

11-12.2 Summary and analysis skills should be split

Texts need to be 75% informational and 25% literary on the secondary level.

12.2 change to: Determine central ideas.....

11th-12th Grade English Language Arts

Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	90.20%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
5	9.80%

Evaluating effectiveness in R1.11-12.5 is not a high school level task in that most of these students do not have the breadth or depth of reading experience to provide an informed opinion and there is little training available to teachers regarding how to teach this skill. Professional development needs to precede this skill. Most teachers are not well-equipped to provide this kind of instruction/guidance.

e.g. Madison...should be substituted for something from literature

Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	84.31%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
8	15.69%

Foundational U.S. documents of historical and literary significance should be required in the history classroom, not in an English Language Arts standards.

There is too much focus on these foundational U.S. documents at every age. There aren't enough of them of significance to be doing them every year. How many times can we read The Declaration of Independence?

Again, I would like to see British works included.

Again with the focus on America. It is far to easy to spend the last two years of high school (i.e. right before the students go to college) only studying American authors, leading to a flawed belief that America is equal in importance to the rest of the world.

R1.11-12.9 Seventeenth and eighteenth century vocabulary, syntax, and thought is very difficult for high school students to follow and many English teachers are not well-equipped to teach the political ramifications. These would be better addressed in government classes.

RI.11-12.9 is basically sound, but the recommended texts are used in lower grade English courses, U.S. History, Civics, and U.S. Government courses.

Same as Reading Literature (see above)

11th-12th Grade English Language Arts

Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
42	82.35%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
9	17.65%

Any text examples?

Again "read and comprehend literary nonfiction" is not a measurable objective.

The "text complexity band" is set too high for the average student

Again, I do not believe that all students (even AP ones) need to read texts completely independently.

I teach content with the opportunity for student mastery. With that in mind, throughout the limited time I have with my students, I choose quality over quantity, and, assuming a student chooses to learn, he or she will; however, I have very little control over whether any of my sixteen to eighteen-year-old adolescents (sometimes nineteen) actually takes advantage of the opportunity. Yes, in an ideal world, all of our students will leave our classrooms reading at grade level. The truth is, much to my disheartenment, they all will not. If this standard were a goal, it is absolutely for what we teachers should be guiding our students to aim; if it is a standard by which we educators are evaluated, it is an inequitable expectation.

Both grades 11 and 12 range of reading will require strategies for students to scaffold knowledge as necessary for their abilities.

Same as Reading Literature (see above)

Text Types and Purposes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	90.20%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
5	9.80%

In general I think that these standards as written address the needs of our most academically inclined students, but do not take into account the reality that many students will simply be incapable of performing at this level. An important question is what do we do about the students who can't or won't?

11th-12th Grade English Language Arts

If the idea is to get students college and career ready, why is there equal focus given to narrative writing? I love the idea of narratives in the younger grades, but seniors should be writing academic papers. I've had many jobs before I became a teacher, and I had to write argumentative papers; I've had to write expository papers. I have never had a boss tell me that I needed to write a story. In college, the only narrative writing I did was in my creative writing classes. Also, breaking down the parts of the writing may be beneficial to some, but it also takes away from the fluidity and wholeness of a piece of writing. Couldn't the standard just be "Write to support a claim, with introduction, full development of ideas, including counterclaims, appropriate diction, syntax, and style, and an effective conclusion"? Do we need all the verbage here?

The standards need to be condensed on the 11-12 level.

These writing standards might be the strongest and most post-secondary applicable standards in the whole lot.

I feel that these standards are too narrow. At the 11-12 level, formal writing assignments require most of these things. I believe these could condensed.

Production and Distribution of Writing

I have read the above standards and think they are appropriate as written.

Number	Percent
50	98.04%

I have read the above standards and think they are not appropriate as written.

Number	Percent
1	1.96%

These are fine. Different writing for different purposes, and drafts. I'm indifferent to the technology one.

Research to Build and Present Knowledge

I have read the above standards and think they are appropriate as written.

Number	Percent
44	86.27%

I have read the above standards and think they are not appropriate as written.

Number	Percent
7	13.73%

11.12.9B requirements of reasoning in seminal U.S.texts including the application of constitutional principles and use of legal reasoning is not appropriate for an ELA class; this should be taught in the history classroom.

Same comment about the American foundational works. Some of this should be put in the Social studies classrooms.

These standards need to be condensed.

W.11-12.9B This goes far beyond the scope of an English writing and lit class.

11th-12th Grade English Language Arts

W.11-12.9B is basically sound in intent, but it tends to split the same standard and use the same texts with U.S. History, which is also taught at this level. Currently, these documents are taught in ELA courses for rhetorical effectiveness and in History for content. They belong in U.S. History for both.

8 and 9 are too similar

Range of Writing	
I have read the above standards and think they are appropriate as written.	
Number	Percent
47	92.16%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
4	7.84%

I do not like this standard because it does not feel like it fits until the end of the school year. I feel that if a teacher is meeting the other standards, that this one is implicit.

Comprehension and Collaboration	
I have read the above standards and think they are appropriate as written.	
Number	Percent
45	88.24%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
6	11.76%

These standards are hard to quantifiably measure.

SL 11-12.3 Once again this type of evaluation assumes experiences that students have not had. This skill belongs in an oral communications class more than in an English class.

Excellent standards - the centerpiece of many a strong Socratic Seminar.

Too repetitive.

Presentation of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
48	94.12%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
3	5.88%

11th-12th Grade English Language Arts

I'm officially tired of reviewing these standards. I have to know them for my job, but there are just too many of them. It would be better if the standards were more focused on what students actually need, and teachers can actually teach and measure. I've counted 76 standards on this page. And that's not counting the fact that some of those standards have more than one part to them. My contract is for 180 days. Some of those days are PD; some are lost to events and testing. So, I have roughly an average of 2 days per standard. I may be able to teach students to use a hyphen in two days, but I can't teach them to find and analyze two themes in a work of literature in two days. Which means, with all of these standards, something's going to give.

All standards in Presentation of Knowledge and Ideas are more appropriate to an Oral Communications class; given the number of reading and writing skills that English teachers are called upon to teach and assess, oral communications/public speaking/rhetorical skills should not be emphasized in English classes.

Conventions of Standard English

I have read the above standards and think they are appropriate as written.

Number	Percent
46	90.20%

I have read the above standards and think they are not appropriate as written.

Number	Percent
5	9.80%

Why is hyphen use singled out?

"Demonstrate a command of the conventions of standard English grammar and usage" is very broad. The standards need to be much more specific because a teacher could document that she had taught this standard without teaching many of the elements of good grammar and usage.

"Apply the understanding that usage... can change over time...": It is/is not okay to end a sentence with a preposition, for example, in the case of my earlier comments, during which the Oxford English usage makes the statement sound awkward: "... it is absolutely for what we teachers should be guiding our students to aim..."

L.11-12.2A/B are not skills that need to be emphasized; word processing takes care of these matters for the most part and these should have been mastered far earlier than 11-12 grade classes.

Knowledge of Language

I have read the above standards and think they are appropriate as written.

Number	Percent
47	92.16%

I have read the above standards and think they are not appropriate as written.

Number	Percent
4	7.84%

Needs clarity.	
Vocabulary Acquisition and Use	
I have read the above standards and think they are appropriate as written.	
Number	Percent
49	96.08%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
2	3.92%

Literacy in Science/Technical Subjects – Grades 6-8

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
These standards compliment the AR standards for science. All demonstrate skills our students need in college or the workplace. Why do you have to show the multi step procedure again a little too much for a sixth grader	
Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
These standards compliment the AR standards for science. All demonstrate skills our students need in college or the workplace. I do not agree or disagree. That was not one of my choices	
Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
These standards compliment the AR standards for science. All demonstrate skills our students need in college or the workplace. These Ideas are already a part of the Science Classroom	
Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
7	87.50%
I have read the above standards and think they are not appropriate as written.	

Literacy in Science/Technical Subjects – Grades 6-8

Number	Percent
1	12.50%
These standards compliment the AR standards for science. All demonstrate skills our students need in college or the workplace. I think the children are expected to know too much especially for sixth grade maybe in ninth or tenth grade	

Literacy in Science/Technical Subjects – Grades 9-10

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
3	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
3	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
3	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
2	66.67%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
1	33.33%
It is not the standard I have issue with. The problem lies in the new lexile bands required.	

Literacy in Science/Technical Subjects – Grades 11-12

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
3	75.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
1	25.00%
The standard is fine. The new lexile bands are problematic.	

Literacy in History/Social Studies – Grades 6-8

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
9	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
9	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
9	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	88.89%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
1	11.11%
This is a very difficult standard to obtain with fidelity. Even though the teacher works to achieve this with their students, all students will not be able to achieve this standard because of other difficulties (Physical, academic, etc.). Social Studies classes do not experience pull-out for special ed students, so this makes it a difficult standard to attain across the board.	

Literacy in History/Social Studies – Grades 9-10

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%

Literacy in History/Social Studies – Grades 11-12

Key Ideas and Details	
I have read the above standards and think they are appropriate as written.	
Number	Percent
11	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Craft and Structure	
I have read the above standards and think they are appropriate as written.	
Number	Percent
11	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Integration of Knowledge and Ideas	
I have read the above standards and think they are appropriate as written.	
Number	Percent
11	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Range of Reading and Level of Text Complexity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
11	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%

Writing in History/Social Studies, Science, & Technical Subjects Grades 6-8

Text Types and Purposes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
I do a lot of writing with my students, and have incorporated these standards previously in social studies as well as in science. Last year was the first year I had students who had a great foundation in common core literacy. They did an outstanding job of arguing the merits of claims and substantiating with evidence. For my students, Common Core literacy has been great!!	
Production and Distribution of Writing	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
Again, I have used these extensively over the past couple of years and am very pleased with the progress of my students. They are much stronger in their writing skills!	
Research to Build and Present Knowledge	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
I did project based social studies last year along with teaching science classes. These standards fit this type of teaching very well.	
Range of Writing	
I have read the above standards and think they are appropriate as written.	
Number	Percent
8	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%
To me, this is a common sense way of incorporating writing. Most of the teachers in my building use interactive notebooks. This is ideal for that.	

Writing in History/Social Studies, Science, & Technical Subjects Grades 6-8

Writing in History/Social Studies, Science, & Technical Subjects Grades 11-12

Text Types and Purposes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
4	57.14%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
3	42.86%

The standards express an ideal goal for high achievers, but in language more suited to a postgraduate audience. (I do hold a postgraduate degree.) Will h. s. students be able to translate this lofty language into their own, and then synthesize new material to meet the goals? And are the teachers ready to facilitate such translations without devolving into pedantic dryness? Could we see the curriculum materials BEFORE adopting the standards? Please allow time for field-tested curriculum development before dumping another round of confusion directly into the classroom. We will see major regression and fatal institutional instability if we continue revise, mandate, and enforce untested standards of assessment & evaluation on students & their teachers, we will reap the whirlwind. Public education is a tax-funded fact of life. Unless the (unspoken) goal--and this would NOT be the goal of the taxpaying public--is to kill or co-opt the common good, then please develop something more than half-baked before buying it (at inflated prices) on behalf of the people who pay your freight.

Students are not ready for this. - maybe after a few years in the lower grades to build them up.

I very much like these standards because students do not understand that writing well is extremely important in the History field.

WHST.11-12.D Should be rewritten. Precise language and domain specific vocabulary are integral, but the use of metaphor, simile, and analogy in historical research writing does not "convey a knowledgeable stance in a style that responds to the discipline" of historical research and analysis at this level.

Production and Distribution of Writing	
I have read the above standards and think they are appropriate as written.	
Number	Percent
7	100.00%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
0	0.00%

Research to Build and Present Knowledge	
I have read the above standards and think they are appropriate as written.	
Number	Percent
5	71.43%
I have read the above standards and think they are not appropriate as written.	

Writing in History/Social Studies, Science, & Technical Subjects Grades 11-12

Number	Percent
2	28.57%
Excuse me. Is this author a graduate of a 12th grade curriculum that did not include a filter for RUN-ON SENTENCES!!!!!????? Students are not knowledgeable enough about digital resources, other than those in social media.	
Range of Writing	
I have read the above standards and think they are appropriate as written.	
Number	Percent
6	85.71%
I have read the above standards and think they are not appropriate as written.	
Number	Percent
1	14.29%
Too much in one sentence and too vague or ambiguous to be meaningful except to the writer. FAIL.	

Kindergarten Math

Number Names and Count Sequence	
I have read the above standards and think they are appropriate as written.	
Number	Percent
69	90.79%
I have read the above standards and offer the following comments.	
Number	Percent
7	9.21%

Introducing it is fine but don't expect it to be learned this early.

Why can't they be simply stated? Count to 100 by ones. Count to 100 by tens. Count on. Write numbers to 20.

In what time of the year is expected for the child to know this, if the child don't attend some sort of pre school before entering kindergarten, they barley know how to count to 10 let alone 100

write numbers from 0-20 with no reversals. OR write numbers from 0-20 reversals ok.

When do they have to meet those standards? The answer would determine my answer.

I like the standards, but feel some expectations are too weak (kindergarten students can do so much more than we give them credit for) and feel some expectations may be too high. The standards never mention that students must be able to identify the numerals. For example, if you flash the number 4 at a student, they ought to be able to tell you that is a 4.

I would amend K.CC.A.2 to read, "Count forward and backward..." I would also add a standard (K.CC.A.0 ?) that addresses the importance of students being able to subitize small collections, as a precursor to counting to answer the question, "how many?". (Recommendation 1 from the Educator's Practice Guide "Teaching Math to Young Children", published by the Institute of Education Sciences and available at http://whatworks.ed.gov).

Count Objects	
I have read the above standards and think they are appropriate as written.	
Number	Percent
68	89.47%
I have read the above standards and offer the following comments.	
Number	Percent
8	10.53%

Kindergarten Math

Ridiculous

K.CC.B.4.A - is very wordy..."pairing each object with one and only one number name and each number name with one and only one object"...I think that can be simply stated as "one to one matching with the corresponding number" K.CC.B.5 - why give the choice of counting as many as 20 OR as many as 10. Either the child can count it or now even if it is scattered in different ways.

WAAAAAYYYYYY too wordy for what they mean.

this is nuts, I am all about teaching a child but pushing to fast and to hard only creates problems for the child unless they have an IQ of 240

This is hard for me to follow and I have 2 undergraduate degrees.

I think grouping objects into groups of 5 or 10 should be included here. I believe that if students are able to count to 5 or 10, we should give them experiences making groups of 5 and 10 (or 2 or 3), but the standards do not mention this, so many K teachers never cover it. This is essential for later standards expecting students to skip count and for base ten understanding.

I think the word cardinality is unfamiliar and makes this more confusing than need be. It could say connects counting to actual sets of numbers.

I would recommend that the range in K.CC.B.5 be extending to at least 35 to foster the development of place value. There is much evidence within our district that Kindergarten students are able to work within and beyond this range.

Compare Numbers

I have read the above standards and think they are appropriate as written.

Number	Percent
72	94.74%

I have read the above standards and offer the following comments.

Number	Percent
4	5.26%

Introducing it is fine but don't expect it to be learned this early.

personally we didn't learn this greater then less then strategy until the 2nd or 3rd grade. Kids today have enough pressure on them with out forcing common core education on them at a young age

too difficult

I recommend extending the number range K.CC.C.7 to at least 20.

Kindergarten Math

Understand Concept of Addition and Subtraction

I have read the above standards and think they are appropriate as written.

Number	Percent
65	85.53%

I have read the above standards and offer the following comments.

Number	Percent
11	14.47%

Addition and subtraction problems shouldn't be done in kindergarten. They are 5.

Ridiculous!!! This is kindergarten!!!! This should start in 1st grade!!!

Come on adding and subtracting in kindergarten. .

I think this may be confusing to some children in the class.

Clarification for teachers that an expression or equation is NOT required for these standards.

Some teachers will never pose a problem to their students using numbers larger than 10 because of the way this standard is written. A footnote encouraging teachers to use larger numbers as students become able would be advised.

K.OA.A.2 Subtraction is a very difficult concept for young children. While we can introduce it at a young age, expecting children to fully understand is just not developmentally appropriate.

I believe that instead of the standards being "addition and subtraction" they should be separated by skill. One standard specific for addition and one for subtraction. It is very hard to assess using both skills.

Decomposing numbers is not a standard term to the general public. I understand the meaning, but this wording is awkward for parents.

I'm not sure this should be added to standard K.OA.A.4, but it would be beneficial for educators (and the public) to know this a precursor to understanding missing addend problems.

I recommend extending the number range in K.OA.A 2 to at least 35 to develop place value understanding. There is much evidence within our district that Kindergarten students are able to work within and beyond this range. For K.OA.A 5- I recommend fluency to 10

Kindergarten Math

Foundations for Place Value

I have read the above standards and think they are appropriate as written.

Number	Percent
64	84.21%

I have read the above standards and offer the following comments.

Number	Percent
12	15.79%

They are 5! No need in trying to make them "little Einstein's" in kindergarten. Equations are not necessary at all.

Ridiculous!!! This is kindergarten!!!! This should start in 1st grade!!! What happened to 8+10=18

Let kids be kids, don't make them out to be a Einstein in kindergarten..

This does not seem appropriate for kindergarten age children.

Seems hard

This has been a very difficult concept for my students. Even my first graders struggle with it.

This is a great math concept for students to work on and practice, but with some kindergarten age children, it is a hard concept to grasp because of their age.

My students are beginning to understand 1to1 it is difficult for them to fully understand that 11 is one group of 10 and 1 more. it is easy for the higher groups but students that don't have background education or experiences.

too difficult

I'm not a math teacher or a kindergarten teacher, but surely there's an easier way to communicate this to parents, in plain English.

For emphasis, I would recommend the addition of, "...(not one ten)" in the first sentence "Compose and decompose numbers ... into ten ones (not one ten) and some further ones..." The intention is for students to notice the patterns resulting from compositions and decompositions in which one group contains ten objects. It is not for them to abstractly work with ten objects as a singular unit (one ten) --- that ability is, appropriately, a first grade expectation. I would like to see the bold print to read, "Work with numbers 11-19, and beyond, to gain foundations for place value."
9/9/2015 3:26 PM View respondent's answers Categorize as... œ

I recommend the number range in K.NBT.A.1 be extended to at least 35. Repeated patterns of ten is a critical understanding to place value. In 19, only one ten is revealed and no pattern can be seen.

Kindergarten Math

Measurable Attributes

I have read the above standards and think they are appropriate as written.

Number	Percent
71	93.42%

I have read the above standards and offer the following comments.

Number	Percent
5	6.58%

If only comparing tall/short , wide/narrow. Not actual measurements (inches, feet) (pounds, kilograms).

Compare objects by size, shape, color, etc.

needs to be 2nd or 3rd grade work

We find that these are a little vague and could use more elaboration.

I recommend adding a standard for measuring objects to 12 inches using a ruler.

Classify and Count

I have read the above standards and think they are appropriate as written.

Number	Percent
71	93.42%

I have read the above standards and offer the following comments.

Number	Percent
5	6.58%

Sort objects into groups by properties

first grade work

Without reading the progressions, this standard is not clear to most teachers. I have had to provide lots of examples. It would be best to separate into two standards. First, classify into categories. Second, sort categories by count.

I think this is confusing as written.

It would be helpful to have an example here just to make it clear to all. E.g. you have apples and oranges and sort them into groups and tell how many of each there are.

Kindergarten Math

Identify and Describe Shapes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
71	93.42%
I have read the above standards and offer the following comments.	
Number	Percent
5	6.58%

Terms should include: "on top of, under" should be allowed, therefore, it should state "terms such as, but not limited to...."

Clarification of required shapes to name

CCSS K.G.A.3 is a challenging one for younger students. They understand 2D but 3D is more challenging.

