TITLE 23: EDUCATION AND CULTURAL RESOURCES
SUBTITLE A: EDUCATION
CHAPTER I: STATE BOARD OF EDUCATION
SUBCHAPTER b: PERSONNEL

PART 21
STANDARDS FOR ENDORSEMENTS IN THE MIDDLE GRADES

SUBPART A: GENERAL

Section
21.10 Purpose and Effective Dates of Standards

SUBPART B: STANDARDS FOR ALL TEACHERS IN THE MIDDLE GRADES

21.100 General Standards
21.120 Literacy Standards for All Teachers in the Middle Grades
21.130 Dispositions

SUBPART C: STANDARDS FOR LITERACY TEACHERS

21.140 English Language Arts Standards for Literacy Teachers in the Middle Grades

SUBPART D: STANDARDS FOR MATHEMATICS TEACHERS

21.150 Mathematics Standards for Mathematics Teachers in the Middle Grades

AUTHORITY: Implementing Article 21B and authorized by Section 2-3.6 of the School Code [105 ILCS 5/Art. 21B and 2-3.6].

SOURCE: Adopted at 37 Ill. Reg. 16691, effective October 2, 2013.

SUBPART A: GENERAL

Section 21.10 Purpose and Effective Dates of Standards

a) This Part establishes the standards that, together with the standards set forth in Standards for All Illinois Teachers (23 Ill. Adm. Code 24), shall apply to the issuance of endorsements in the middle grades (i.e., grades 5 through 8) on professional educator licenses pursuant to Article 21B of the School Code [105 ILCS 5/Art. 21B]. The standards set forth in this Part shall apply both to candidates for endorsements in middle grades and to the programs that prepare them. That is:

1) beginning July 1, 2013, approval of any teacher preparation program or course of study in middle grades, whether currently approved or newly proposed, pursuant to the State Board's rules for Educator Licensure (23 Ill. Adm. Code 25, Subpart C) shall be based on the congruence of that program's or course's content with the standards identified in this Part;

2) on or before February 1, 2018, the examinations required for issuance of an endorsement in middle grades shall be based on the standards identified in this Part; and

3) on or before February 1, 2018, each middle grades program seeking approval shall work in consultation with one or more community colleges to ensure the articulation of coursework between the two institutions and, as applicable, the alignment of community college coursework relevant to middle grades education to the standards set forth in this Part.

b) In addition to demonstrating congruence with the standards set forth in this Part, each program or course of study in the middle grades shall meet the requirements set forth in 23 Ill. Adm. Code 25.99 (Endorsement for Middle Grades (Grades 5 through 8)).

SUBPART B: STANDARDS FOR ALL TEACHERS IN THE MIDDLE GRADES

Section 21.100 General Standards

Effective teachers in the middle grades possess the knowledge and skills articulated in the "Middle Level Teacher Preparation Standards" (2012) published by the Association for Middle Level Education, 4151 Executive Parkway, Suite 300, Westerville OH 43081and posted at http://www.amle.org/ProfessionalPreparation/AMLEStandards/tabid/374/Default.aspx. (No later amendments to or editions of these standards are incorporated.)

Section 21.120 Literacy Standards for All Teachers in the Middle Grades

Each teacher in the middle grades shall possess the knowledge and skills articulated in this Section.

a) The Disciplinary Literacy Curriculum

Effective middle grade teachers:

1) understand and use the scientific basis of teaching to plan, evaluate and modify instruction (e.g., use of appropriate research in identifying and implementing effective instructional practices);

2) know the developmental sequence of language and literacy skills, along with age-level or grade-level benchmarks of development, particularly for adolescent learners;

3) understand the Illinois Learning Standards for English Language Arts and Literacy in History/Social Studies, Science and Technical Subjects (23 Ill. Adm. Code 1.Appendix D, State Goals for Learning), their organization, progressions and the interconnections among the skills;

4) understand the role of systematic and explicit teaching of literacy skills; and

5) understand the influence of students' literacy skills on their performance on discipline-specific assessments.

b) Foundational Knowledge

1) Language

Effective middle grade teachers understand:

A) the nature and communicative role of various features of language, including semantics, syntax, morphology and pragmatics;

B) major theories and stages of first and second literacy acquisition and the role of native language in learning to read and write in a second language;

C) language, reading and writing development across the middle school years using supporting evidence from theory and research;

D) the role of academic language in developing students' understanding of concepts, content, skills and processes; and

E) conventions of standard English grammar and usage (e.g., irregular plural nouns, past tense of irregular verbs, subject-verb agreement, pronoun-antecedent agreement, conjunctions, prepositions, interjections, perfect verb tenses).

2) Text

Effective middle grade teachers understand:

A) the quantitative, qualitative and individual factors that affect text complexity, including how to estimate text readability;

B) the organizational structures, literary devices, rhetorical features, text features and graphics commonly used in literary and informational texts;

C) the characteristics of various genre or forms of literary and informational text; and

D) the role, perspective and purpose of text in specific disciplines.

c) Using Research-Based Instructional Approaches

1) Reading Comprehension

Effective middle grade teachers:

A) select high-quality texts that match student needs and educational goals;

B) identify disciplinary text features that may impede comprehension (e.g., author's assumption of prior knowledge, use of unusual key vocabulary, complexity of sentences, unclear cohesive links, subtlety of relationships among characters or ideas, sophistication of tone, complexity of text structure, use of literary devices or data);

C) scaffold reading to enable students to understand and learn from challenging text (e.g., re-reading, pre-teaching of vocabulary or key information not provided in the text);

D) introduce texts efficiently providing a clear purpose for reading and refrain from revealing information that students can learn from reading the text;

E) guide close reading discussions that require students to identify the key ideas and details of a text, analyze the text's craft and structure (including the tone and meaning of words) and critically evaluate the text;

F) teach students to trace and evaluate the argument and specific claims in a text and to distinguish claims that are supported by reasons and evidence from those claims that are not supported;

G) provide instruction in interpreting graphic features (e.g., tables, charts, illustrations, tables of contents, captions, headings, indexes) and their relationship to text;

H) guide students to use note-taking, previewing, identification of main idea and supporting details, and review strategies to clarify and solidify comprehension;

I) ask high-level, text-dependent questions;

J) support students in analyzing the organizational structure of texts (e.g., sequentially, causally, comparatively) and in considering how specific sentences, paragraphs and larger portions of the text relate to each other and to the text as a whole;

K) assist students with recognizing features of text common to individual disciplines;

L) guide students to identify and analyze content in texts that indicates point of view, perspective, purpose, fact, opinion, speculation and audience;

M) guide the reading of multiple texts to enable students to comparatively analyze and evaluate information and synthesize

information from the texts into a coherent understanding of a topic; and

N) model and encourage the use of reading strategies to improve comprehension (e.g., predicting, purpose-setting, sequencing, connecting, visualizing, monitoring, questioning, summarizing, synthesizing, making inferences, evaluating).

2) Writing

Effective middle grade teachers:

A) provide instructional support and opportunities for students to write routinely for authentic purposes in multiple forms and genres to demonstrate the power and importance of writing throughout their lives;

B) engage students in using writing to develop an understanding of content area concepts and skills;

C) support students in producing coherent and clear writing with organization, development, substance and style appropriate to the task, purpose and audience;

D) provide feedback to written work to guide students' revisions;

E) reinforce the process for writing arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence;

F) provide instruction to students on how to create a text that introduces an opinion on a topic, supports the opinion with information and reasons based on facts and details, uses appropriate transitional devices and concludes with a statement supporting the opinion;

G) provide instructional support for creating a narrative text based on real or imagined experiences or events that introduces a narrator and/or characters; uses dialogue, description and pacing to develop and organize a sequence of events; uses concrete words, phrases, sensory details and transitional devices; and uses a conclusion that follows from the experiences or events;

H) facilitate the writing of informative and explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization and analysis of content;

I) instruct students in the skills necessary to conduct research projects using evidence drawn from multiple sources (including how to select and develop topics; gather information from a variety of sources, including the Internet; synthesize information; paraphrase, summarize and quote or cite sources);

J) provide support in using search terms effectively, assessing the credibility and accuracy of sources, avoiding plagiarism and following a standard format for citations;

K) facilitate the use of the conventions of standard English grammar (e.g., irregular plural nouns, past tense of irregular verbs, subject-verb agreement, pronoun-antecedent agreement, conjunctions, prepositions, interjections, perfect verb tenses); and

L) engage students in using technology to produce and publish writing and to interact and collaborate with others.