Which shapes should be specified. Do they need to know a dodecagon for example. It should say correctly name the following shapes: square, circle, rectangle, triangle, and oval, if those are the shapes they expect them to know.

I wish K.G.2 specifically stated which shapes should be taught and the proper name for each shape ex: RHOMBUS not diamond.

Analyze and Create Shapes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
70	92.11%
I have read the above standards and offer the following comments.	
Number	Percent
6	7.89%

First grade work

K.G.B.5 - unnecessary standard

Be more specific on exactly what vocabulary students must have mastered and that teachers should assess.

As mentioned above, which 3d shapes should be taught in K.G.4

KG.B.4 does not seem age appropriate to me.

I would like to see an additional example for K.G.B.6 that opens the context to include the composition of two-dimensional shapes to create nets for three-dimensional shapes (and vice-versa), maybe something like, "Can you create a jacket (skin, etc.) that completely covers this box --- top, bottom and all sides?" or "Draw a picture of what you think this box might look like if we cut it open and laid it flat."

Kindergarten Math

1st Grade Math

Addition and Subtraction	
I have read the above standards and think they are appropriate as written.	
Number	Percent
71	86.59%
I have read the above standards and offer the following comments.	
Number	Percent
11	13.41%

It sounds like first graders are expected to solve for x which is algebra.

I wonder how many first graders are actually able to understand what is being asked in the above problems. As an adult who has a college degree, I'm even a bit confused. The questions and verbiage used is lengthy, confusing and unnecessary to teach students how to solve math problems.

There is no way that a first grader can understand these instructions. I don't understand them and I have worked in accounting and management.

The breakdown process that common core teaches is too drawn out. Steps are advised that are unnecessary and cause confusion.

I agree with your standards. The point I want to make is this. Kids dont learn at the same rate. Some are slower, some are faster at picking up the process. The slower ones need to be identified and be offered help, not discipline. The exceptionally faster kids also need to be identified and be offered help too. Not with the subject matter specifically, but with helping them to achieve at that faster rate to accelerate their learning and also for adapting and adjusting with other kids in school. Some kids are gifted and they get persecuted for it. Another point I wish to make is this. Math is not enforced enough. Whether or not they graduate, math is universal. They will need to know math NO MATTER WHAT they do in life. From a ditch digger to an astronaut...they HAVE and MUST know math no matter what.

adding to and taking away from with beginning unknown add to unknown take away unknown

The language is too much and too confusing. Needs to be worded differently.

This is a fine standard halfway through the year. It is not developmentally appropriate at the beginning of the year.

I don't think you need to e.g. It is just confusing and doesn't really fit. Take it out completely and it reads better. I also think it should say or, "by using objects, drawing, or equations" If the kid doesn't need to draw a picture to figure it out, then don't slow them down and make it art class by requiring it. Teach techniques and push them toward efficiency.

Readers/users need to recognize that 1.OA.A.1 is expanded in 1.NBT.C.4-6 to addition and subtraction within 100.

1st Grade Math

I recommend extending 1.0A.A.1 to at least 60 so various number patterns and place value strategies can be revealed. Also, since 2nd grade is required to solve any problem within 1000, not expecting more from first graders creates a great gap from first to second grade. I recommend additional standards requiring students to solve multiplication and division problems to 60 to deepen number sense and place value concepts. I recommend additional standards that require students to solve equal share problems resulting in halves. For example, 2 kids share one candy bar so that each gets the same amount. Research reveal young children naturally solve problems involving halves and have implicit understanding of fraction quantities. Add domain...Represent and solve problems involving multiplication and division within 35. Again, to build place value understanding.

Properties of Operations

I have read the above standards and think they are appropriate as written.

Number	Percent
72	87.80%

I have read the above standards and offer the following comments.

Number	Percent
10	12.20%

This seems to add to many confusing extra steps to get the answer. I get where they are going but its overkill. A simple number line will allow them to show their work and still get the answer.

I think the questions are too complicated for first graders. And again, it offers only one solution to solving the problems.

Again, this does not make sense.

First grade students don't have the basic math skills to understand this process. Common core drags out mathematical problems that should be simplified. I was in advanced math from 6th to 12th grade and have trouble now explaining 1st grade common core to my child.

Commutative property is well within the range for 6/7 year olds associative property ex. 2+6+4=10+2 is very difficult for this age

The first one is too wordy and confusing.

The commutative property would be good to teach halfway through the year with smaller numbers and work your way up. The way they are introducing the associative property is way too advanced in first grade.

I think knowing the names of the properties may be a little too high for first graders.
9/15/2015 10:21 AM View respondent's answers Categorize as... œ

Teaching first graders to make a ten when adding and subtracting is very difficult to teach, especially to the student who struggle in math.

1st Grade Math

This is so important. Kids who struggle with this idea will never make it in algebra.

Add and Subtract within 20

I have read the above standards and think they are appropriate as written.

Number	Percent
66	80.49%

I have read the above standards and offer the following comments.

Number	Percent
16	19.51%

1.OA.C.6- This standard just seems to turn a basic concept into a very difficult way of working out a problem.

1.OA.5 - This standard is vague and difficult to assess.

Again, the solutions to the problems are lengthy, complicated and unnecessary. Why break down the number 6 into the equation 2+4 when you can simplify the solution by using less steps? Not all children learn in the manner in which CC requires them to learn. If a child simplifies the solution, it is counted wrong because not all of the steps were shown on their work. If a child can solve the problem correctly in a different manner, they shouldn't be punished for it.

CCSS.MATH.CONTENT.1.0A.C.6 - This makes absolutely no sense at all. These are simple math FACTS that should be learned and memorized. 8+6=14 because it is a FACT and that is it. Simple as that. Get some flash cards and learn math facts!

1st Grade Math

The old way of doing math worked well, this is totally confusing and way above the comprehension of a first grader.

Common core is making a simple 2 digit math problem into a longer 3 digit math problem. We should simplify the process not make it larger. Unnecessary steps are being added.

1.OA.5 is too vague.

1.0AC.6 Just reading it makes my head hurt. That is a lot of information in one standard!

Decomposing the number ex. 13-4=13-3-1, seems to be to abstract of an idea for the majority of the students i have. Only my top students seem to get this.

1.OA.C.6 You are going to have a lot of push back on the idea of making 10 within a number sentence due to the poor Facebook articles that have been published to make this look as though it is an unnecessary skill. This is actually a very important and useful skill that helps children form the basis for strong mental math skills. Please do not take it out.

I think that this is an appropriate standard but there are too many steps that you have to take to get the answer.

See above comment.

I think these skills are important, but teachers need to not be confusing in how they teach them. The teachers need to really understand how to think like this and teach their children by example, not give them a worksheet that shows this and then confuse them more because they think they are solving two or three different problems.

This is a little difficult for most 1st grade students. If this deeper level thinking is implemented over a period of time, it may work.

Again, 1.NBT.C.4-6 extends the expectation to addition and subtraction within 100, not just 20. Fluency within 10 is certainly reasonable --- some will accomplish this in Kindergarten (given the opportunity---subitizing activities are great for developing this fluency) and many will be able to demonstrate fluency to 20. However, I don't think there's any need to push this, so I believe the standard is appropriate as written.

Recommend changing the domain heading to Demonstrating Fluency for Add and Subtract within 20.

Addition and Subtraction Equations

I have read the above standards and think they are appropriate as written.

Number	Percent
73	89.02%

I have read the above standards and offer the following comments.

1st Grade Math

Number	Percent
9	10.98%

Again, I think the questions are too lengthy and complicated.

The unknown in a number sentence is somewhat difficult for 1st grade. It's very similar to algebra and I do not think it's appropriate for all first graders.

Same as previous comment.

Again, drawing out a simple problem. We don't need to make the math problem longer to solve it, it should be simplified.

1.OAD.8 is a challenging standard for first graders.

D.7 works well as long as there are no more than 2 addends on each side

First one is great, the second one is confusing and too wordy.

I think that this is appropriate but needs to be done after students understand addition facts to 20.

I like this standard, but if you're going to italicize one "for example" italicize all "for examples"

Extend Counting Sequence

I have read the above standards and think they are appropriate as written.

Number	Percent
75	91.46%

I have read the above standards and offer the following comments.

Number	Percent
7	8.54%

Why? Why make counting to 120 so complicated and difficult for a child to answer?

The counting makes sense, but the "represent a number of objects with a written numeral" does not.

This needs to be changed. Second grade has to count to 1000. The gap between 120-1000 is too great a jump in one year. Kindergarten counts to 100 so first grade should be able to count higher than 20 past that expectation by the end of the year.

I think that this is appropriate.

1st Grade Math

I think that this is fine for the most part. However, it may be a little difficult for some first grade children to represent numbers with objects to 120. It might be better to word it to represent a number of object with base ten blocks.

I would recommend the following rewording of the first sentence: "Count forwards and backwards within 120, starting at any number less than 120."

This one really shows if students know how to count. Keep it up!

Place Value

I have read the above standards and think they are appropriate as written.

Number	Percent
77	93.90%

I have read the above standards and offer the following comments.

Number	Percent
5	6.10%

Does not make sense.

As stated it seems easy but I have a child in 1st and 2nd grade and when this is put into a common core exercise it is difficult to explain.

Need to add grouping situations (by 2, 5, 10) here to aid in base ten understanding and use of place value.

I think that this is appropriate.

The wording "based on meanings of tens and ones digits" is awkward, maybe it could say based on understanding of place value.

Place Value and Properties of Operations

I have read the above standards and think they are appropriate as written.

Number	Percent
71	86.59%

I have read the above standards and offer the following comments.

Number	Percent
11	13.41%

nbt.c.5 is a concept that may be more advanced then most 6 or 7 years are capable of. If they don't already have a good number sense foundation that includes a real understanding of base 10 concepts, they will have a hard time being able to just know what 10 more or 10 less is without having to count.

Questions are too complicated and lengthy, especially for first grade students.

1st Grade Math

45+36=81 5+6 =11, carry the one 4+3+1= 8 It's the same answer no matter how long it takes you to get it. My employer is not going to wait for me to draw out 7 sticks that represent 10's and 11 squares that represent 1's. We should teach our children the most efficient way to solve a math problem.

Way too complicated for a fist grader.

They use a large square diagram that has 1-100 with 10 numbers per line. They can jump down or up 10 numbers at a time to add or subtract and them move over for ones as needed. This helps show a sliding scale but nothing else about common core breaks down the process visually for students.

Include money somewhere - counting, understanding values, etc. Second grade has to solve word problems with money, which occurs nowhere in CCSS until then.

All three of these standards are quite "deep" for first grade minds!

NBT.C4 adding the tens and tens together work well adding ones together works well until you have to add more than 10, only my higher students understand that concept NBT.C.6: the last standard "relate the strategy to a written method and explain reasoning" gives them trouble.

Way too wordy

The CCSS 1.NBT.C.4 contains a lot of words and is very confusing. Through simplifying the wording of this standard, an educator will have a better understanding of what content needs to be taught. An example showing the content listed in this standard would also help with an educators comprehension of the standard and help drive more explicit instruction.

I think that 2 digit addition needs to be taught towards the end of first grade.

Length Units

I have read the above standards and think they are appropriate as written.

Number	Percent
76	92.68%

I have read the above standards and offer the following comments.

Number	Percent
6	7.32%

The questions need to be simplified and clearer to understand. It shouldn't take an essay to ask "Measure the objects, which one is larger; which one is smaller..." etc.

1st Grade Math

Let's just begin teaching units of measurement. Instead of saying a marker is 2 crayons tall, why not give the student a marker and a ruler and begin learning actual units of measurements.

same as above

They need to be able to grasp the concept of long, short, and be able to tell which is shortest and longest.

I would say repeating instead of iterating. That will confuse most parents and teachers. Where it says order three objects by length... using a third object I would give an example of the object, i.e. blocks, a ruler, etc.

I recommend adding a standard the requires students to measure length with a ruler and yardstick.

Time

I have read the above standards and think they are appropriate as written.

Number	Percent
78	93.98%

I have read the above standards and offer the following comments.

Number	Percent
5	6.02%

Too lengthy, too complicated and confusing.

too complicated for a first grader

Specify the type of graphs that are to be used to display this data, would help an educator with instruction.

I think what kinds of ways of representing data should be specified. Do they need to know pie graphs, bar graphs, tally marks, point plotted graphs or all of these or something else as well? Parents and teachers need direction.

I like that there is no specification as to how the data should be displayed. This allows students to create displays that make sense to them, to discover the advantages and disadvantages of various displays, and to determine for themselves the importance of organization, labels, titles, etc.

It's so cool that they deal with data this young! Future engineers and computer programmers!

Recommend first standard to involve conducting a survey and representing the results numerically in some way. OR modify the current standard to include "conducting a survey". Conceptual understanding for data is a result of gathering information through a survey question.

1st Grade Math

Reason with Shapes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
74	89.16%
I have read the above standards and offer the following comments.	
Number	Percent
9	10.84%

First grade students should not be required to use the terms: fourth of and quarter of. It's too confusing!

I think the choice of words need to be simplified so that first graders can understand what is being asked. Many of the words used in the questions aren't in their vocabulary yet.

too complicated for a first grader

This is geometry. Common core wants to teach 1st graders geometry.

Too vague. Each grade should know which shapes they are to teach to their students.

All are way too confusing, worded wrong & too long

Third graders have a hard enough time learning fractions, let alone first grade. May be a little high for their level.

For 1.G.A.2 I would like to see a statement or example provided that clarified the expectation to include compositions of two-dimensional shapes from three-dimensional shapes, and vice-versa. Activities could include conjecturing about and creating nets, footprints, and shadows for various three-dimensional shapes.

To compose is not doable for most first graders.

2nd Grade Math

Solve Problems with Addition and Subtraction	
I have read the above standards and think they are appropriate as written.	
Number	Percent
59	80.82%
I have read the above standards and offer the following comments.	
Number	Percent
14	19.18%

2.OA.A.1 Two-step problems are a challenge. Please limit the story types for these problems.

Equations with symbols in unknown position is too abstract and diificult for grades k-4. This is not algebra class.

It is too complicated for children this age to understand.

After they learn to use drawings no one will transfer that knowledge to using numbers and trading to complete problems. They have to figure it out by themselves

Go back to the way we learned math. No need for the extra steps and boxes!!

I am tired of my child drawing hash marks, boxes, shapes,etc. 4 math problems should not take 30min- an hour. She does not know her math addition or subtraction facts. Neither do her peers.

Examples of word problems, especially two-step problems, should be given.

If by "drawings" you mean rows and rows of stupid rectangles then no, stupid concept.

This is confusing to small children. My child is struggling in this

Students are struggling with the terminology used in the standards

This need to be introduced but not mastered.

Doesn't make any sense

I think students will shut down and become frustrated with all the steps.

Word problems MUST make sense in context. I understand that this is a curriculum issue rather than a standards issue, per se, but word problems are NOT, NOT, NOT value added when they don't make sense in context.

2nd Grade Math

Add and Subtract within 20

I have read the above standards and think they are appropriate as written.

Number	Percent
64	87.67%

I have read the above standards and offer the following comments.

Number	Percent
9	12.33%

Within 20 is not very rigorous. Though I realize uping it to 100 is not an option.

The problem I have with this is my daughter has frequently been marked down because she could not fluently show all mental strategies taught. I thought the purpose was for her to chose a strategy that worked best for her, but instead she has become more confused and doubts herself as to which strategy is the "right" one. This way of teaching does not work well for very literal children and she is still struggling to master these facts in fourth grade. Too many options were given and there was never enough time to truly master one strategy before learning yet another strategy. Throw in all the time spent on standardized testing and there is very little time just doing basic math drills.

Same as above.

The teachers have been told not to teach using flash cards so many kids don't learn these math facts.

Subtraction is never mastered in 2nd grade. These 2nd graders could understand multiplication better than subtraction.

See comment above

Stupid, what are "mental strategies"? Why would they need to know sums from memory if they know how to stack normal, whole numbers then add or subtract?

Most children do not know from memory how to add digits in there head from memory. If they write down anything it is marked wrong because it should be ftom memory and this is unfair to children who struggle

Don't understand

Foundations for Multiplication

I have read the above standards and think they are appropriate as written.

Number	Percent
63	86.30%

I have read the above standards and offer the following comments.

Number	Percent
10	13.70%

Up to 50 or 100 would be more rigorous.

2nd Grade Math

Too much too soon!!!!!!

This was never done in 2nd grade but is now in 3rd grade

Have they even learned to add large sums yet??

Stupid, why aren't they just learning simple odd even numbers. Why do they need rectangular arrays? Why don't they just stack normal number then add or subtract them?

Second grade students struggle with multiplication

I don't understand the directions on these problems

just if you would please add s hort examples like you did for the others.

This part of the standard, '...write an equation to express an even number as a sum of two equal addend," is developmentally inappropriate for many second grade students who most often are very concrete thinkers and problem solvers.

I think there is an easier way to say this, but the standard itself is acceptable.

Place Value

I have read the above standards and think they are appropriate as written.

Number	Percent
63	86.30%

I have read the above standards and offer the following comments.

Number	Percent
10	13.70%

This is good. So why are we stopping at adding/subtracting at within 20?

Although the emphasis in 2.NBT.A.1.A-B is on the understanding of 100 as ten tens (as opposed to previous understandings of 100 as 100 ones), students should also understand the three digits of a three-digit number as representing amounts involving a variety of units (groupings). For example, 706 also equals 70 tens and 6 ones (and in later years, 70.6 tens, 7.06 hundreds, and 0.706 thousands, just to name a few).

Too much too soon!!!!!!

Place value is only initially explained to children in the small values. All other place value must be understood by them as a multiple of 10 which they don't know how to do.

2nd Grade Math

Again the idea of learning the standard is great but they aren't fluent in the application of it.

I guess but judging by my daughter's homework, we are again back to meaningless rows of boxes. If they can add or subtract digits 0-9 and compare their values this is irrelevant.

This is confusing

I do not understand the directions

These standards are appropriate as written. However first grade needs to count higher than 120 for 2nd grade to be ready for these understandings.

"Read and write numbers to 1000 using base-ten numeral, number names, and expanded form." This standards also is developmentally inappropriate for many second grade students as number names use hyphens, are composed of compound words, and spelling patterns that are not familiar to most second grade students.

Place Value and Properties of Operations

I have read the above standards and think they are appropriate as written.

Number	Percent
52	71.23%

I have read the above standards and offer the following comments.

Number	Percent
21	28.77%

Yes. But the first few questions of this survey reference up to 20?

2.NBT.B.5 I strongly agree with computation at this level being based on place value, properties of operations, and/or the relationship between addition and subtraction.

Comment on 2.NBT.B.7: Finding sums and difference, by adding or subtracting hundreds and hundreds, tens and tens, ones and ones is just one strategy, and is often not the most efficient one. Nor is it one that taps into the desired fluencies with numbers and operations. For example, students who can fluently add and subtract within 100 (2.NBT.B.5) and who recognize 241 - 196 as finding the difference (as opposed to 'take-away') should quickly recognize 196 is just 4 from 200 and 241 is just 41 more than 200 so 241-196 = 4 + 41 = 45.

2.NBT.6 - This standard is too difficult for second grade. It needs to be lowered to 3 two-digit numbers. 2.NBT.9 - This is redundant and embedded in many other standards. It is not necessary by itself.

2nd Grade Math

Again, my daughter had to master four strategies to add tens numbers. Number jumping on a line, 100 charts, adding ones and tens separately, and the standard algorithm. There was very little time dedicated to each strategy before moving on, so my daughter was left with very weak skills. Pleas spend more time on each skill instead of trying to teach every way possible to master these facts.

Too much too soon!!!!!

Not strong enough on math facts to do this without drawing 1000 circles. Too many ways to make mistakes

Once again, I believe subtraction is an issue for 2nd graders, but I don't know what the answer really is. Maybe master subtraction in 3rd grade and master multiplication in 2nd grade.

I feel like they are missing basic components of math to complete this standard.

Why does the above have to be as confusing as their homework? Why can't you give examples of what you are talking about instead of endless, verbose blah, blah, blah. It's how the kids feel as well.

This is confusing as a parent. So my child in return is confused

Children can barely explain how they added 2 rows of 2 digit numbers, at a second grade level. Telling them they have to explain strategies and 'properties of operation' is ridiculous!

Adding more than three-digit numbers confuses most second grade students

Up to 1000 is a little to excessive for a second grader mentally. They are not developmentally ready to make that happen nor are they ready to mentally add up to 100. This has to be developmentally appropriate, again when we push our kids to fast when they are not ready or developmentally ready then they will not continue with school in the future or go on to college because the begin to bate school because we are pushing them so fast.

Clarification of use of models for understanding.

I did not understand the directions

2NBT.B. 9 is too vague. Adding 4 two numbers too hard.

I feel that it is important that the children understand place value as it relates to addition and subtraction. I also realize that there are many strategies that children can use to figure out an addition or subtraction problem. However, I feel that not teaching the traditional algorithm from the beginning is taking away one strategy that the children can use. As a teacher, I see students that will only use pictures to figure out addition and subtraction problems. When using big numbers, this is very hard. No matter what I do, these students do not want to move

beyond that strategy. Parents also don't know how to help their children beyond the traditional algorithm and will either insist they do it that way or won't help them at all and that is not what we want. This is the main problem I have with The CCSS math curriculum.

2.NBT.B9 Students need to be able to explain their thinking using a variety of tools not just written words

Lots of vocabulary that has to be taught for understanding.

Just one mother's opinion, but I think these "strategies" have limited value at this age. They over complicate an already challenging subject. I have a college degree and master's level classes and sometimes can't figure out my child's homework. I can answer the question, certainly, just not using the inane, use-25-steps-to-do-what-could-be-done-in-2-steps "strategies".

Measure and Estimate Lengths

I have read the above standards and think they are appropriate as written.

Number	Percent
65	89.04%

I have read the above standards and offer the following comments.

Number	Percent
8	10.96%

Students this age group are just learning to add and subtract. This is too much too soon.

#2 does not make sense.

I did not understand the directions

2.MD.2 - inappropriate to have students measure in two different units. In first grade they used non-standard measurement, so to move to measuring with two different units and comparing them is not appropriate.

These should include work with tiling and iteration. The work of Richard Lehrer would be a helpful resource to consider.

The CCSS content standard 2.MD.A.2 contains confusing wording. For example, "Using length units of different lengths for the two measurements" the wording should be simplified and have an example present to assist an educator in implementing this standard.

The 2.MDA.4 standard needs to be deleted from 2nd grade standards.

I think this standard is fine for an end of the year goal. However, students come into 2nd grade and have to do a LOT with nonstandard measurement before they are really ready for this actual standard. I feel like there are a lot of underlying things that have to be done to meet this standard that a new teacher would not be aware of.

2nd Grade Math

Relate Addition and Subtraction to Length	
I have read the above standards and think they are appropriate as written.	
Number	Percent
64	87.67%
I have read the above standards and offer the following comments.	
Number	Percent
9	12.33%

These are 2nd grade students. Kids in the 7 and 8 age group. This is ridiculous to try and get them to understand.

They can't do addition and subtraction without drawings.

please give an example of #6

Confusing

I barely understand what this one is talking about. How do we expect a second grader to??

Those students who are struggling readers have difficulty with word problems

This again is not developmentally appropriate. We can begin to introduce this skill, however, it does not need to be mastered.

I did not understand the directions

Again, lots of vocabulary that has to be understood.

Time and Money	
I have read the above standards and think they are appropriate as written.	
Number	Percent
64	87.67%
I have read the above standards and offer the following comments.	
Number	Percent
9	12.33%

24 hour time needs to be included. Not to teach military time so speak but to show there are 24 hours in time and also to show the difference in for example 10+4=14 but in time 10+4 equals 2pm not 14.

2.MD.C.8 Please provide clarification on the word problems. (Making change?)

See previous comments

2nd Grade Math

I did not understand the directions

I think the standard "Work with time and money" needs to have a specific standard that addresses teaching the value of each coin. Many teachers read standard 2.MD.C.8 as only adding with money, not teaching coin values.

Money problems are absolutely inappropriate for second grade because they have not been introduced to money previously.

I agree with both of these standards as written. However, I do think that a measurement standard in first grade needs to address money as far as students should be able to identify coins and their values.

Students should be introduced to the names of coins and their values in earlier grades. Coming to second with no prior knowledge of money DOES NOT set them up for success with this standard. Students no longer have as much real world knowledge of money due to the proliferation of debit and credit cards. It is up to us to make sure they understand these units and names if they are to work with them in a complex word problem.

I feel that students should be exposed to money vocabulary earlier than second grade. They need to know how much each symbol is worth, because money is complex to understand and in order for them to master this standard by the end of the year, they need prior exposure.

Data

I have read the above standards and think they are appropriate as written.	
Number	Percent
64	87.67%
I have read the above standards and offer the following comments.	
Number	Percent
9	12.33%

Drop the picture graph. It is not needed to see the bar graph.

See previous comments

Did not do in 2nd grade

a line plot is not used often in real life and should not be presented in 2nd grade

Data for what?? By the way... I do not use boxes and charts on a daily basis at my job....

Confusing

I don't think you would find a lot of second grade children that understand bar graphs. What happened to simple math?!

2nd Grade Math

I did not understand the directions

Modeling and repetition needed for understanding.

Reason with Shapes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
61	83.56%
I have read the above standards and offer the following comments.	
Number	Percent
12	16.44%

2.G.A.1 Please provide clarification on the limited scope of this standard. Why is cube included with the 2-D figures?

2.g.a.3 I feel as though this grade is also ready to see the fraction form of these. Part over whole in halves, thirds, and fouths.

2.G.1 - Is the cube the only 3 dimensional shape that needs to be taught at this grade level?

See previous comments

Stop with the boxes and shapes!!

Confusing

Again, second grade children will have a very hard time understanding thirds, fourths, etc.. They are having to learn things beyond their age.

I did not understand the directions

2.G.A.2 - Clarify: what is the purpose? If this leads to area in third grade, it is not helpful to get students in the habit of partitioning shapes into random "units".

The manipulation of the shapes is too hard for them to gain accurate information.

We need more work in this grade level with nets. This resources should be written into the standard so more teachers are aware of their power in helping students develop geometric, spatial thinking.

I don't understand the purpose of the targeted skill in GA2.

3rd Grade Math

Multiplication and Division	
I have read the above standards and think they are appropriate as written.	
Number	Percent
79	89.04%
I have read the above standards and offer the following comments.	
Number	Percent
15	15.96%

The Math Standard 3.OAA.3 says by using drawings but when tested the students could not draw because the test was done on computer. Many students have to draw to show their work.

3.OA.A3 My understanding is that multiplicative comparison word problems are to be taught in fourth grade. Some districts teach multiplicative comparison word problems in third grade because it is one the chart. I agree with teaching those situations in fourth grade. Equal groups, arrays, and area seem to be a big enough challenge for third grade. Please clarify this for us.

I think having our kids draw there answer is ridiculous. What is wrong with learning multiplication tables. If I go to a bank for a loan and the loan officer starts drawing pictures I will walk out.

Seriously. There is so much wordiness. This is a math problem. All of the extra words are just confusing for anyone. Interpret?! How about "What is 5 X 7?"

300A1 Drawing pictures does not teach quick recall of basic facts. 300A3 Drawing pictures does not teach critical thinking. 300A4 If students are taught their basic number facts the unknown number won't be unknown.

Too difficult. Too abstract.

Why Are THEY Drawing AND HSVING To Interpret. Math worked 25 years ago. Do it that way. My child cries over math!

By the time children are in third grade, they should no longer rely on drawings to solve math problems. They should be learning multiplication tables which in turn leads to solving percentage problems and division problems in a more efficient way.

Let's begin by accepting & acknowledging the cold truth that children at this age operate in the concrete and are not able to process in the abstract. There is plenty of time for the word problems. Let's also accept the fact that children MUST Learn their multiplication facts before they progress to division, long division, word problems etc. This certainly did NOT happen at Benton or any other place in Arkansas from what I hear from other people. The equation 5=x/3 is completely stupid for a 3rd grader to grasp. The ADE should know that.

5x7=35. This is what they need to know. It is frustrating and time consuming to write a sentence with three or four terms in it. They are third graders. Let them memorize the multiplication table before introducing terms and word problems with diagrams.

Practicing multiplication tables the old fashioned way should be integrated into this curriculum. As the parent of a third grader, I have seen the difficulties. Multiplication should be mastered prior to learning division as this would make that process easier. I spend a lot of time working with my kids on basics. These would be better taught in school than at home.

I believe all the standards are too wordy. The examples in all of the standards are more reader friendly.

I think the wording is too hard for 8 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

The standards are student and teacher friendly.

Shares is confusing. Use group s instead.

Relationship Between Multiplication and Division

I have read the above standards and think they are appropriate as written.

Number	Percent
83	88.30%

I have read the above standards and offer the following comments.

Number	Percent
11	11.70%

The commutative property is also used as, example, 3 x 2 x 5= show ways to solve the above problem and the answer was (3 x 2) x 5.

Or, pay attention, 8 X 7= 56 Why are making more steps to find one answer?

30AB5 This is taking the long way around to teach something very simple. It's a waste of time and frustrating to students.

Too difficult.

Same as above.

This standard for the distributive property is completely developmentally inappropriate at this age and if you at the ADE are child education experts you should know this.

Frustrating

3rd Grade Math

3.OAB.5- Clarify that they should be able to apply these properties, but not necessarily name what they are. These property names should definitely be introduced and used by the teacher, but the students need experience with applying these properties before they can name them.

The distributive property part of this standard should be addressed in a higher grade.

The CCSS.MATH.CONTENT.3.OA.B.5 wording is too complex.

The standards are properly written but we would want to make sure the second grade teachers introduce multiplication for awareness.

Multiply and Divide within 100

I have read the above standards and think they are appropriate as written.

Number	Percent
84	89.36%

I have read the above standards and offer the following comments.

Number	Percent
10	10.64%

Students work on understanding the operation of addition and subtraction as well as fact strategies during Grades 1 AND 2 with knowing the addition facts by memory at the end of Grade 2. However, Grade 3 must develop an understanding of the operations of multiplication and division, develop strategies, and know all of the facts by memory in ONE year. This is a huge undertaking that forces many districts and teachers to begin drilling multiplication facts for memory before students have been given the opportunity to work through the learning progression (understand the operation, develop strategies, and then work on fluency). Many math leaders say that drilling for memory before students have been allowed to work through the learning progression will hinder those students from ever truly knowing the facts.

Clarify fluency.....does that mean automaticity or be able to use a strategy?

30AC7 Again, learning of number facts is basic and can't be successfully taught by muddying the water.

Same as above

The teachers are NOT following this standard of making children learn their multiplication tables. We did it at home luckily for us & our children. Could it be they spent too much time prepping for the litany of standardized tests instead?

It is totally appropriate to start this standard in 3rd grade. Maybe clarification of the required strategies could be included.

Frustrating

3rd Grade Math

I do not find it realistic to expect all students to know all their one-digit facts by memory by the end of third grade. I have found that the majority of my students have fluent recall for their (0-5) x (0-5) facts but still need to use a problem-solving strategy for their x6 - x9 facts. They often use those strategies quickly (fluently?) but they do not have instant recall.

great...examples

Student should memorize facts in order to move forward.

Solve Problems Involving Four Operations

I have read the above standards and think they are appropriate as written.

Number	Percent
79	89.04%

I have read the above standards and offer the following comments.

Number	Percent
15	15.96%

3.OA.D.8 needs an example

(8) The committee questions the reasonableness of this expectation at this grade level.

3.OA.D.8 Two-step problems are a struggle for many third graders. I'm not sure they are all developmentally ready for complicated two-step problems. I think the two-step problems at this level should be classified as simple (limiting use of some of the more difficult story types).

While I understand what the standard is saying, I do not have a clue why a 3rd grader needs to know anytime you multiply a number by 4 it's even. Why? How does this change what they learn?

OA.8 needs to be broken up into separate standards.

These objectives could be stated simply to the benefit of both teachers and students.

Too difficult

Same as above

Take this standard out of third grade. It is too abstract for 8-9 yer olds

You are out of your mind if you believe children in 3rd grade should be writing equations which have them solving for "x". Hammer the basics - there is plenty of time to solve all sorts of algebraic equations after the 3rd grade.

3rd Grade Math

Frustrating

OAD.9- Please keep in mind that some students may be able to recognize arithmetic patterns, but they don't have the language skills to explain them.

Mastering the use of 4 properties with 2-step word problems in 3rd grade is not developmentally appropriate.

Two step word problems using multiplication and division is difficult for most 3rd graders.

I think the wording is too hard for 8 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

Multi-Digit Arithmetic

I have read the above standards and think they are appropriate as written.

Number	Percent
84	89.36%

I have read the above standards and offer the following comments.

Number	Percent
10	10.64%

3.NBT.A.2- fluently add and subtract within 1000 and to fluently multiply is too much to be responsible for.

3.NBT.A2 I strongly agree with the emphasis of K-3 computation on place value understanding and properties of operations. I hope to see this continue. I do not want to force students to use the standard recording system for multi-digit computation. The CCSS progression in this area aligns with Arkansas' meaningful work with Cognitively Guided Instruction. As educational leaders, we must follow the research. I understand that this isn't always popular with the uninformed public or some teachers who resist change, but our goal is what is best for the students. Research has fostered improvements in medicine, technology, transportation, etc. over the past 50 to 100 years. Most people are not resistant to those changes. Why would we continue to teach the way we taught 50 to 100 years ago when research helps us know more about how students learn?

These objectives could be stated simply to the benefit of teachers and students.

Same as above

They don't need to learn multiple strategies to solve double digit multiplication.

Students have to round to the nearest 10 with a three digit number. Rounding should be introduced to the 10 with a 2 digit number and to the nearest 100 with a 3 digit number. To the nearest 10 with a 3 digit is too difficult since this concept was just introduced in. 3rd

3rd Grade Math

The rounding standard needs to be tied into the estimating standards.

"

There needs to be another standard in third grade to reinforce place value understanding learned in second grade.

I think there needs to be a specific standard for place value understanding added in third grade. There is a gap from second to fourth grade on this skill.

Fractions as Numbers

I have read the above standards and think they are appropriate as written.

Number	Percent
77	81.91%

I have read the above standards and offer the following comments.

Number	Percent
17	18.09%

(3.NF) The committee feels that although the expectations of the fraction standards are appropriate for 3rd grade, some of the wording needs to be simplified for teachers. Also, would it relieve some of 4th grade's fraction burden to add simple addition and subtraction of fractions (with like denominators using models) to 3rd grade's expectations?

I think this is not all developmentally appropriate. I think a longer period needs to be sent on understanding and having a full grasp of fractions before moving to higher order thinking skills on this skill.

3.NF.A.3.B I think equivalent fractions at the third grade level should be based on visual models, the number line, and expressions for whole numbers. I think equivalent fractions without those supports should be fourth grade. The way this standard is written, the visual model is only referenced as an example that might be used in an explanation. This implies that the task would not have a support model provided.

These objectives are correct but stated in a very long-winded way.

Too difficult

Same as above

Fractions on a number line for 8-9 year olds is preposterous! Research tells us that children don't think abstractly until age 10!!

Nope. Delete this as well for 3rd grade.

Visual models need to be stressed on these so our kids have a strong physical concept of fractions before going on to 4th grade.

3rd Grade Math

"

I NEVER WANT TO SEE FRACTIONS ON A NUMBER LINE

Not developmentally appropriate because not vertically aligned to 2nd grade standards.

The language in the above standards needs to be written clearer. Fractions on a number line needs to be addressed in a higher grade.

I agree with the above standards, except I feel fractions should be taught more real-life situation. I know of very few jobs where they use number lines to find fractions.

There are way too many fraction standards for this grade. At this age students are just getting comfortable with whole number operations and it has taken 3 years to get them there. It is too much for students in one grade to go from only knowing how to write a fraction in word form to finding equivalence in and comparing fractions.

The wording is somewhat simplified but it is still too complex for 8 year old's to understand.

This expectation could be difficult if mastery of basics has not yet occurred.

Measurement and Estimation

I have read the above standards and think they are appropriate as written.

Number	Percent
81	86.17%

I have read the above standards and offer the following comments.

Number	Percent
13	13.83%

3.MD.A.1- Why do they have to represent the problem on a number line? This may or may not be the most efficient way for a student to solve the problem. The student should be able to choose whatever strategy is best for them to find the answer.

The committee feels that students need a better foundation for life skills such as counting money and telling time. Although telling time is specified in grades 1 and 2, could basic elapsed time be added to 2nd grade? The tasks of identifying coins, values, and counting money needs to be more precise and start before 2nd grade.

3.MD.A.1 would like to see elapsed time moved above the third grade level. This is so difficult for most students at this level. Teaching elapsed time requires a great amount of time for a concept that is not an emphasis for the grade level and many children are not developmentally ready to learn. If the decision is made to include elapsed time, please limit the duration to no more than an hour. 3.MD.A.2 I like that these word problems are limited to one-step problems.

3rd Grade Math

Same as above

They do not need to use drawings for this.

What? 3rd Grade? You must be kidding.

I would like to see the rounding standard- 3.NBT.a.1 tied to these estimating standards so kids have real world situations for rounding.

"

THIS WAS NEVER TAUGHT IN 3RD GRADE IF IT WERE TO BE THEN GREAT

3.MD.A.1 - Clarify a time range for intervals of time for the word problems. PARCC focused only on intervals no longer than 60 minutes. Is/should there be specific guidelines? 3.MD.A.2 - Measuring and estimating needs to be a separate standard from solving word problems. To solve the word problems does not require any actual measuring.

Does 3.MD.A.2 mean that they are doing conversions? If so, I think it should say that.

The elapsed time part of the objective in 3.MD.1 needs to be kept to smaller intervals. The number line doesn't need to be included.

In standard 3.MD.A.1, I would like clarification about "word problems involving addition and subtraction of time intervals in minutes". I have seen this interpreted to mean ANY time intervals, including across hours, i.e., elapsed time from 11:45 to 12:05. I have also seen this interpreted to mean only minutes within an hour, i.e., elapsed time from 11:45 to 11:57.

Data	
I have read the above standards and think they are appropriate as written.	
Number	Percent
85	90.43%
I have read the above standards and offer the following comments.	
Number	Percent
9	9.57%

Same as above

A ruler will suffice. They don't need to use line plots to learn this skill

No way. Not 3rd grade.

3rd Grade Math

"

3.MD.B.4 - This standard is very difficult for third graders. They have very small fraction understanding, so to measure by fractional lengths is difficult. Also, some students understand making a line plot, but they cannot measure correctly. If this standard stays intact, it could be separated into subparts - a, b.

Two step word problems are not developmentally appropriate with this standard.

3.MD.4 The horizontal scale only needs to be in whole and half numbers for third grade.

Do not measure fourth

Put more emphasize in this area.

Geometric Measurement

I have read the above standards and think they are appropriate as written.

Number	Percent
82	87.23%

I have read the above standards and offer the following comments.

Number	Percent
12	12.77%

3.MD.C7.D Decomposing this is too much.

3.MD.C.7.D If you include finding the area of rectilinear figures, please provide clarification on the difficulty level and provide examples. I have seen tasks that are a challenge but within reach for third graders. However, I have seen tasks that are a challenge for most adults.