3) Speaking and Listening

Effective middle grade teachers:

A) engage students in a variety of oral language activities, including whole and small group collaborative discussion, asking questions, reporting on a topic and recounting experiences;

B) teach students to present ideas and information; use facts and relevant details to support main ideas; and use presentation software, media and visual displays appropriate to the purpose and audience;

C) support students in using conventions of standard English, eye contact, voice projection and enunciation in formal presentations; and

D) teach students to listen actively and critically in order to understand, evaluate and respond to a speaker's message.

4) Vocabulary

Effective middle grade teachers:

A) for the instructional focus, select appropriate words central to the meaning of the text and likely to be unfamiliar, academic vocabulary and word relationships;

B) support the use of word-solving strategies for clarifying the meaning of unfamiliar words, including contextual analysis, structural analysis and the use of reference materials;

C) support oral and written language development and the use of newly acquired vocabulary across disciplines;

D) understand and implement the forms and functions of academic language to help students develop and express content understandings;

E) utilize authentic text to help students develop word consciousness; and

F) actively engage students in using a wide variety of strategies for developing and expanding vocabularies.

d) Using Materials, Texts and Technology

Effective middle grade teachers:

1) use a wide range of high-quality literature and informational texts, including primary sources;

2) select literature and informational texts that address the interests, backgrounds and learning needs of each student;

3) estimate the difficulty level of text using readability measures and qualitative factors, and make text accessible to students;

4) use culturally responsive texts to promote students' understanding of their lives and society;

5) use a variety of technologies to support disciplinary literacy instruction (e.g., computers, cameras, interactive websites, blogs, online research); and

6) use techniques for helping students navigate online sources, including the importance of critically evaluating the information available online by addressing sources, audience and purpose.

e) Monitoring Student Learning through Assessment

Effective middle grade teachers:

1) assess students' interest, engagement and response to instruction to guide teaching;

2) use assessment data, student work samples and observations from continuous monitoring of student progress to plan and evaluate disciplinary literacy instruction;

3) provide feedback to students on their work to help them understand their own progress and how to improve performance;

4) communicate results of assessments appropriately;

5) engage students in self-assessment; and

6) recognize how to maintain and use accurate records of students' performance and progress in meeting disciplinary literacy standards.

f) Meeting the Needs of Diverse Learners

Effective middle grade teachers:

1) understand the impact of cultural, linguistic, cognitive, academic, physical, social and emotional differences on language development and literacy;

2) seek appropriate assistance and support for struggling readers and writers;

3) collaborate and plan with other professionals to deliver a consistent, sequenced and supportive instructional program for each student;

4) differentiate strategies, materials, pace, levels of text and language complexity to introduce concepts and skills to meet the diverse learning needs of each student; and

5) make content accessible in appropriate ways to English language learners.

g) Constructing a Supportive Language and Literacy Environment

Effective middle grade teachers:

1) understand motivation and engagement and the use of the "gradual release of responsibility approach" to design learning experiences that build student self-direction and ownership of literacy learning;

2) establish classroom routines that promote independence, self-direction, collaboration and responsibility for disciplinary literacy learning;

3) incorporate student choices in determining reading and writing materials and activities; and

4) build collaborative classroom communities that support and engage all students in reading, writing, listening, speaking, viewing and visually representing their thoughts and ideas.