MDC.7.D is confusing and sounds very similar to 7.C

Too difficult

Same as above

Tiling is not necessary to know which shape is bigger. Measuring is more than adequate now and in the work world.

Md.c.7.c and d are not developmentally appropriate for 3rd graders

NONE of this is appropriate at their age. Please....give me a break. See above comments about concrete vs. abstract. I would go so far as to say that many elementary math teachers would have to read these many times before they understood what it was asking.

3rd Grade Math

The area standards need to be tied in with the multiplication standards so kids have real world situations for using these two strategies of multiplication.

"

3.MD.7c doesn't need to be in a higher grade.

If basics are not mastered, this is a difficult application.

Perimeter	
I have read the above standards and think they are appropriate as written.	
Number	Percent
90	95.74%
I have read the above standards and offer the following comments.	
Number	Percent
4	4.26%

Same as above

I'm not sure this can be accomplished in 3rd grade with them taking 4-6 standardized tests.

"

Seems more fitting for geometry to be placed in 4th grade.

Shapes and Their Attributes	
I have read the above standards and think they are appropriate as written.	
Number	Percent
88	93.62%
I have read the above standards and offer the following comments.	
Number	Percent
6	6.38%

3rd Grade Math

The committee feels that some attribute vocabulary accountability may need to be added at this level. If students are to categorize shapes, they may need geometric vocabulary such as parallel and perpendicular.

3.G.A.1 This has always been a hard standard to understand. To discuss the attributes and name various quadrilaterals you seem to have to understand concepts not taught until fourth grade (line segments, right angles, parallel and perpendicular lines). I don't think those concepts need to be moved to third grade. It takes all year to work on multiplication, division, area, fractions, addition, and subtraction. I agree that the Geometry piece should be small at this level. Please clarify the scope of this standard. Also, what about the definition of a trapezoid?

Same as above

I was just learning this in 10th grade. I graduated in 2003

3.G.A.1- Could be more specific. Provide the different categories

Seems more fitting for geometry to begin in 4th grade.

4th Grade Math

Operations with Whole Numbers	
I have read the above standards and think they are appropriate as written.	
Number	Percent
84	82.35%
I have read the above standards and offer the following comments.	
Number	Percent
18	17.65%

If my child understands the basics, why does she have to spend so much time explaining?

Improvements in the educational process should not make things more difficult. My son has ADHD and he can not comprehend what this is even talking about. As a 33 year old adult I myself have trouble comprehending this. I am a college graduate and learned math the old fashioned way. This way is so confusing and difficult to even understand the instructions.

These standards require students to understand math conceptually. I appreciate that it requires teachers to have students work through the concepts, not teach only algorithms. In the past students could meet the standards without comprehending what they were doing. This led to serious gaps in their learning that did not become apparent until later grades. These standards need to remain as-is. They are appropriate as written.

This is not how they're taught, it's completely ridiculous and nobody, not even the children, can understand long enough to walk away with knowledge of how this math is SUPPOSED to ve worked out. Go back to simple math, quit making it a million times harder than it needs to be. While taking a college algebra class myself, my I couldn't help my elementary children add and subtract. Utterly appalling educators would care so little about the stress children have gone through trying to comprehend this garbage and then still fail.

The way the questions are worded is confusing for a 9 year old. There are to many steps to show making math more complicated than it needs to be.

4.OAA.2 is algebra and not appropriate for fourth grade. We did not solve problems with a letter standing for the unknown quantity in fourth grade.

I think these standards are fine, but the curriculum that go along with the standards are not appropriate.

The way in which the problems can or should be solved should not be included. My child shouldn't have to draw pictures if he understands the equation.

Language usage could be more descriptive. A student and most parents would not understand the terminology.

As an educator we had to "unpack" these standards and learn what these looked like so I know parents must struggle with the language.

4th Grade Math

We've gone from a country that ruled the world with educational excellence and inventions, that taught latin in high school. Now we teach remedial math and english in college. The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Stop with the pictures. In real life no one is given the opportunity to draw a picture to figure out a simple multiplication fact that should be memorized. In 4th grade multiplication facts should be second nature. We do not draw pictures in our respective jobs or even day to day life because it is a life skill that is considered basic. It is the same way we do not count on our fingers as adults. Stop making math more complicated and abstract when children have difficulty understand abstract concepts. They need to be taught how to find a correct answer not how to diagram it (which often results in mistakes as well since drawing 63 of anything opens additional opportunities for error).

http://www.hmhco.com/shop/education-curriculum/math/saxon-math I have found that Saxon math works best for my child because it's incremental and distributive. That is, my child has time to understand, practice, and master previous concepts.

We feel the standards would be more understandable if they were written in user friendly language. They are way too wordy.

Some of these standards are too large and it could be more manageable if we were to break the standards up into smaller strands.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

4.OA.A1 I think the standard are durable. My only concern is that students do not have their multiplication facts memorized by the time they enter fourth grade. There needs to be given some reference to taking time to reinforce the basic math skills. These are the skills the students need to survive in the work field.

On 4.OA.A.2 it says to solve using drawings and equations. While I think this is totally appropriate because the drawings helps the students make sense of the equations, I wonder when we have to start holding the students accounting with simply the equation. Is this in 4th grade? Do we start out with the drawing and eventually require all students to be able to represent it with an equation or is that required in a later grade. Some students, while it's not efficient, get comfortable with drawing and will continue to use that strategy long past it's usefulness. I think some teachers struggle with this because as our Lieutenant Governor said in one of the common core committee meetings, "We don't want them drawing circles on the ACT." Well, we as teachers don't want that either, but when the standard reads as "you can use either" we need to know when we start holding them accountable for the more abstract equation. I know there is no "Today we use pictures and next Tuesday we use equations" since it's all so developmental, but a general idea of when we expect students to use the equation would be nice.

4th Grade Math

Factors and Multiples	
I have read the above standards and think they are appropriate as written.	
Number	Percent
89	87.25%
I have read the above standards and offer the following comments.	
Number	Percent
13	12.75%

Do you understand what this is even saying? I can not understand the question. How can a child understand this?

This is not how they're taught, it's completely ridiculous and nobody, not even the children, can understand long enough to walk away with knowledge of how this math is SUPPOSED to ve worked out. Go back to simple math, quit making it a million times harder than it needs to be. While taking a college algebra class myself, my I couldn't help my elementary children add and subtract. Utterly appalling educators would care so little about the stress children have gone through trying to comprehend this garbage and then still fail.

Same as above

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Same as above - Saxon math.

We feel the standards would be more understandable if they were written in user friendly language. They are way too wordy. Break them down into smaller steps ie. 1. find all factor pairs....2. determine the multiple....

Please separate into subparts.. (a,b, etc...)

This standard would be better split into two - (1) factor pairs and multiples (2) prime or composite.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

This feels a little premature. Maybe this needs to wait until 5th grade. Most students aren't fluent enough at this point to actually teach prime and composite in a meaningful way.

This standard has to many task within one standard.

4th Grade Math

Refer back to the previous comments.

I really like this standard for the most part, but I know some teachers struggle because they also want to teach the rules of divisibility with this to help students be more efficient when "determining whether a given whole number in the range 1-100 is a multiple of a given one digit number." I know sure if this is what common core had in mind, but it might need to be addressed.

Patterns

I have read the above standards and think they are appropriate as written.

Number	Percent
90	88.24%

I have read the above standards and offer the following comments.

Number	Percent
12	11.76%

Again, understanding the concept and explaining it are two different things. The explanation is simply skip counted by 3. Stop making the explanation portion more important that finding the correct answer.

Same as above - see Saxon math.

We feel the standards would be more understandable if they were written in user friendly language. They are way too wordy.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

The statement "explain informally why the numbers will continue to alternate..." is vague and should be written more explicitly.

Place Value for Multi-Digit Whole Numbers

I have read the above standards and think they are appropriate as written.

Number	Percent
87	85.29%

I have read the above standards and offer the following comments.

Number	Percent
15	14.71%

(3) The committee feels that the words "to any place" need to be changed to "greatest place." For example, is rounding to the nearest 10 in a 6-digit number a reasonable expectation at this level? "To any place" is acceptable when rounding a smaller number. Also, the committee feels the jump between 3rd grade's place value expectation (1,000) to 4th grade's (1,000,000) is too broad. Fourth grade teachers are spending a great deal of time extending this understanding.

4th Grade Math

These standards require students to understand math conceptually. I appreciate that it requires teachers to have students work through the concepts, not teach only algorithms. In the past students could meet the standards without comprehending what they were doing. This led to serious gaps in their learning that did not become apparent until later grades. These standards need to remain as-is. They are appropriate as written.

Stop. Just. Stop.

Seems to be a low level skill for 4th grade. Comparing numbers and place value of whole numbers should be mastered by this point.

This is difficult for students to understand

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

See Saxon math.

We feel the standards would be more understandable if they were written in user friendly language. They are way too wordy. The examples provided are too confusing, a more simplistic approach would be helpful for students and parents to understand.

4.NBT.1 - New example, please. This is a fifth grade skill. 4.NBT.2 - Please separate into subparts.. (a,b, etc...)

4.NBT.A.1 - The example needs to be changed to one that fits the standard more closely. The example currently listed better fits the similar 5th grade standard. 4.NBT.A.2 - This standard should be split. (1) Read and write multi-digit whole numbers... (2) Compare two multi-digit numbers...

4.NBT.A2 needs to be broken into smaller pieces.

4.nbt.2 I think the round, write, expanded form and compare need to be broken up. I have kids who can do all but expanded form but the fail the standard because they are all together. 4.nbt.1 needs more explanation.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

NBT.1 I think a comment about how far fourth grade needs to generalize by the end of the year needs to be made. Students are to generalize all the way into the millions and many teachers don't know that. I think information about how far third grade needs to take their students so that this is an obtainable goal in fourth grade needs to be added also.

4th Grade Math

Refer back to the first comment.

Multi-Digit Arithmetic	
I have read the above standards and think they are appropriate as written.	
Number	Percent
81	79.41%
I have read the above standards and offer the following comments.	
Number	Percent
21	20.59%

Too complicated. Causes major anxiety for my child.

(4) The committee feels "multi-digit" needs to be more specific (adding and subtracting to 1,000,000?). And is the student required to use the traditional recording system or is partial sums acceptable? (6) Do divisibility rules need to added here for 2, 5, and 10?

Is this really the 4th grade level?

Students must have a background in previous grades to be able to complete these tasks.

These standards require students to understand math conceptually. I appreciate that it requires teachers to have students work through the concepts, not teach only algorithms. In the past students could meet the standards without comprehending what they were doing. This led to serious gaps in their learning that did not become apparent until later grades. These standards need to remain as-is.

No

These are kids. I'm a 40 year old person who's educated and I have trouble understanding these directions. My 9 year old sure won't

4.nbt.B.5. There is too much disagreement on the standard algorithm. Some teachers say it is the tradional way that was learned years ago with carrying and borrowing. Some teachers say the student can partial sums and use place value to solve and that will count. Some say the standard algorithm does not have to used until 6th grade. The expectations here need more clarification.

Again if my student understands the standard algorithm why do they need to show it in a different way. I understand teaching in different ways to make sure each student can use what is easiest for them but to require a picture or array seems like overkill.

Standard algorithm that will be used is unclear.

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who

have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Again, stop with nonstop pictures.

See Saxon math

We like the first one. However we feel the standards would be more understandable if they were written in user friendly language. They are way too wordy.

The word fluently really needs to be defined within this scope.4.nbt.b.4

4.NBT.4 - Please separate into subparts.. (a,b, etc...) 4.NBT.5 - Please separate into subparts.. (a,b, etc...)

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

NBT.4 needs to state what a standard algorithm is because I think it confuses many teachers.

I think the kids need to be required to learn and be able to use the algorithm for long division and 2 digit x 2 digit multiplication. We taught them forgiving division and other strategies in multiplication (Bow tie method) as alternatives to the algorithm the first year of common core but when they got to middle school they had to know the algorithm which some didn't know.

4.NBT.B4,5,6 We need to concentrate on the basic skills. Then go to higher levels of thinking skills.

I think it has been a VERY WISE move to not require mastery of the standard algorithm until the 4th grade. I think this gives students more time to learn and learn IN DEPTH about what addition and subtraction is. It isn't a series of steps to be followed but an understanding of the nature of numbers. However, a change that I think is NECESSARY is to highlight that this is the first time teachers should require mastery of it. I see teachers in second and third see the word "algorithm" in their frameworks and the only algorithm they know is the standard algorithm. They don't understand all the invented algorithms that children use. Therefore teachers are teaching the standard algorithm in second and third because because they see the word "algorithm" in their standards, not realizing that common core doesn't mean the STANDARD algorithm. This misconceptions must be addressed, but the fact that the standard algorithm isn't until 4th was an excellent move.

Fraction Equivalence and Ordering

I have read the above standards and think they are appropriate as written.

Number	Percent
84	82.35%

I have read the above standards and offer the following comments.

4th Grade Math

Number	Percent
18	17.65%

The committee feels like to overall terminology of the fraction standards is too difficult to interpret. (2) The committee feels 4th grade students are unprepared at this level to "create" common denominators and numerators and should be limited to common denominators at this stage.

See above comment. Our youth is struggling tremendously with this. I say sabotage.

Clarifying statements would be great to include in these standards.

These standards require students to understand math conceptually. I appreciate that it requires teachers to have students work through the concepts, not teach only algorithms. In the past students could meet the standards without comprehending what they were doing. This led to serious gaps in their learning that did not become apparent until later grades. These standards need to remain as-is. They are appropriate as written.

No

This could be explained so much simpler. These questions just make things more confusing for kids.

I feel like this skill is appropriate with visual models but having to multiply denominators to make comparisons is a bit advanced for children that have just mastered multiplication.

Seems better suited for 5 th or 6 th grade.

Very confusing terms.

Same comment

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Clarify visual models

See Saxon math

Parents often comment they find this confusing and do not understand what is being asked. Thus, students are not receiving the help they need from home.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

The standards for fractions need to define those in which grade four students are responsible. (E.g. Fourths, eighths, twelfths)

I think this standard is too hard for 4th grade to be required to master. Some of the kids can get it but developmentally some are just not ready for this type of advanced fraction problem.

Again, I LOVE that we are focusing on the visual models. I think this is AWESOME for students, but teachers struggle with teaching this. Perhaps some visual examples in the standards should be included, like we had in the old Arkansas frameworks.

Fractions from Unit Fractions

I have read the above standards and think they are appropriate as written.

Number	Percent
87	85.29%

I have read the above standards and offer the following comments.

Number	Percent
15	14.71%

Too complicated.

(3c) The committee feels these problems should be limited to no regrouping required. (4c) The committee feels that repeated addition should be added as an acceptable strategy to this standard.

Common Core should make things easier to understand for everyone. This will hurt our country in the future. Those that passed this new process are either paid off easily or are in on the conspiracy themselves.

In order to meet this standard CGI and ECM needs to be provided by districts so that there are not gaps in the present math curriculum. Both of these programs are outstanding and provide problem solving strategies and allow students to realize that it is NOT all about procedures. It provides the understanding which is often the missing link.

These standards require students to understand math conceptually. I appreciate that it requires teachers to have students work through the concepts, not teach only algorithms. In the past students could meet the standards without comprehending what they were doing. This led to serious gaps in their learning that did not become apparent until later grades. These standards need to remain as-is. They are appropriate as written.

4th Grade Math

Come on.

Once again, just seems very confusing. Way to many steps. Over complicated.

If you are not a "math person" these take a lot to figure out and must be related to an example

Mixed numbers are too hard for 4th graders.

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Clarify visual models.

See Saxon math

We feel the standards would be more understandable if they were written in user friendly language. They are way too wordy.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

I feel that these standards are not developmentally appropriate for 4th graders. The students really struggle with these standards and become frustrated.

Decimal Notation for Fractions

I have read the above standards and think they are appropriate as written.

Number	Percent
86	84.31%

I have read the above standards and offer the following comments.

Number	Percent
16	15.69%

Our teachers are having a very hard time of getting this across to the children. The teachers are almost as lost as the kids. Can you please establish community workshops so that parents can go ahead and start teaching this stuff to our own children. Home schooling sounds like the way to go.

Resources need to be provided such as manipulatives, ipads, computers, etc. to make sure this standard can be met with understanding and mastery.

4th Grade Math

These standards require students to understand math conceptually. I appreciate that it requires teachers to have students work through the concepts, not teach only algorithms. In the past students could meet the standards without comprehending what they were doing. This led to serious gaps in their learning that did not become apparent until later grades. These standards need to remain as-is. They are appropriate as written.

No

Same

hard to understand as written

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Move to 5th

Saxon math

We feel the standards would be more understandable if they were written in user friendly language. They are way too wordy.

Change to "OR justify by using a visual model" instead of requiring a visual model. This allows students with higher level understanding to still be considered proficient without having to draw a visual model, which shows a lower understanding.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

I think if we are going to include this standard, it would be helpful to have a tie-in with decimals when we cover place value.

I think the first part of the standard is too hard to require. They have to be able to find the common denominator and then add the fractions. Some still struggle with this at age 9 or 10.

I feel like, as I understand this frameworks, that 7 should be listed before 6 because, depending on the students mastery of decimals in 3rd grade, they may need to work with visual models of decimals, then compare them to visual models of fractions and discover then that they represent similar quantities and can be written both ways.

4th Grade Math

I feel that these standards are not developmentally appropriate for 4th graders. The students really struggle with these standards and become frustrated.

Measurement

I have read the above standards and think they are appropriate as written.

Number	Percent
85	83.33%

I have read the above standards and offer the following comments.

Number	Percent
17	16.67%

way too complicated. My child gets upset after trying to do this for an hour. Takes several hours to complete homework. She understands this math, I don't understand why she has to explain, when that confuses her more

(1) The metric/standard expectation needs to be clarified. While the standard names metric measurement, the example uses standard. The committee is concerned about on which system to focus on the most.

ridiculous

Materials, resources, ipads and apps, programs, manipulatives etc. need to be provided by districts. Money needs to be appropriated to allow teachers to provide lessons and hands on activities for student learning.

The real world applications are critical in all standards.

No

This may be age appropriate math but the wording of the directions is very complicated

Too rigorous.

Language

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Saxon math

Simplify.

4th Grade Math

4.MD.1- Please separate into subparts.. (a,b, etc...) -- based on units of measurement 4.MD.2 - Please separate into subparts.. (a,b, etc...) -- based on units of measurement 4.MD.3 - Please separate into subparts.. (a,b, etc...)

4.MD. 1 - This is a massive standard and very difficult to assess. Perhaps separate the different areas of measurement? 4.MD. 3 - I would like perimeter and area separated into two different standards. Having them both in the same standard implies that they should be taught together, which is contradictory to brain research and best practices.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

I think these are acceptable as long as a conversion chart is provided.

I like these standards as is but something perhaps 3rd grade teachers need to be aware of is that they learn the formula for area and perimeter in the 4th grade, so in 3rd they should still be teaching for understanding and not going straight to the formula. (which, sadly, I've seen done in 3rd grade.)

Represent and Interpret Data

I have read the above standards and think they are appropriate as written.

Number	Percent
89	87.25%

I have read the above standards and offer the following comments.

Number	Percent
13	12.75%

too complicated. Needs to be simplized

No

Made more complicated than it should be

I don't understand why the line plot is only graph studied in 4th grade

Ditto

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

4th Grade Math

I do not understand the need for constant use of number lines. They are almost as frequent as pictures. This is just an additional step that is confusing for kids.

Saxon math

Show an example of a line plot. Break this into two separate standards.

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

This seems to be a very specific standard that is repeated at the various grades. What is its significance? Can we not reason with fractions without using a line plot? Don't see the need.

Needs to be with same denominator

Again, I think a visual model within the standards would be helpful for teachers to understand this.

Geometric Measurements

I have read the above standards and think they are appropriate as written.

Number	Percent
90	88.24%

I have read the above standards and offer the following comments.

Number	Percent
12	11.76%

Needs to be more simple. My child has to overanalyze

high school math was easier to understand than this

No

I started this kind of math in jr. high not 4th grade

Better suited for later age groups

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

4th Grade Math

Saxon math

We feel the standards would be more understandable if they were written in user friendly language. They are way too wordy.

Just one question. Why does this skill(angles/measuring) not reappear until 7th grade?

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

learning basis angles and turns within a circle are enough; when using additive parts to find n degrees gets difficult at this age group

I feel that these standards are not developmentally appropriate for 4th graders. The students really struggle with these standards and become frustrated.

Lines and Angles

I have read the above standards and think they are appropriate as written.

Number	Percent
93	91.18%

I have read the above standards and offer the following comments.

Number	Percent
9	8.82%

Too complicated. The shorter explanation is better.

(1) The committee feels this standard could be started in 3rd grade and completed in 4th. (2) Is the last part of this standard limited to right angles exclusively?

This reminds me of high school algebra. A child with ADHD will not grasp on to this while in the 4th grade.

No

I believe that this math would be more advanced than a 9 year old

The federal government has no place in our state and local educational choices. By taking those "thirty pieces of silver", Arkansas sold out to the federal government and allowed the feds to take control of our education in our state. The CC standards were written by people who have no business in the education of my child. The CC standards rob out children of a real education and replace it with "teaching to the test". I wish Gov. Hutchinson would repeal CC.

Saxon math

4th Grade Math

I feel it is harder for the children to understand and get the concept of it. I am a accountant and I have trouble figuring it so how do you expect my 4th and 1st grader to understand it.

FOR ALL standards. Sometimes I would just like for them to be written in a more reader friendly version.. not quite so LENGTHY and WORDY!

5th Grade Math

Numerical Expressions	
I have read the above standards and think they are appropriate as written.	
Number	Percent
53	80.30%
I have read the above standards and offer the following comments.	
Number	Percent
13	19.70%

5.OA.1 - Committee questions whether brackets and braces are necessary at this level and should focus on the use of parentheses.

After reading through all the standards in this survey I don't think any of them make sense, are far too convoluted for anyone to understand or use in day to day life!

In 5th, developmentally, my experience has been that using parentheses correctly and order of operations is more than enough without including braces and brackets as found in 5.OAA.1 5.OAA.2 is a reasonable and developmentally appropriate standard.

Students at this age are capable of working with parentheses and brackets, but adding braces makes it very difficult for them.

It's real easy to write a paragraph outlining the standard. How it's taught in the classroom is a different matter.

Evaluating the expression is not too hard but the words "three times as much as large as 18932 + 921" is very hard for students to understand and take from words to actual math sentence.

They are appropriate as written, but it is difficult to find curriculum and resources that support them.

5.OA.A.2 Does this standard apply to lower grade levels as well?

Braces and brackets are not appropriate for 5th graders

Thousands of words to express what could be said in less than 50. Our students are so inundated and overwhelmed with excessive language they can't see the actual math for what it is.

This is ridiculous to think that a 10 year old is going to understand what they are really supposed to do!

parentheses and brackets are appropriate for 5th graders but I think braces are going too far.

You picked an easy one for the survey.

5th Grade Math

Patterns and Relationships

I have read the above standards and think they are appropriate as written.

Number	Percent
54	81.82%

I have read the above standards and offer the following comments.

Number	Percent
12	18.18%

5.OA.3 - This standard could be separated into subparts, making it easier to assess.

See above

This standard becomes too complex for a 5th grader, in my opinion. Focusing on learning about the first quadrant, moving horizontally and then vertically, writing ordered pairs, and graphing ordered pairs has been more than sufficient and challenging, considering the vastness of the decimal and fraction components.

Simplify

It's written like governmental double-speak to start with; where is the real life application for this in which children could understand the WHY of it before they just have to work a problem they have no understanding of.

Standard is lengthy and could benefit from being broken apart.

The standard is vague in many aspects such as "using two given rules". How should the rules be represented, should they use negative numbers, fractions, whole numbers.

That concept is relatively basic, however made to appear much harder and more complex with the excessive verbage. That carries over to our students, creating monsters out of what should be simple basic math.

Omit-apparent, supplement obvious Omit-consisting of corresponding

Fifth grade students will work only with ordered pairs of positive numbers graphed in Quadrant 1.

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

Don't have a clue. If I had an example or frame of reference, maybe I would think it was appropriate.

5th Grade Math

Place Value System	
I have read the above standards and think they are appropriate as written.	
Number	Percent
54	81.82%
I have read the above standards and offer the following comments.	
Number	Percent
12	18.18%

I find it a little too in depth for some students

see above

I think all of these standards are spot on except for 5.NBTA.3A. The expanded form used in this standard is confusing for them. Many still struggle with the previous method.

5NBTA3 is hard to interpret as a teacher. I have seen it demonstrated in numerous ways and it is hard to teach all the possible ways it might be evaluated. Ex: 3 x 10 squared + 4x10 +... or (3x100) + (4x10) +... or as shown in the standard

That's the most complicated explanation I've ever heard. All that expanded form only serves to confuse and waste time in the classroom. How was this taught 100 years ago when America ruled the world with industrial inventions? How was math taught 50 years ago when America ruled the world in the space race? There was no need to re-invent education. The classics worked. Now American education is horrible. Our children graduate stupid. The government needs to get OUT of education - our standards have done nothing but tank in the world since the DofE was created.

NBT.A.1 is confusing for students to understand. The released items on standardized tests (PARCC, not ACT Aspire) have interpreted this standard very literally. This has resulted in very wordy and confusing test items. For example: 3,991,076 The 9 in the ten thousands place is 10 times, 100 times, 1/10 times 1/100 times the value of the nine in the place to the right. This has turned math into a reading comprehension "puzzle"- rather than a true assessment of students' abilities in math. I would change it to: students can multiply and divide by powers of 10.

5.NBT..2 - in the first sentence "multiplying a number" is said but not division and in the following statement both multiplying or dividing is used. Also on this standard could it be decomposed to: A. Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10 B. Use whole- number exponents to denote powers of 10.

The students have hard time grasping with the place value system, even as 5th graders,and when dealing with 1/10 of something and recognizing that the number next to it is 10 times greater, they struggle. The powers of 10 they understand.

I don't even understand this and I have a graduate degree.

Same answer as stated in the #1 and #2.

This is a very confusing topic for 5th graders to grasp when they are not coming to us with a strong understanding of place value. Ten times as great is a bit more on 5th grade level but adding in the 1/10 is hard for student to grasp.

5.NBT.1, 5.NBT.2, 5.NBT.3 and 5.NBT.4 are incredibly essential for students to gain number sense and to be able to easily understand higher mathematics.

Multi-Digit Whole Numbers and Decimals

I have read the above standards and think they are appropriate as written.

Number	Percent
47	71.21%

I have read the above standards and offer the following comments.

Number	Percent
19	28.79%

(5) Committee questions whether this also means using the traditional recording system as well as standard algorithm or is partial products acceptable. (6) Also, should divisibility rules be added here (3, 4, 6, 9)? In addition to this, the committee feels the last sentence of 6, using rectangular arrays and area models in division, is a questionable expectation.

NBT.5 The Standard Algorithm is a Distributive Property activity. Instead of stating "the" standard algorithm, there should be "an" algorithm.

see above

By requiring that students know equations, rectangular arrays and area models in 5NBTB6, students can get overwhelmed and confused. I agree with introducing the various methods so students can find one that makes sense to them, but having to teach all of them in case they are tested forces the students to learn 3 different methods. They get confused and begin to mix them together resulting in an incorrect answer when they can find a correct answer when just using the method of their choosing.

CCSS.Math.Content.5.NBT.B.5 "Fluently" should be explained more completely. Fluency in basic multiplication facts must be mastered before the fifth grade level in order to achieve fluency in multi-digit multiplication.

Refer to comments in above comment boxes.

5.NBT.B.7 - This standard could be split into subparts for the different operations.

If students can demonstrate proficiency in standard 5.nbt.b.5, then, the last part of 5.nbt.b.6 is not necessary (Illustrate and explain calculations .....by using rectangular arrays, and or area models). In the classroom, students come into the room with knowledge of the standard algorithm and we are confusing them with unnecessary concrete models.

5th Grade Math

5.NBT.B.7 Consider using concrete models/drawings as a teaching tool rather than an objective for the students.

5.NBT.B.5 "Fluently multiply multi-digit whole numbers using "A" standard algorithm. Perhaps add to the language of standard algorithm as emphasizing place value. This would include a variety of strategies as partial products, compact method, distributive,...etc. 5.NBT.B.7 ---- - if students are not required in the grade level to divide a fraction by a fraction then why is it a requirement to divide two decimals. Fraction notation is one strategy students could use to perform operations with decimals.

I don't feel 5th graders are ready for 4 digits by 3 digits.

5.NBT.5 I really wish we would take the standard algorithm out of the standards and allow students to use relational thinking strategies tied to the properties of operations, (i.e. the distributive property of multiplication over addition).

Students need to know their multiplication tables before this standard can be applied. I am finding that my students coming into 5th grade do not know their multiplication tables.

Add specific examples of the properties of operations

5.NBT.5 Compared to the division standard of 4 digit dividends and 2 digit divisors, I believe there should also be a guideline for multiplication. How many digits should fifth graders be expected to multiply?

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

Dividing with decimals in the divisor is hard when student are not fluent in dividing whole numbers.

5.NBT.5 needs to be clarified to say that the standard algorithm is not the same thing as the traditional recording system.

Teach the old fashioned way first, learn multiplication facts and divide the real way, then you can throw in those stupid arrays.

Equivalent Fractions	
I have read the above standards and think they are appropriate as written.	
Number	Percent
55	83.33%
I have read the above standards and offer the following comments.	
Number	Percent
11	16.67%

5.NF.1 - This standard could be separated into subparts.

see above

I have taught 5th grade math for over 20 years. I have had students really understand 5NFA.1 and 5NFA.2, but the majority have struggled with this much without truly having a firm grasp and understanding of the fraction components that MUST be mastered as previous knowledge. Developmentally, I'm not sure it isn't too much, not for all, but for many.

We wish the "For example" section were more child friendly.

Refer to comments in above comment boxes.

Move to 6th grade

5.NF.A.1 Could this standard be simplified so it is not so wordy. 5.NF.A.1 could this standard define equivalent fractions as simplified forms and also the word regrouping added since these concepts are addressed in the 4th grade standards.

I believe the language of the standards could be condensed to be more user friendly.

5.NFA.1 I understand what they are expecting for this standard. However, the wording of it can be quite confusing. "Add and subtract fractions with unlike denominators (including mixed numbers) using equivalent fractions and common denominators" would suffice.

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

I can't remember fractions, so I can't comment. If I had text or some other frame of reference, maybe I could judge.

Multiplication and Division

I have read the above standards and think they are appropriate as written.

Number	Percent
53	80.30%

I have read the above standards and offer the following comments.

Number	Percent
13	19.70%

(5 a and b) The committee feels this is too abstract and needs friendlier wording. They also wonder why students have to compare "without performing the indicated multiplication."

see above

5th Grade Math

Seriously? These are way too many to break down reasonably! There are parts that are great, but for one, the area component is still being solidified (area vs perimeter vs volume), much less throw in fraction sides! When calculators were a viable option, you bet! BUT, I feel like I am having to zone in on computation SO much, that the deeper problem solving is getting bogged down!

We believe this can be simplified by writing in child friendly terms. We believe this is why parents are frustrated with Common Core Math.

Refer to comments in above comment boxes.

Very confusing!!!

Clarify use of visual models.

5.NF.B4B If they understand the relationship with whole units, there is no reason to do tiling with fractional units. 5.NF.B.7A 5th graders can mentally picture and reason about fractions such as 1/2, 1/3, and 1/4. Not so much 1/5, 1/12 etc.

5.NF.B.5 could these be simplified and combined. 5.NF.B4a reword because the example makes more sense than the description.

I think that factoring with exact numbers ought to be taught, and separately predicting outcomes ought to be studied, or additionally, but NOT IN PLACE OF exact numbers.

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

Using visual representations is very critical at this stage for students to start to form an understanding of fractions. 4th and 5th grade should be heavy on visual models and as students transition to 6th grade they should transition from models to algorithms.

What the crap?????

Convert Measurement Units

I have read the above standards and think they are appropriate as written.

Number	Percent
57	86.36%

I have read the above standards and offer the following comments.

Number	Percent
9	13.64%

The committee feels there needs to be more clarity on the use of standard and/or metric units.

see above

5th Grade Math

Be specific to the area of measurements to be covered under these standards.

Refer to comments in above comment boxes.

Clarify the use of visual models.

This is appropriate as written, but it is difficult to find curriculum and resources that supports it.

I believe this standard is too hard and 5th graders are not developmentally ready for it.

Emphasis should be placed on the metric system. There will be no crossing from metric to US standard measurement systems.

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

Represent and Interpret Data

I have read the above standards and think they are appropriate as written.

Number	Percent
56	84.85%

I have read the above standards and offer the following comments.

Number	Percent
10	15.15%

There should be more specific references made to Measures of Central Tendency. The italicized scenario is a reference to finding a mean average.

see above

Background in data representation is not enough to delve this deeply yet. The old standards were reasonable and challenging at a level that was much more acceptable.

Refer to comments in above comment boxes.

This is appropriate as written, but it is difficult to find curriculum and resources that supports it.

Drop the "Use operations on fractions..."

Interpreting this standard is quite fluid. I would prefer a more concrete means of clarifying this standard.

....fractions of a unit(1/3, 1/5, 1/4, 1/2, 1/8,1/10)

5th Grade Math

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

What's a line plot?

Concepts of Volume

I have read the above standards and think they are appropriate as written.

Number	Percent
59	89.39%

I have read the above standards and offer the following comments.

Number	Percent
7	10.61%

see above

Too much emphasis on volume, too soon.

Additive volume is a very abstract concept for a fifth grader and is difficult for them to calculate on paper/computer. Typically they can be successful with manipulatives, but that is not an option on testing.

Fluently calculating perimeter and area are a pre-requisite to solving volume.

Refer to comments in above comment boxes.

Highlight the use of concrete models and drawings.

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

Graph Points on Coordinate Plane

I have read the above standards and think they are appropriate as written.

Number	Percent
62	93.94%

I have read the above standards and offer the following comments.

Number	Percent
4	6.06%

see above

Refer to comments in above comment boxes.

5th Grade Math

5.G.A.1 What quadrant should be focused on in this standard? It is addressed in 5.G.A.2

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

Two-Dimensional Figures

I have read the above standards and think they are appropriate as written.

Number	Percent
58	87.88%

I have read the above standards and offer the following comments.

Number	Percent
8	12.12%

see above

For a standard that seems so straightforward and easy, this is misleading. There are so many ways to write these questions that students get confused. For example, what are all the possible names you can give a rhombus? Is a square a rectangle? Is a rectangle a square?

Refer to comments in above comment boxes.

Will the inclusive or exclusive definition of trapezoid be emphasized in this state?

Why do we even need this standard?

Provide details of the hierarchy.

Again, I think the wording is too hard for 10 year old kids to understand. I have numerous complaints from parents not knowing how to help their kids because even they don't understand it.

This is a hard concept for adults to understand and having 5th grade minds trying to put the quadrilaterals into a hierarchy is a bit above their capacity. Identifying traits of each quadrilateral is hard for students to be specific (a square has 4 congruent sides instead of a square has 4 sides).

6th Grade Math

Understand Ratio	
I have read the above standards and think they are appropriate as written.	
Number	Percent
38	66.67%
I have read the above standards and offer the following comments.	
Number	Percent
19	33.33%

Cognitively, students cannot grasp this entirely. They can remote control it, but are unable to have deeper understanding. Their brain has not yet developed enough for this.

Although I agree that all of the above standards are appropriate as written for some of the students I have this year, but I believe they may well be unattainable considering the developmental deficit under which many of my students are laboring.

"Ratio reasoning" is unnecessary language, and quite deceptive. The real application of this is a compounding of the difficulty,neither no appreciable gain in student performance.

I'd like to know if teachers have a book on this now? The issue is that the system failed my daughter so badly that she is now in remedial math with co-teachers. I've had many conferences with teachers over the last 2.5 years, who told me she was doing ok. She was not. She couldn't do basic single digit multiplication. Teachers had no books and were relying on 4th graders to take appropriate notes, creating their own math "journals" in place of books. I couldn't help my own child because she wasn't taught to understand it. My high school son was unable to help her and the teachers were too overworked and some too prideful to try another approach because they were being pressured by the system to get kids ready for the initial field tests AND the Benchmark. As a result, my child has lost her academic confidence after repeatedly trying her hardest and bringing home D's. What's the saying about a fish will never succeed if you judge them on their ability to climb a tree.

This is a little hard for me to understand let alone a sixth grader.

These are the most important standards in all of the 6th grade. Every other standard taught in 6th grade can refer back to this reasoning. This set of standards should be focused on and maybe even expanded on. These are the main life skills that I hope my students leave 6th grade knowing.

These are important standards that really prepare students for the business world.

More example problems to describe the expectations.

6th grade has too many standards to cover. There is no way to implement these with the depth the students need.

6th Grade Math

All of these standards are labeled RP for Ratios and Proportional Relationships, but the grade 6 standards limit themselves to only ratio and equivalent ratios, without diving into proportions. I would love an added expectation limitation at the bottom, stating this missing piece. If 7th grade is going to define a proportion, then sixth grade really shouldn't dive into the next grade's standards, but focus on depth of ratio understanding instead.

converting measurement units: does this mean within the same system or between systems? in standards rp.a.3, the eg makes the various strategies seem optional. students should be exposed to all strategies

We only briefly cover 6.rp.a.3d and 6.rp.a.3c because we are spending so much time reviewing concepts from lower grades, such as place value and basic fraction and decimal operations and conceptual understanding.

RP.3 specific methods to reason ratios is not needed There are many other ways that also make sense. Whatever way works best for the student is way that student should use.

I feel all standards are appropriate as written with one exception: 6.RP.A.3.D - I think it is vague and unclear. I am not sure what is required of this particular strand.

6.RP.A.3.A,B,C Are extremely important. 6.RP.A.3.D Fits in science

I believe that the standard 6.RP.3 - d should be a science standard.

The last standard listed (RP.A.3.D) better fits with science standards and is more likely to sticky with students when discussed in that atmosphere where they generally do more measuring.

To many expectations listed in the standard. They sound overwhelming when you read them cold. As a teacher, I know to break them down but to a parent or even a new teacher it is confusing. I know they are written so the thoughts are shorten but express the same content but there are to many thoughts separated by commas.

All of the 6th grade ratio and proportional reasoning standards are well written and developmentally appropriate. 6.RP.1, 6.RP.2 and 6.RP.3 are rigorous but achievable standards for our students.

Divide Fractions by Fractions

I have read the above standards and think they are appropriate as written.

Number	Percent
38	66.67%

I have read the above standards and offer the following comments.

Number	Percent
19	33.33%

6th Grade Math

Again, cognitively speaking, students FIRST have not mastered a true understanding of fractions, and next cannot apply RW to this without comprehension.

Using word problems to solve fraction by fraction division is appropriate. However the creation of story problems where they have to correctly identify objects/ units/ items that could be measured in a fractional amount and divided by a fractional amount is not appropriate, given many students at this level are still concrete thinkers not abstract.

Please see my comment from survey question #1.

"Visual fraction model" Again, unnecessary complication of relatively simple mathematical processes.

please see the above

Really how do you expect sixth graders to understand this especially when the teachers don't understand it either

Give an example of what is meant by a visual model

These standards are important, but do not lend to as many "Real-World" situations as the Ratio standards.

The visual fraction model is extremely difficult for students who struggle with fraction operations anyway. Some of the more gifted students learn to do it with a tape diagram. Most never can do it and trying to explain it to parents is a nightmare. It is much more accessible to build on 5th grade and continue whole numbers divided by fractions and fractions divided by whole numbers as far as the visual model goes.

Although it is appropriate as written, we are concerned that teachers do not have the content knowledge to teach this standard as it is written. Teachers don't understand the models, but instead teach the "flip it and multiply" procedure.

Again, an assessment boundary would be great here. The standard implies no need for the "invert and multiply" algorithm, but teachers need the written permission to stick only with models and equations. I love the way this one is written!

the eg makes it sound like modeling is optional - it should not be optional!!!!!!!! students should use a number line and grids to model fraction multiplication and division

This hard concept for teachers to teach because we were not taught this way ourselves. Additional training is necessary to master so that we can teach it. We're sure it is being taught incorrectly.

This standard is very abstract for 6th grade students to understand.

Students do not come to sixth grade with a deep enough understanding of division or fractions.

6th Grade Math

Too abstract for 6th graders to understand.

6th grade students are not cognitively ready to understand the division of fractions by fractions, and cannot compute this fluently. Developing a real world understanding of this topic is frustratingly hard for the teacher as well as the student.

I like the examples given. Gives a more concise expectation attached to the standard.

I would put all of the division of fractions here, including the unit fraction divided by a whole number in 5.NF.7 because that's the basic understanding behind why someone would even want to invert and multiply. It feels disjointed to put them in separate grades.

Multi-Digit Numbers

I have read the above standards and think they are appropriate as written.

Number	Percent
44	77.19%

I have read the above standards and offer the following comments.

Number	Percent
13	22.81%

When do we talk about prime factorization? Do we not? Is that just included in working with factors? If so, how would we know that if it doesn't say. Also, I've heard different interpretations for what the standard algorithm means, based on the district. When I read "using the standard algorithm" I think of the traditional algorithm, but does that just include any algorithm that works (partial quotient) or breaking the number apart by place value?

In my experience, students are not secure in these skills when they arrive in sixth grade. I feel that beginning with multi-digit problems sets many students up for early failure in sixth grade. Perhaps the standards should begin with addressing division at a lower level and progress to multi-digit later in the year.

Thus is mostly ok, though again, the language is unnecessarily complicated.

Basic skills were lost in translation in the early implementation phase. "Fluently add, subtract, multiply and divide...". No. She's in 6th grade and unable to multiply and divide effectively because s he was unable to draw the correct "bubbles and sticks".

I really feel like we need to go back to regular subjects not this common core.

6.NS.B.3 - CLARIFY STANDARD ALGORITHM AND STANDARD TO INCLUDE MULTIPLE ALGORITHMS INVOLVING PLACE VALUE

I think many teachers feel that the "standard algorithm" is the only method to teach division. I have suggested partial quotients on many occasions and teachers sometimes feel scared to do something different--even when their kids don't understand. I believe it should be allowed for the student to show whichever way makes sense to them.

6th Grade Math

CCSS.6NSB2 I believe that standard belongs in a lower grade, 5th perhaps. 6th graders need to have that skill as part of the skill set upon arriving in 6th grade.

This is important. I think it should be encouraged that NO student use a calculator until 8th or 9th grade. Number Sense simply cannot be gained without these skills.

We need an additional standard above 6.NS.B.4 that solely focuses on the distributive property. As it is written, the distributive property is missed as a significant part of this standard. Maybe attach it to 6.EE.A.3.

Distributive property needs to be its own standard. It seems hidden in this standard and it is important.

Students do not come to sixth grade with a fluent understanding of number sense (m, a,d,and d) to be able to integrate multi-digit with decimals.

6.NS.3, 6.NS.4 are appropriate as written. 6.NS.2 needs to be clarified that the standard algorithm is not the same as the traditional recording system.

System of Rational Numbers

I have read the above standards and think they are appropriate as written.

Number	Percent
49	85.96%

I have read the above standards and offer the following comments.

Number	Percent
8	14.04%

A little too difficult for some students

Absolute value WAS an 7th/8th grade standard.

Again, "...coordinate axes as learned from previous grades...". That's assuming the teacher had the time to do so previously.

This is all a little much

6.NS.C8 - COULD AN EXAMPLE BE PROVIDED WITH THIS STANDARD

I think it should addressed that students should be introduced to adding and subtracting integers.

6.NS.C8 Students are not developmentally ready to understand.

6th Grade Math

These are too abstract for the 11-12 year old mind.

Algebraic Expressions

I have read the above standards and think they are appropriate as written.	
Number	Percent
47	82.46%
I have read the above standards and offer the following comments.	
Number	Percent
10	17.54%

6.EE.A.2.C I would suggest that the focus be on the usage of whole number values substituted in for variables. the example given was with a s=1/2. This standard could lend itself to focus on the importance of units for volume, perimeter and area. By adding the extra component of fractional length sides, students might miss the important concepts related to units and the operations being performed. This standard would be an appropriate place to help students better understand the foundations of geometry as it applies to the real world application.

See the comment from survey question #1.

This standard is not too far removed from the old pre-algebra standards. Unfortunately, this wording does not reflect the actual methodology being utilized.

Really algebraic expressions in sixth grade. I didn't do this until high school

Think this should be back at the junior high level.

This seems to be a little confusing, maybe it could be rewritten with less technical language

Make the discussion about properties more explicit.

6.EE.A.3 - which properties? Specifically list the properties we expect all kids to use.

EE.3 Standards say "the properties of operations", the example only mentions the distributive property Distributive property is also a

Too abstract for 6th graders.

Equations and Inequalities

I have read the above standards and think they are appropriate as written.	
Number	Percent
47	82.46%
I have read the above standards and offer the following comments.	
Number	Percent

10	17.54%

Variables are difficult, but ok at this level. However, we are going from understanding variable straight into understanding the application. The brain at this age rarely can process this. It is too early.

See the comment from survey question #1.

See initial statement

I was told all children in my sons math class are falling behind.I thought it was supposed to be no child left behind. I don't feel this is true.

Should stay at junior high level.

6.ee.b.5 - CAN AN EXAMPLE BE PROVIDED

CCSS.6EE.B.8 My experience is that 6th graders are not ready to write or solve inequalities. They do not have the advance processes to acquire this skill level. My experience with trying to teach 6th graders that some math problems have infinite solutions showed frustration on the student's part.

I don't feel these are appropriate for 6th grade. They were pushed down. I understand the standards but feel the mastering of the other standards in this domain are too important and students should have ample time mastering them rather than trudging forward to cover these.

6.EE5, 6.EE.6, and 6.EE.8 are appropriate as written. 6.EE.B.7 needs some clarification. If p, q, and x are all non-negative rational numbers then x-3=5 would not fit under this standard. When teaching this standard, students are ready to deal with this type of equation. However, since students have not performed operations with negative rationals, they would not yet be ready to deal with an equation like this: -3x=6.

These are too abstract for 6th graders. Take a sample of 20 6th graders from across the state. They don't even know their multiplication tables yet and this is shoving algebra down their throat. Get them the solid facts first. Then, give them the abstract. Please, don't tell me, well, they learned multiplication in 3rd and 4th grade because they didn't. They went over it, but they did not learn it. These standards are too advanced.

Dependent and Independent Variables

I have read the above standards and think they are appropriate as written.

Number	Percent
44	77.19%

I have read the above standards and offer the following comments.

Number	Percent
13	22.81%

Just NO. Dependent variables was 7th 8th. WHY are standards being pushed down?

6th Grade Math

See the comment from survey question #1.

See initial statements

All these extra strategies that the children have to do is a little ridiculous

Stay in junior high

Why couldn't this be moved to science?

This really applies to Science. With science standards changing to NGSS, we aren't sure if this will still fit with 6th grade. Students really struggle with understanding the difference between them. Not sure if they are developmentally ready.

I don't think this particular strand is inappropriate, but I think it is too in depth. Students should be able to identify and express the relationship between the independent and dependent variable. I don't think they should be writing these type of equations (that focus on independent and dependent) until the 7th grade level. Or there should be a limit to as how challenging the problems are that students need to be able to write. In other words, if they must write an equation such as d = 65t, it needs to stay that basic. This gives no limit to the rigor.

6EE.C9 Science!

I believe that dependent and independent variables should be a science standard.

Analyzing the relationship between the dependent and independent variables is another item that is better suited to a science classroom. In math the students are being introduced to variables in an equation or expression for the first time and to recognize which is independent and which is dependent is something that would be more concrete in the science classroom.

Way to much listed!

Too advanced

Real World Mathematical Problems	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	80.70%
I have read the above standards and offer the following comments.	
Number	Percent
11	19.30%

6th Grade Math

Again, I have concerns of students finding the volume of prisms with fractional sides. I think it is abstract for the concrete learners of a 6th grader.

6.G.A.4 "three-dimensional figures using nets made up of..." Seriously?

See initial statements

I cant even help my child with homework

6.GA.1, 6.GA.2 - Another example of pushing down skills from junior high. WHY was this necessary?

6.G.A.1 - what special quadrilaterals? be specific.

compare and contrast prisms and pyramids

Tends to be short changed

G.1 and G.4 In G.4 we are showing them how basic 3-D Shapes are made up of rectangles and triangles. In G.4 we are having them extend MUCH FURTHER these same concepts.

These standards are taught last and very hard for some 6th grade students to visual see and be able to break apart .

Too advanced

Statistical Variability

I have read the above standards and think they are appropriate as written.

Number	Percent
44	77.19%

I have read the above standards and offer the following comments.

Number	Percent
13	22.81%

See the comment from survey question #1.

Similar to the old standards with unnecessary updating of language that actually confuses the process.

See initial statements

Please get rid of common core standards.

6th Grade Math

Why couldn't this be moved to science?

Statistics are so important for business and dealing with data in careers.

These are another example of pushing down the standards. I don't think any of these are appropriate for 6th grade. Why was it necessary to move them down? This content is very difficult and abstract.

Exemplar items would be great! Teachers disagree what these standards mean.

This is conceptually too difficult for middle school.

Students should still have to focus on measures of central tendency and how they summarize a set of data. They should not have to be able to recognize a statistical questions. It seems out of place in 6th grade math.

6.SP.A.3 is vague.

Students lack of understanding due to being developmentally unready.

Too abstract

Distributions

I have read the above standards and think they are appropriate as written.

Number	Percent
39	68.42%

I have read the above standards and offer the following comments.

Number	Percent
18	31.58%

6.SP.B.5.C Finding the measures of center or central tendencies is appropriate; as would finding measures of spread, such as interquartile range. Concerns: Striking deviations- the vocabulary of outliers would be approbate at this grade level. Mean absolute deviation- what is that? Why is it important?

See the comment from survey question #1.

See initial statements

I just don't really know how you expect children to do this.

When in real life does one even encounter a box plot and histogram?

6th Grade Math

CCSS.6.SP.B.5.C I believe that mean should be introduced in 5th grade. Before the Common Core it was taught in 5th grade with high success.

The kinds of graphs introduced are rare and don't seem relevant to real-life.

These standards are examples of pushing down standards. Why was it necessary? They need time and practice to nail down so many other standards in the other domains.

6.SP.B.5.C we're struggling with mean absolute deviation

In my experience students are more than capable of dealing with measures of variability, both IQR and MAD. However, the bigger problem is teachers who have never had good professional development on statistics. These standards are CRUCIAL to students being college and career ready, and we cannot assume they will get the mathematical purposes of the operations involved in science class. These standards must stay! (6.SP.B.5.C and 6.SP.B.5.D)

can you add the terminology of line plot along with dot plot (college professors still use line plot and dot plot)? The stat standards are not taken seriously enough. But if you think about life, what will get you better prepared for college, career, and everyday life than chance, odds, shape of data, inferences, quality control, average, median, most likely, variability, deviation, graphical representations. During your daily routine, do you utilize statistical reasoning more or do you divide fractions more?

Students seem able to calculate this information, but they do not really understand what it all means. This section of standards is really too advanced for understanding at the 6th grade level.

I agree with all the strands in this section, but think making box plots is inappropriate at this level.

6.SP.B.5.C Students are not developmentally ready.

Students lack understanding due to being developmentally unready

Should not be a 6th grade standard..... they do not understand this concept.

In today's technological age students should not be expected to simply display the data in various ways but interpret the data. Students no longer need to draw diagrams on their own with given data, so many programs will do that for them. The 6.SP.B.4 standard is outdated and not completely neccesary for today's students.

I think this portion of the standards is beyond the maturity level of students in this grade and is difficult for them to understand.

7th Grade Math

Proportional Relationships	
I have read the above standards and think they are appropriate as written.	
Number	Percent
45	86.54%
I have read the above standards and offer the following comments.	
Number	Percent
7	13.46%

Percent error is not really age appropriate. Percent increase and decrease is fine.

Percent error is inappropriate for 7th grade, and should be moved to a higher grade level. Percent increase and decrease, however, is appropriate.

7.PR.A.3 should not include percent error. Percent increase and decrease is appropriate for 7th grade but percent error is a bit of a stretch.

B

These are great and rigorous standards.

Proportional reasoning is such an integral part of our 7th grade Math standards. A firm foundation of proportional reasoning will help in 8th grade math, Algebra I in particular. I agree with the written standards, but I think as much time as possible should be spent on developing proportional reasoning in the 7th grade. I see that students who do not have a firm understanding of it do not have a firm foundation for algebraic reasoning. (i.e., linear functions, direct variation, etc)

These proportional relationship standards are rigorous and achievable for our students. They are incredibly important for 7th graders to have this strong foundation that 7.RP.1, 7.RP.2, 7.RP.3 help them build.

Operations with Fractions	
I have read the above standards and think they are appropriate as written.	
Number	Percent
49	94.23%
I have read the above standards and offer the following comments.	
Number	Percent
3	5.77%

7th Grade Math

CCSS.NS.7.A.1 I taught adding and subtracting of negative numbers to my 6th graders with high success. I believe that part of the standard should be moved to 6th grade.

I think that long division doesn't have a place in 7th grade standards. It has been covered in earlier grades, and it seems too late to retract it. Otherwise, I think that it is worth the time spent on these standards. They are so key in moving on into high school math.

More time needs to be spent on the "why" of rational number properties instead of just having students memorize the rules (i.e. integer rules). Real World reasoning with temperatures, banking, yardage in sports, phrases like "below sea level". I agree with the standards as written. Love it when students come to me with a knowledge of negative numbers and how they work, so we can roll with it in 7th grade!

Equivalent Expressions

I have read the above standards and think they are appropriate as written.

Number	Percent
45	86.54%

I have read the above standards and offer the following comments.

Number	Percent
7	13.46%

Context and practical application are not apparent.

students in grade 7 struggle with these concepts- are they cognitively ready?

7.EE.A.1 - Which properties of operations? Be specific.

Expanding linear expressions with rational coefficients is very clear.

Clarify what is meant by "expand" linear expressions with rational coefficients. The rest is fine.

I agree that it is valuable to look at these problems in different ways.

I am concerned about the factoring component of this standard. In 7th grade thinking abstractly and learning to work with expressions is a new concept. They need time to process and understand simplifying expressions and using the distributive property before asking them to factor. In teaching common core at the 7th level this was a topic that just did not seem to "fit" the kids and their abilities. I think factoring would be more appropriate at the 8th grade level.

Real-Life Mathematical Problems

I have read the above standards and think they are appropriate as written.

Number	Percent
51	98.08%

7th Grade Math

I have read the above standards and offer the following comments.	
Number	Percent
1	1.92%
The more time spent on these kinds of problems, the better.	

Geometrical Figures

I have read the above standards and think they are appropriate as written.	
Number	Percent
38	73.08%
I have read the above standards and offer the following comments.	
Number	Percent
14	26.92%

I am okay with these standards, but I would be fine with moving the construction of triangles (CCSS.Math.content.7.G.A2 to the Geometry course.

7.G.A.2 Should include the ability to reassure within a specified level of precision. 7.G.A.3 Lacks contextual practicality or application.

I think that there needs to be more specific geometry concepts added to 7.G. I think there are gaps between the grades.

7.G.A.2 is very vague. Beyond triangles, what geometric shapes should students be drawing? And A.3 seems out of place with the rest of 7th grade.

The standards 7.G.A.2 and 7.G.A.3 does not flow well with the other standards. I would think this would fit better as part of a geometry unit taught in either 6th or 8th grades.

7.G.A.3 is a standard that has never been taught before in previous years. Why is this standard in 7th? What is this standard tied to for future learning? 7.G.A.2 This standard should be moved to high school geometry where it fits in better.

GA2 and GA3 are not necessary to the content in 7th grade. Placement of the GA2 should be placed with proving theorems in Geometry and what is the purpose of GA3- slicing 3-d to observe the 2-d result?? Seems to be just thrown in here.

While I enjoy teaching geometry, I feel that it is a bit out of place in 7th grade math standards.

7GA2. I know that determining the number of triangles possible under certain conditions is a hard skill for geometry students. This standard might be better if students had to decide if it would be a triangle or not and leave out the part about a unique triangle. Again students are asked to think abstractly and at this age that skill is being developed.

7th Grade Math

7.GA.3 This standard would be most appropriate after students have developed a deep understanding of 3-d figures (ex: cones, spheres) not addressed until 8th grade. Could this standard be threaded to cover multiple grade levels? This could include 6th using cross sections of rectangular prisms, 7th grade all prisms and pyramids, and 8th grade cones, spheres, cylinders.

7.G.A.3 should be moved up to Geometry in high school. I do not think they are developmentally ready to visualize and comprehend this standard.

Agree with the standards as written. Activities that promote student understanding of drawing (G.A.2) and describing (G.A.3) are often only talked about instead of done in class, because it takes a lot of time. Using actual tools (protractors) and solid figures that students can see/touch need to be emphasized before technology.

I would move 7.G.3 to Geometry because it doesn't really fit with other 7th grade content.

7.G.1 is a very appropriate standard and fits nicely with the 7.RP standards. 7.G.2 needs to specify whether or not students are expected to formally construct triangles (with compass and straight edge) or if they are only expected to informally construct triangles (using protractor and ruler). It is mentioned in the beginning of the standard with the verb "draw" but it is unclear whether that refers to the construction of triangles or not. 7.G.3 does not fit in with any of the other standards and must be taught as a stand-alone standard. It might be more appropriate in high school geometry.

Measurement, Area, and Volume

I have read the above standards and think they are appropriate as written.

Number	Percent
43	82.69%

I have read the above standards and offer the following comments.

Number	Percent
9	17.31%

X

I think 7.G.B.6 needs to be written with examples.

Eventhough the standard states explicitly that an informal derivation of the relationship between the circumference and area is required - I have observed that most teachers do not understand this. They are still stuck in the relationship that exists between radius, diamter, circumference, and pi. Not to be misunderstood, students are ready for this standard - and it is a well written standard.

Why aren't other angle relationships (such as alternate interior/exterior) included in this standard? It fits better with the standards than in 8th grade.

7.G.B.5- why are other angle relationships (alt. int/ext, corresponding) not included in this?? The others are fine.

7th Grade Math

Out of place in 7th grade.

7.G.B.5 Could the 5th and 6th consider spiraling a standard involving angle measure? It is developed highly in 4th grade, but not addressed specifically in the standards for 5th and 6th grade.

Love these standards. Great opportunity to demonstrate algebraic reasoning (G.B.4) when findnig radius or diameter using a circumference formula, for example.

7.G.4 and 7.G.5 are appropriate. 7.G.6 should be separated into two standards. One dealing with two-dimensional shapes (area/surface area of objects composed of triangles, quadrilaterals, and polygons) and one dealing with 3 dimensional shapes (volume of objects composed of cubes and right prisms). It is confusing as written since you cannot combine 2-D and 3-D objects.

Random Sampling

I have read the above standards and think they are appropriate as written.

Number	Percent
47	90.38%

I have read the above standards and offer the following comments.

Number	Percent
5	9.62%

The teachers won't get to teach this because their students will be in too many testing situations.

Examples lack authenticity to problem application.

Too much emphasis on random sampling.

This is a hard concept for 7th graders, and also out of place in the 7th grade standards.

While I like the standard, I do not think it is being taught in the schools as it should be. The standard should either be removed or moved to a different grade.

Comparative Inferences

I have read the above standards and think they are appropriate as written.

Number	Percent
44	84.62%

I have read the above standards and offer the following comments.

Number	Percent
8	15.38%

I don't see how all this can be accomplished in a 7 th grade year.

7th Grade Math

I do not think MAD needs to be taught at this age level.

I think that measures of variability need to moved to a higher grade. This concept is too complex for a 12 to 13 year old "average" mathematical mind.

Inferences about populations don't fit in the 7th grade standards.

7.SP.B. 3 & 4 Could more examples be provided to support the descriptions of the standards.

7.SP.B3 is inappropriate for 7th graders.

I don't think finding mean absolute deviation is necessary for 7th grade students. It is such a specific thing that is not used regularly in daily life. I do think they need to be able to see/analyze variability of data but not with mean absolute deviation.

Variability should be moved to high school. Students are only learning the very basics of variability and are not learning it well enough to understand it.

Investigate Chance

I have read the above standards and think they are appropriate as written.

Number	Percent
43	82.69%

I have read the above standards and offer the following comments.

Number	Percent
9	17.31%

Z

Just my opinion but I feel CCSS.Math.content 7.SP.C.8.C is rather rigorous for 7th grade and is taught more deeply in HS statistics.

CCSS.7.SP.C.5 I believe that probability should be introduced in the 6th grade. Before Common Core we did teach probability in the 6th grade with high success. Probability is a high hands-on skill that 6th graders have the mental processes to have success on.

These SP standards need the help of technology that we do not have. In my classroom, students were capable of understanding these complex ideas, but we had access to Tinkerplots. These licenses should be provided to all students in the state of Arkansas if we want students thinking analytically about data, statistics, and probability.

I wish the whole state would use a prescribe simulation program. I would suggest Tinkerplots as we have had multiple trainings using it and the students love it. Could the state supply it and endorse it? It aligns perfectly! Additionally, I marked the comment box not because the way the stat standards are written need improvement, but because I feel they do not get the stressed value they deserve. As I stated in the 6th review, stats are more important in every day life than some other content listed in the standards. What part of the standards does your

job utilize most often? All factory jobs rely heavily on quality control. All production processes are driven by statistics. Real estate - data. Supply and demand - data. Sales and marketing - that screams stats. Education - data. The odds of getting a parking spot at the mall - data. Chance of pregnancy being boy/girl. Medical field - data. Research - data. And so on.

Probability models take probability to a very deep level. I don't feel this is appropriate for 7th grade.

Compound probability is a difficult skill for 7th graders. They do not have the probability foundation coming in to 7th grade since they don't have probability standards in 6th grade.

Compound probability is a challenge for students at this age. 7.SP.C.8.B and 7.SP.C.8.C would maybe fit better in 8th grade OR in Stat.

Agree with standards as written. Personally find it difficult to fully investigate some of them with my students (7.SP.C.8.B and 7. SP.C.8.C) with my students because of time constraints.

8th Grade Math

Rational and Irrational Numbers	
I have read the above standards and think they are appropriate as written.	
Number	Percent
45	84.91%
I have read the above standards and offer the following comments.	
Number	Percent
8	15.09%

They are confusing

We need to teach our kids the math they will have in the real world. I've been out of school 20 years and have worked with numbers everyday for 15 years and I have yet to use rational, irrational, intergers, etc

The standards are too hard for an 8th grade level student to even decipher... needs to be put in simpler terms...

In standard 8.NS.A.1, students really need to understand solving systems of equations by the elimination method before being able to change repeating decimals to a fraction. I have been teaching students to solve systems of equations as an extension but only by substitution. I like the standard 8.NS.A.2 except I think they should be able to approximate to the nearest integer without a calculator.

8.NSA.2 delete all or move to 7th.

I think that 8.NS.A.2 does not fit as nicely with the rest of the frameworks. It is a less necessary and specific topic to cover.

8.NS.A.2 Is vague and irrelevant for 8th grade math.

Seriously? NO one understands that except the people who wrote it.

Radicals and Integer Exponents	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	86.79%
I have read the above standards and offer the following comments.	
Number	Percent
7	13.21%

8th Grade Math

They do not provide the pre teaching and steps for young inexperienced teachers - they are teaching the skill not the steps before the skill

Move to Algebra 1 - this is too difficult for eighth grade students in general math

I feel that scientific notation could be more emphasized in these standards.

See about comment in no 1

the words of each standard are not simplified into a language the majority of students can understand

In 8.EE.2, the cube root needs to be taken out! The square roots are perfect there, but in grade 8, we spend a great deal of time teaching that every time you square a number, it's never negative. Therefore, we never put a negative under a square root radical. They need to be very fluent with this before dealing with cube roots in which there can be a negative under the radical. At this level, cube roots just cause confusion.

I believe cube roots should be taken out. 8th grade standards focus on linear equations. We do work with square roots, but cube roots are not a large part of our curriculum.

Proportional Relationships, Lines, and Linear Equations

I have read the above standards and think they are appropriate as written.

Number	Percent
48	90.57%

I have read the above standards and offer the following comments.

Number	Percent
5	9.43%

Inexperienced teachers are not teaching all the skills you need prior to this skill

See comment in no 1

these standards make it too complicated to understand how to solve problems

8.EE.B.6 I don't think it should be written that the students should use similar triangles to explain WHY the slope is the same, but maybe to illustrate that it is the same.

Too vague

8th Grade Math

Linear Equations

I have read the above standards and think they are appropriate as written.

Number	Percent
43	81.13%

I have read the above standards and offer the following comments.

Number	Percent
10	18.87%

Needs to be broken down into what they need to know to get to this skill

Move to Algebra 1 - systems of equations are not appropriate for eighth grade students in general math

See comment no 1

8.ee.c.7.a We do not understand the x=a, a=a, a=b (where a and b are different numbers)

8.EE.7.A- I do not believe students at this age level are mentally mature enough to begin working with different types of solutions. I believe that solutions should be kept to one solution equations. 8.EE.8- I do not believe students at this age level are mentally mature enough to be working with systems of equations.

CCSS.MATH.CONTENT.8.EE.C.8 fits better as content and is more developmentally appropriate if addressed first in an Algebra I course.

Needs better explanation

I am still not sure about systems of equations at this level. When I taught it students readily understood it graphically and could interpret the meaning of the solution as it applied to the real world problem I gave them. They struggled with solving systems algebraically. I spent a lot of time on it. Some students got it, but there were some who did not. I would be ok with introducing solving systems algebraially, but I think it would be better at this age to have students solve real world systems by choosing either graphically or algebraially. I also would not require students to solve a none real world algwbraically. I would give them the choice of using graphs is they would like.

8.EE.C.8.B is more appropriate for Algebra I. In eighth grade, students are still struggling with solving multi-step equations.

This standard is too difficult for average 8th grade students. It should be moved to Algebra 1 where students have a better understanding of linear equations.

Define, Evaluate, and Compare Functions

I have read the above standards and think they are appropriate as written.

Number	Percent
48	90.57%

8th Grade Math

I have read the above standards and offer the following comments.	
Number	Percent
5	9.43%

This skill is useless

See comment no 1

huh?

I do not believe that students are developmentally mature enough for functions. I believe that functions should be reserved for Algebra I.

8.F.A.3 is unclear as written.

Use Functions to Model

I have read the above standards and think they are appropriate as written.	
Number	Percent
46	86.79%

I have read the above standards and offer the following comments.	
Number	Percent
7	13.21%

It's note clear

See comment no 1

what does "qualitatively" mean?

I do not believe students are ready for functions.

In F.B.4, I'd like the wording to say "y-intercept" instead of "initial value."

This should be moved to High School Geometry since they have it again there anyway.

Give a real life reason for this

Congruence and Similarity

I have read the above standards and think they are appropriate as written.	
Number	Percent
42	79.25%

I have read the above standards and offer the following comments.

8th Grade Math

Number	Percent
11	20.75%

Schools do not have the software

Consider simplifying this particular standard - basic transformations should be included, but identifying images that are a result of multiple transformations is too difficult for this age in general math.

See comment no 1

why are bringing argumentative writing into mathematics in the 8th grade?

I think my students do not know as much geometry as they should when they get to grade 8. I think the geometry standards in earlier grades may not be sufficient or specific enough.

Once again, this should be moved to Geometry.

8.G.A.5 does not fit well with the rest of the 8th grade standards. This would be more appropriate with a grade level that focuses more on geometry rather than algebra (as the rest of 8th grade does). This should be moved down to 7th grade with the rest of the angle topics.

8.G.A.5 seems out of place for this course of study. We think this would be more appropriate with the other angles in 7th grade.

Too vague

Geometry should be moved to high school... this is too much to cover in 8th grade math.

This standard should be put into Geometry.

Pythagorean Theorem

I have read the above standards and think they are appropriate as written.

Number	Percent
44	83.02%

I have read the above standards and offer the following comments.

Number	Percent
9	16.98%

We jump to this? The standards need to build on each other

See comment no 1

after reading these common core standards... I am beginning to wonder if this is vocabulary class or math class?

8th Grade Math

CCSS.MATH.CONTENT.8.G.B.6 - Many students in 8th grade are still just entering into Piaget's Formal Operational Stage of cognitive development. This means that many if not most are cognitively unready to handle the deductive tasks required to develop a proof for any theorem much less explain one and its converse. This content may find a better home in Geometry standards or Algebra I standards.

In G.B.6, it is definitely a rigorous task for students to explain a proof of the Pythagorean Theorem. Some of the proofs require more algebra than they know at this level.

All of Geometry should be moved to High School Geometry class. This does not fit and they get it all again in Geometry. They don't recall it between 8th and Geometry. This would allow more time to delve in the number sense of Algebra.

Converse? I understand what we are wanting them to know but questions I have seen are too hard to comprehend

Explain a proof of the Pythagorean Theorem 8GB6. Students should know how the Pythagorean theorem was derived, but I feel this standard should be more concrete or specific. The standard could possibly state students will be given an example of a proof and they give reasons for steps or process.

I believe that 8.G.B.6 should be a concept saved for a high school geometry class. I do not believe that most grade 8 students are able to grasp and reproduce the proof of the Pythagorean Theorem and its converse.

Real-World Problems

I have read the above standards and think they are appropriate as written.

Number	Percent
43	81.13%

I have read the above standards and offer the following comments.

Number	Percent
10	18.87%

We need to make sure clearer steps are provided for the inexperienced teachers

See comment no 1

this sounds like math that would be used in a drafting class or college level math class..

This needs to be find the volume of prisms and pyramids too.

Same as question 8

This seems out of place with the overall theme of 8th grade curriculum. As a teacher, it is very difficult to fit this standard into our sequence of pre-algebra topics. This hurts the kids because it has no real context. Volume needs to be with other volume topics.

This seems out of place with the overall theme of the 8th grade standards. We believe this would be best placed with the other volume standards in the 7th grade.

This seems better suited for a geometry course.

This standard should be covered in the 7th grade and is not necessary in the 8th grade math standards.

I think this standard should be put in Geometry. The focus of 8th grade should be to get students ready for Algebra 1. This standard become clutter in the curriculum.

Patterns of Association in Bivariate Data

I have read the above standards and think they are appropriate as written.

Number	Percent
43	81.13%

I have read the above standards and offer the following comments.

Number	Percent
10	18.87%

Confusing

See comment no 1

I don't want to be a math teacher... ever..

Because the previous (8.F.3) standard asks students to determine if a relationship is linear or not linear, it causes confusion when we get to scatter plots and students are to determine if a scatter plot shows a linear relationship or not.(SP.A.1)

Don't see this again until they are in Algebra II or so. Move it to high school.

8.SPA.4 is extremely out of place in 8th grade. Why is it here at all? Any statistics not related to lines and scatter plots does not fit with the flow of the class and is difficult to present to students in a contextualized way. This would possibly fit better with 7th grade.

8.SP.A.4 seems out of place here. Why is it here?

This would be better suited for a future statistics course. This seems out of place in relation to the rest of the curriculum.

Patterns of Association in Bivariate Data is not important to 8th grade mathematics, and these standards should be removed.

8th Grade Math

I think this standard needs more explanation. Is the line of best fit simply an approximation? Can students make their own judgments about how closely their line fits the scatterplot? Tying bivariate data to linear graphs makes sense, but correlation coefficients should be left in higher math classes where they will use regression techniques.

9th-12th Grade Math

Rational and Irrational Numbers	
I have read the above standards and think they are appropriate as written.	
Number	Percent
47	78.33%
I have read the above standards and offer the following comments.	
Number	Percent
13	21.67%

This should be taught in Algebra 2

I understand the wording in the example part of HSN.RN.A.1 but I think after the "because", it gets a bit confusing.

HSN.RN.A.1 is very wordy and hard to understand. I had to look at the example to clearly understand. HSN.RN.B3 is fine the way it is written.

If the language used in the writing of the standard must be so "dense," please provide more examples of what is expected within the standard.

I would revise and synthesize the first standard.

Providing the example on RN.A.1 was very useful for teachers, parents, and students. I feel that you should provide examples when a standard is wordy or vague.

B3 Why "explain"? They are what they are. It seems that the word explain was put there to make it sound like it was a higher order thinking skill.

Standard HSN.RN.A.1 is too muddled at the beginning. Why does it not say something like "Explain, using the definition of rational exponents and properties of integers, that notation for radicals can be rewritten in terms of exponents."

I know this is the 9-12 standard, but our algebra I standards do not have powers of monomials. It is in 8th grade. I know it was a gap, but I had to teach that skill before my algebra I students were ready for quadratics and polynomials. It might be good for that skill to also be in Algebra I.

The writing of standards is like the writing of a lawyer. English plain and simple is best for me.

HSN.RN.B.3 is not specific enough. Is this simply an explanation of what happens, or should it also include operations with expressions?

9th-12th Grade Math

If standard RN.A.1 was written in understandable terms, it wouldn't need the "For example." Is this "For example" all that the standard is asking.

Specify in what grade or subject the standards should be taught.

Quantitative Reasoning

I have read the above standards and think they are appropriate as written.

Number	Percent
53	88.33%

I have read the above standards and offer the following comments.

Number	Percent
7	11.67%

Too vague

The second tow standards are quite broad and open to subjectivity (teacher/district/etc.)

QA.1 Use and interpret units consistently in formulas; understand and choose units to guide the solution of multi-step problems and interpret the scale and origin of graph and data displays.

Examples of these would be nice. A3 can be choosing inches instead of miles or something much more complex from the sounds of it.

HSN.Q.A.2 - Too open ended - what is descriptive modeling. HSN.Q.A.3 - To whose level of accuracy? Different for Statistics, AP Calculus, and Science courses. Our school expects the same across the curriculum.

All three standards for quantitative reasoning are extremely vague. what is a level of accuracy? Does it change by grade level?

Specify in what grade or subject the standards should be taught.

Complex Numbers

I have read the above standards and think they are appropriate as written.

Number	Percent
51	85.00%

I have read the above standards and offer the following comments.

Number	Percent
9	15.00%

This needs to be taught in Algebra 2

These are a bit vague.

9th-12th Grade Math

In standard HSN. CN.A.3, I did not understand what a moduli is (until I looked it up in a trigonometry textbook) and why it is applicable to Algebra 2.

Are we supposed to find moduli in Algebra II?

CN.A.1 ...has the form a + bi with "a" and "b" being real numbers.

Standard HSN.CN.A.1 seems to me that it should read "where a and b are real."

Why not give an example of your expectations for CNA.3

HSN.CN.A.3: Moduli?!

Specify in what grade or subject the standards should be taught.

Complex Numbers on the Complex Plane

I have read the above standards and think they are appropriate as written.

Number	Percent
48	80.00%

I have read the above standards and offer the following comments.

Number	Percent
12	20.00%

This should be taught in math higher than Algebra 2

This is way above anything I teach.

I do not know what polar form is. Can we have more explanation or an example in the standard?

In what course is this content taught? It seems way above algebra II.

.

These standards are not among those that our grade level teaches.

B5 shouldn't that be a square instead of cube?

Terrible standard. Teachers are not all really good at polar or even just good.. Due to that, this standard may be treated as a plus and not taught to algebra2 or higher mathematics.

HSN.CN.B.5 and HSN.CN.B.6 - too high a level for high school students; never did any of these type problems until masters work.

I feel that the complex number system is interesting and useful for some students, but most student will never use this information and our time could be better spent in other areas.

The average math teacher isn't going to understand what any of the above standards are asking him/her to teach. If the teacher doesn't understand and can't teach it, how does this help the students?

Specify in what grade or subject the standards should be taught.

Complex Numbers in Polynomial Identities and Equations

I have read the above standards and think they are appropriate as written.

Number	Percent
55	91.67%

I have read the above standards and offer the following comments.

Number	Percent
5	8.33%

This needs to be covered in Algebra 2.

C.7 Solve quadratic equations with real and complex solutions.

CNC9. Where is example. You have one for CNC8.

Knowledge of the complex number system should be limited to students who plan to study much more math. Students who plan to go not further than Algebra II could use the time on other areas.

Specify in what grade or subject the standards should be taught.

Model Vectors

I have read the above standards and think they are appropriate as written.

Number	Percent
50	83.33%

I have read the above standards and offer the following comments.

Number	Percent
10	16.67%

This needs to be covered in math higher than Algebra 2.

I would like an example. Some of these standards are vague and the wording is difficult to understand.

9th-12th Grade Math

Isn't this physics?

Too much for Algebra II.

I don't get into vectors; so, unsure if it is appropriately written

.

These standards are not among those that our grade level teaches.

High school math books don't support vectors as well as the standards want. Vectors seems to be better understood by my physics students that those who do not take physics.

Vectors are covered in physics for the few students that will ever use them. Stop the overlap.

Specify in what grade or subject the standards should be taught.

Perform Operations on Vectors

I have read the above standards and think they are appropriate as written.

Number	Percent
53	88.33%

I have read the above standards and offer the following comments.

Number	Percent
7	11.67%

This should be covered in a math higher than Algebra 2.

Above what I teach, so I have no comment.

I don't get into vectors; so, unsure if it is appropriately written

.

These standards are not among those that our grade level teaches.

Vectors are covered in physics for the few students that will ever use them. Stop the overlap. I have a degree in math. I learned very little about vectors in high school or college. I know all most no one who uses them.

Specify in what grade or subject the standards should be taught.

9th-12th Grade Math

Matrices	
I have read the above standards and think they are appropriate as written.	
Number	Percent
52	86.67%
I have read the above standards and offer the following comments.	
Number	Percent
8	13.33%

Keep this in Algebra 2.

Would like examples

HSN.VM.C.12 is confusing. I need an example.

Would like an example for HSN.VM.C.12

Any instance where a standard uses the verb "understand" is not effectively communicating the objective. Do you want the educator to "understand", or do you want them to "show", "model", or "explain"?

HSN VM C8. Possibly include with/without technology.

HSN.VM.C.12 - What is the point, considering the other ways transformations have been taught?

Specify in what grade or subject the standards should be taught.

Interpret Structure of Expressions	
I have read the above standards and think they are appropriate as written.	
Number	Percent
57	95.00%
I have read the above standards and offer the following comments.	
Number	Percent
3	5.00%

This needs to be in Algebra 1.

Aren't there better examples that could be used for these?

Specify in what grade or subject the standards should be taught.

9th-12th Grade Math

Expressions in Equivalent Forms	
I have read the above standards and think they are appropriate as written.	
Number	Percent
57	95.00%
I have read the above standards and offer the following comments.	
Number	Percent
3	5.00%

This needs to be in Algebra 1 and Algebra 2.

SSE.B.4 Not many students are going to be able to derive a formula.

Specify in what grade or subject the standards should be taught.

Operations on Polynomials	
I have read the above standards and think they are appropriate as written.	
Number	Percent
55	91.67%
I have read the above standards and offer the following comments.	
Number	Percent
5	8.33%

This should be in Algebra 2.

Understand that polynomials are closed under the operations of additions, subtractions, and multiplication.

I think the wording on this is a little confusing. I would reword it a little differently.

When have we talked about be closed under an operation? Middle school? Elementary School?

Specify in what grade or subject the standards should be taught.

Relationship Between Zeros and Factors of Polynomials	
I have read the above standards and think they are appropriate as written.	
Number	Percent
58	96.67%
I have read the above standards and offer the following comments.	
Number	Percent
2	3.33%

This needs to be in Algebra 2.

9th-12th Grade Math

Specify in what grade or subject the standards should be taught.

Polynomial Identities

I have read the above standards and think they are appropriate as written.

Number	Percent
55	91.67%

I have read the above standards and offer the following comments.

Number	Percent
5	8.33%

This belongs in Algebra 2.

Where in high school mathematics are the words and explanation of polynomial indentities?

HSA.APR.C.4 - This does not seem to blend with Algebra II. Pythagorean triples are a geometry concept. Be more specific, please.

The example for APR.C.4 doesn't fit the stem. The stem is talking about describing, and the example is looking at generating. APR.C.5 Does this refer only to Pascal's Triangle or are their other examples to be included in instruction?

Specify in what grade or subject the standards should be taught.

Rational Expressions

I have read the above standards and think they are appropriate as written.

Number	Percent
55	91.67%

I have read the above standards and offer the following comments.

Number	Percent
5	8.33%

This needs to be in Algebra 2.

Both are wordy.

These standards are not among those that our grade level teaches.

HSA.APR.D.6 - computer algebra system?

Specify in what grade or subject the standards should be taught.

9th-12th Grade Math

Create Equations	
I have read the above standards and think they are appropriate as written.	
Number	Percent
58	96.67%
I have read the above standards and offer the following comments.	
Number	Percent
2	3.33%
This should be in Algebra 1. Specify in what grade or subject the standards should be taught.	

Reasoning	
I have read the above standards and think they are appropriate as written.	
Number	Percent
58	96.67%
I have read the above standards and offer the following comments.	
Number	Percent
2	3.33%
This should be in Algebra 1. Except for HSA.REI.A.2, should be in Algebra 2. Specify in what grade or subject the standards should be taught.	

Solve Equations and Inequalities	
I have read the above standards and think they are appropriate as written.	
Number	Percent
57	95.00%
I have read the above standards and offer the following comments.	
Number	Percent
3	5.00%
This should be in Algebra 1 CED.A.4 - Add the example from this one to REI.B.3. Then delete REI.B.3. Specify in what grade or subject the standards should be taught.	

Solve Systems of Equations	
I have read the above standards and think they are appropriate as written.	
Number	Percent
56	93.33%

9th-12th Grade Math

I have read the above standards and offer the following comments.	
Number	Percent
4	6.67%

C.5 and C.6 need to be in Algebra 1. C.6, C.7, C.8 and C.9 should be in Algebra 2.

Don't quite understand HSA.REI.C8. Providing and example would be beneficial.

HSA.REI. C.5 - Prove is too high of a conceptual level of Algebra I students.

Specify in what grade or subject the standards should be taught.

Solve Equations and Inequalities Graphically

I have read the above standards and think they are appropriate as written.	
Number	Percent
58	96.67%
I have read the above standards and offer the following comments.	
Number	Percent
2	3.33%

This should be in Algebra 1

Specify in what grade or subject the standards should be taught.

Functions

I have read the above standards and think they are appropriate as written.	
Number	Percent
57	95.00%
I have read the above standards and offer the following comments.	
Number	Percent
3	5.00%

This should be covered in Algebra 1.

In HSF.IFA.1 this is definition of a function and should be worded to reflect that. Understand that a function is defined as a set that maps exactly one element of the domain with exactly one element of the range.

Specify in what grade or subject the standards should be taught.

Interpret Functions

I have read the above standards and think they are appropriate as written.	
Number	Percent
57	95.00%

9th-12th Grade Math

I have read the above standards and offer the following comments.	
Number	Percent
3	5.00%

These are Algebra 1 skills.

Thank you for explicitly defining key features of a graph in standard HSF.IF.B.4. Not just in HSF.IF.B.6, but throughout theses standards average rate of change is never referred to as slope. For years Arkansas teachers (especially at the calculus/pre-calculus level) have been relating the concepts of "slope" and "average rate of change" and I think that should be reflected somewhere in the wording of the standards.

Specify in what grade or subject the standards should be taught.

Analyze Functions

I have read the above standards and think they are appropriate as written.	
Number	Percent
55	91.67%

I have read the above standards and offer the following comments.	
Number	Percent
5	8.33%

These are Algebra 2 skills.

C.8.A Giving a context would be helpful.

In polynomial functions I would add the concepts of even and odd functions especially as it relates to symmetry. Also I would add identifying relative min and relative max from a graph.

Piecewise linear is fine at the Algebra I level. However, with other functions, it needs to be at the Algebra II level.

Specify in what grade or subject the standards should be taught.

Build Functions Modeling Relationship Between Two Quantities

I have read the above standards and think they are appropriate as written.	
Number	Percent
57	95.00%

I have read the above standards and offer the following comments.	
Number	Percent
3	5.00%

9th-12th Grade Math

These need to be covered in Algebra 2.

These standards are not among those that our grade level teaches.

Specify in what grade or subject the standards should be taught.

Build Functions from Existing Functions

I have read the above standards and think they are appropriate as written.

Number	Percent
55	91.67%

I have read the above standards and offer the following comments.

Number	Percent
5	8.33%

These need to be taught in Algebra 2.

In standard HSF.BF.B.3, the concept of TRANSFORMATIONS is discussed, but the word transformation in not used...why?

Not sure how to change it, but B3 is ugly!

HSF.BF.B.4.D - invertible? non-invertible?

Specify in what grade or subject the standards should be taught.

Compare Models and Solve Problems

I have read the above standards and think they are appropriate as written.

Number	Percent
56	93.33%

I have read the above standards and offer the following comments.

Number	Percent
4	6.67%

These are Algebra 1 skills.

Example for base 2

Example for base 2

Specify in what grade or subject the standards should be taught.

9th-12th Grade Math

Interpret Expressions for Functions	
I have read the above standards and think they are appropriate as written.	
Number	Percent
56	93.33%
I have read the above standards and offer the following comments.	
Number	Percent
4	6.67%

This is an Algebra 1 skill

Too broad. Which parameters?

The meaning of this standard would be more clear if you would include an example.

Specify in what grade or subject the standards should be taught.

Unit Circle	
I have read the above standards and think they are appropriate as written.	
Number	Percent
56	93.33%
I have read the above standards and offer the following comments.	
Number	Percent
4	6.67%

This should be covered in math higher than Algebra 2.

These standards are not among those that our grade level teaches.

These standards should be integrated into the math classes, not separated out into our current system of Algebra 1, Geometry, Algebra 2. We are the only nation that separated math and it doesn't make sense to do this. Geometry and Algebra should be learned hand in hand, not compartmentalized. We need to have an integrated system of mathematics for the high schools.

Specify in what grade or subject the standards should be taught.

Periodic Phenomena	
I have read the above standards and think they are appropriate as written.	
Number	Percent
57	95.00%
I have read the above standards and offer the following comments.	
Number	Percent
3	5.00%

9th-12th Grade Math

This should be covered in math higher than Algebra 2

These standards are not among those that our grade level teaches.

Specify in what grade or subject the standards should be taught.

Trigonometric Identities

I have read the above standards and think they are appropriate as written.

Number	Percent
55	91.67%

I have read the above standards and offer the following comments.

Number	Percent
5	8.33%

This should be covered in math higher than Algebra 2.

Worried about these coming into geometry for lower level kids. They don't have the foundational algebra skills to work through these without going through algebra 2 and most of them won't. For good math students they're great.

Why in Algebra II now?

The average student will be unable to prove either of the above.

Specify in what grade or subject the standards should be taught.

Transformations in the Plane

I have read the above standards and think they are appropriate as written.

Number	Percent
57	95.00%

I have read the above standards and offer the following comments.

Number	Percent
3	5.00%

This needs to stay in Geometry

The use of computers have caused us to place far too much emphasis on transformations.

Specify in what grade or subject the standards should be taught.

9th-12th Grade Math

Congruence	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	93.88%
I have read the above standards and offer the following comments.	
Number	Percent
3	6.12%
Why do we need to show congruence with rigid motions and transformations? I would like to see us open the discussion for going integrated. This would allow geometry to be an application each year instead of a disconnected subject and lighten the load of content that is currently placed on algebra 1 and 2. Specify in what grade or subject the standards should be taught.	

Geometric Theorems	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	93.88%
I have read the above standards and offer the following comments.	
Number	Percent
3	6.12%
This quantity of proofs is unnecessary for students who are not college bound. Proofs should be extra, only for pre-ap classes. Not enough time in regular classes Specify in what grade or subject the standards should be taught.	

Geometric Constructions	
I have read the above standards and think they are appropriate as written.	
Number	Percent
48	97.96%
I have read the above standards and offer the following comments.	
Number	Percent
1	2.04%
Specify in what grade or subject the standards should be taught.	

9th-12th Grade Math

Similarity Transformations	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	93.88%
I have read the above standards and offer the following comments.	
Number	Percent
3	6.12%
Eliminate the dilation of a line in A.1A and B These standards should be integrated into the other high school math classes instead of being separated into Algebra and Geometry classes. When math is taught holistically, students can make more powerful connections. Specify in what grade or subject the standards should be taught.	

Prove Theorems Involving Similarity	
I have read the above standards and think they are appropriate as written.	
Number	Percent
46	93.88%
I have read the above standards and offer the following comments.	
Number	Percent
3	6.12%
Triangle similarity is a very narrow way to look at proving the Pythagorean Theorem. Area proofs make more sense to students. B.4 Solve problems using a line parallel to one side of a triangle that divides the other sides proportionally, and conversely. Specify in what grade or subject the standards should be taught.	

Trigonometric Ratios	
I have read the above standards and think they are appropriate as written.	
Number	Percent
47	95.92%
I have read the above standards and offer the following comments.	
Number	Percent
2	4.08%
HSG.SRT.C.6 Does everyone realize this is taking trig to the unit circle? Specify in what grade or subject the standards should be taught.	

9th-12th Grade Math

Apply Trigonometry to General Triangles	
I have read the above standards and think they are appropriate as written.	
Number	Percent
43	87.76%
I have read the above standards and offer the following comments.	
Number	Percent
6	12.24%

This concept is too difficult for Sophomores to understand.

D.10 What types of problems?

Keep these extra

Again the lower level geometry kids may not have the algebra skills to handle this past the point of "here is more math that I'm never going to use!" They are good extensions, but I'm not convinced they should be standards.

The average student will not be able to derive or prove the above standards.

Specify in what grade or subject the standards should be taught.

Theorems about Circles	
I have read the above standards and think they are appropriate as written.	
Number	Percent
48	97.96%
I have read the above standards and offer the following comments.	
Number	Percent
1	2.04%

Specify in what grade or subject the standards should be taught.

Arc Lengths and Areas of Sectors	
I have read the above standards and think they are appropriate as written.	
Number	Percent
47	95.92%
I have read the above standards and offer the following comments.	
Number	Percent
2	4.08%

Radian measure does not need to be in Geometry, and it is set up odd on the reference sheet.

9th-12th Grade Math

Specify in what grade or subject the standards should be taught.

Conic Sections

I have read the above standards and think they are appropriate as written.	
Number	Percent
43	87.76%
I have read the above standards and offer the following comments.	
Number	Percent
6	12.24%

This is an Algebra 2 concept.

I do not like the way these topics have been split between three courses.

These standards are not among those that our grade level teaches.

does not need to be in Geometry

Are conics taught in College Algebra and College Trig? These are not skills that the average student needs. The above average student can easily learn about these in higher math courses.

Specify in what grade or subject the standards should be taught.

Coordinates

I have read the above standards and think they are appropriate as written.	
Number	Percent
47	95.92%
I have read the above standards and offer the following comments.	
Number	Percent
2	4.08%

Is all of this necessary for the ACT Aspire and ACT?

Specify in what grade or subject the standards should be taught.

Volume Formulas

I have read the above standards and think they are appropriate as written.	
Number	Percent
45	91.84%
I have read the above standards and offer the following comments.	
Number	Percent

4	8.16%

I think that it is difficult to learn volume without doing area at the same time. Also, it seems more logical to have less proof in this unit and more practical application, particularly for non-college bound students.

Where is Surface area?

HSG.Gmd.A.1 - needs to be more specific

Specify in what grade or subject the standards should be taught.

Two-Dimensional and Three-Dimensional Objects

I have read the above standards and think they are appropriate as written.

Number	Percent
47	95.92%

I have read the above standards and offer the following comments.

Number	Percent
2	4.08%

7.G.B.4 should be attached to HSG.GMD.B.4 It is not related to any other standards in the 6-8 standards.

Specify in what grade or subject the standards should be taught.

Geometric Modeling

I have read the above standards and think they are appropriate as written.

Number	Percent
47	95.92%

I have read the above standards and offer the following comments.

Number	Percent
2	4.08%

Does not need to be included

Specify in what grade or subject the standards should be taught.

Data

I have read the above standards and think they are appropriate as written.

Number	Percent
43	87.76%

I have read the above standards and offer the following comments.

Number	Percent
6	12.24%

9th-12th Grade Math

This is an Algebra 1 concept

Is this really necessary in Algebra II?

These standards are not among those that our grade level teaches.

Not Geometry in algebra II or algebra I

Many math teachers do not understand some of the statistical terminology if they have not been involved in AP Statistics or other training. There needs to be more training available for teachers to understand these standards.

Specify in what grade or subject the standards should be taught.

Data on Two Categorical and Quantitative Variables

I have read the above standards and think they are appropriate as written.

Number	Percent
44	89.80%

I have read the above standards and offer the following comments.

Number	Percent
5	10.20%

This is an Algebra 1 concept

Are residual plots necessary for Algebra II?

Not Geometry, algebra

HSS.ID.B.5 - More explanation; we have a disagreement on what this means. HSS.ID.B.6.B - We are not sure that all teachers know and understand about residuals. HSS.ID.B.6.C - We are not sure that all teachers know the difference between correlation and association.

Specify in what grade or subject the standards should be taught.

Linear Models

I have read the above standards and think they are appropriate as written.

Number	Percent
45	91.84%

I have read the above standards and offer the following comments.

Number	Percent
4	8.16%

9th-12th Grade Math

Algebra 1

C.8 and 9 is not Geometry but Algebra

HSS.ID.C.9 - There has been a lot of change involving statistics. Are all teachers sure of the difference?

Specify in what grade or subject the standards should be taught.

Random Processes

I have read the above standards and think they are appropriate as written.

Number	Percent
44	89.80%

I have read the above standards and offer the following comments.

Number	Percent
5	10.20%

Algebra 1

I don't teach Stats; so unsure if they are appropriately written.

These standards are not among those that our grade level teaches.

HSS.IC.A.1 - How in depth should the inferences go, i.e. hypothesis testing? HSS.IC.A.2 - Does everyone truly understand random?

Specify in what grade or subject the standards should be taught.

Inferences and Conclusions

I have read the above standards and think they are appropriate as written.

Number	Percent
42	85.71%

I have read the above standards and offer the following comments.

Number	Percent
7	14.29%

This belongs in a Stats course

I think there is too much statistics in Algebra II.

HSS.IC.B.6 - include types of reports or an example

These standards are not among those that our grade level teaches.

Nice, but lots to do in Algebra II

Again, teachers need training on statistics and its terminology.

Specify in what grade or subject the standards should be taught.

Independence and Conditional Probability

I have read the above standards and think they are appropriate as written.

Number	Percent
43	87.76%

I have read the above standards and offer the following comments.

Number	Percent
6	12.24%

Algebra 1

Confusing

These standards are not among those that our grade level teaches.

Nice but lots to do in Algebra II

The above statistics standards fit an AP Statistics course rather than the statistics that is taught in Algebra II.

Specify in what grade or subject the standards should be taught.

Rules of Probability and Compound Events

I have read the above standards and think they are appropriate as written.

Number	Percent
44	89.80%

I have read the above standards and offer the following comments.

Number	Percent
5	10.20%

Algebra 1

B.9 What types of problems?

These standards are not among those that our grade level teaches.

9th-12th Grade Math

Nice but lot to do in Algebra II

Specify in what grade or subject the standards should be taught.

Expected Values

I have read the above standards and think they are appropriate as written.

Number	Percent
44	89.80%

I have read the above standards and offer the following comments.

Number	Percent
5	10.20%

Algebra 1

Too much

I don't teach Stats; so unsure if they are appropriately written.

These standards are not among those that our grade level teaches.

Specify in what grade or subject the standards should be taught.

Use Probability

I have read the above standards and think they are appropriate as written.

Number	Percent
45	91.84%

I have read the above standards and offer the following comments.

Number	Percent
4	8.16%

Algebra 1

Too much

These standards are not among those that our grade level teaches.

Specify in what grade or subject the standards should be taught.

ARKANSAS
K-12 COMPUTER SCIENCE
A FRAMEWORK FOR DYNAMIC LEARNING

Computer Science Education Week

Information on various Computer Science Education week events that took place this week will be shared.

K-8 Computer Science Standards Public Comment Survey

The Arkansas Department of Education (ADE) is encouraging all Arkansas educators and members of the public to take part in a public comment opportunity that is open from November 20 - December 20, 2015 on the Arkansas K-8 Computer Science Standards. A summary of the comments will be made available upon the completion of the survey period.

ADE is encouraging all educators to watch a brief webinar introduction to the standards prior to completing the survey, which can be found at https://www.youtube.com/watch?v=0yrZXQS-344.

The Arkansas K-8 Computer Science Standards Public Comment Survey, which includes screenshots of the current draft version of the standards, can be found at https://www.surveymonkey.com/r/2Q992RC.

The Arkansas K-8 Computer Science Standards is composed of three different documents - *Final drafts will be linked after the public comment period ends*.

- K - 4 Computer Science Standards - *to be embedded across all curriculum areas*
- 5 - 8 Computer Science Standards - *to be embedded across all curriculum areas*
- 7th/8th Grade Coding Block - *to be taught within a standalone block of time*

The embedded K-8 Computer Science Standards provide an introduction to computing concepts that can be embedded into other classes. The standards support critical thinking through algorithmic problem solving. The course strands, content standards, and the student learning expectations (SLEs) are meant to be taught in an integrated manner, not in isolation. Integration of basic computer science skills and knowledge through practical classroom experiences promote connections to all subject areas and to the real world.

The 7th/8th Grade Coding Block is designed to be taught in a standalone block of time to every student in either 7^{th} or 8^{th} grade. As part of this block, students will examine how to formulate algorithms, as well as, create, analyze, test and debug computer programs to solve real-world problems. Students will be required to use a text-based programming language to accomplish these tasks. These standards are to be taught in an identified block of time and not taught by embedding as an activity spread out over a number of weeks in current courses.

Based on the results of the survey, which will be reviewed during the standards development committee's December meeting, needed modifications and clarification statements will be added.

Final versions of these standards will be brought before the State Board in January 2016 for consideration.