Section 21.130 Dispositions

Teachers in the middle grades are committed to building the capacity of every student to reach his or her highest potential as a learner. The development of the learner is shaped by not only the content and pedagogical knowledge of the teacher but also by the professional and technical dispositions that are consistently exhibited. Effective middle grade teachers:

a) value and promote the importance of interdisciplinary content that is part of the middle school concept and demonstrate how these content areas interrelate with all areas of educational content currently and in the future;

b) exhibit high levels of self-efficacy related to their applicable core content area of instruction, and seek to develop beliefs of self-efficacy in their students;

c) demonstrate the ability to be thoughtful and responsive listeners and observers;

d) demonstrate the ability to persevere, appropriately seeking out resources and support when presented with personal or professional challenges; and

e) embody the Code of Ethics for Illinois Educators (23 Ill. Adm. Code 22) and the Standards for All Illinois Teachers (23 Ill. Adm. Code 24), as applicable to the educator, in the learning environment.

SUBPART C: STANDARDS FOR LITERACY TEACHERS

Section 21.140 English Language Arts Standards for Literacy Teachers in the Middle Grades

In addition to the standards set forth in Subpart B of this Part, each literacy teacher in the middle grades shall possess the knowledge and skills articulated in this Section.

a) The Language, Literacy and Literature Curriculum

Effective middle grade literacy teachers:

1) understand and use the scientific basis of teaching to plan, evaluate and modify instruction (i.e., the use of appropriate research in identifying and implementing effective instructional practices);

2) know the developmental sequence of language and literacy skills, along with age-level or grade-level benchmarks of development, particularly for adolescent learners;

3) understand the Illinois Learning Standards for English Language Arts and Literacy in History/Social Studies, Science and Technical Subjects, their organization, progressions and the interconnections among the skills;

4) understand and evaluate the components of a comprehensive English language arts curriculum that develops students' literacy skills and strategies, and ensures that instructional goals and objectives are met;

5) understand the role of systematic and explicit teaching of literacy skills in prekindergarten through grade 12;

6) understand the influence of students' literacy skills on their performance on discipline-specific assessments;

7) understand the connections between the English language arts curriculum and developments in culture, society and education;

8) understand and use research-based instructional strategies that have been demonstrated to be particularly successful for supporting struggling readers;

9) know how adolescents read and compose texts and make meaning through interaction with media environments; and

10) understand a wide range of developmentally appropriate literacy assessments, recognizing their purposes, strengths and limitations, (e.g., standardized assessments, diagnostic measures, universal screening, curriculum-based assessments, progress monitoring).

b) Foundational Knowledge

1) Language

Effective middle grade literacy teachers understand:

A) language, reading and writing development across the middle school years, using supporting evidence from theory and research;

B) the nature and communicative role of various features of language, including phonology, semantics, syntax, morphology and pragmatics;

C) major theories and stages of first and second literacy acquisition and the role of native language in learning to read and write in a second language;

D) the role of academic language in developing students' understanding of concepts, content, skills and processes;

E) the evolution of the English language and historical influences on its forms and how to integrate this knowledge into student learning;

F) conventions of standard English grammar and usage (e.g., irregular plural nouns, past tense of irregular verbs, subject-verb agreement, pronoun-antecedent agreement, conjunctions, prepositions, interjections, perfect verb tenses); and

G) the impact of language on society.

2) Alphabetic Code

Effective middle grade literacy teachers understand:

A) phonological awareness (sound structure of words, including syllables, onsets and rimes, phonemes), its development (from word and syllable separations to phonic segmentation) and relationship to reading and writing proficiency;

B) the orthographic-phonological system, including sound-letter relationships, and common English spelling patterns and their relationship to pronunciation; and

C) structural analysis (e.g., syllabication, affixes, root words) for decoding unknown words.

3) Text

Effective middle grade literacy teachers understand:

A) the quantitative, qualitative and individual factors that affect text complexity, including how to estimate text readability;

B) the organizational text structures, literary devices, rhetorical features, text features and graphics commonly used in literary and informational texts;

C) the characteristics of various genre or forms of literary and informational text;

D) the role, perspective and purpose of text in specific disciplines;

E) how to analyze a modern work of literature and determine how it draws on themes, patterns or events or character types from myths, traditional stories or religious works, such as the Bible, including describing how the material is rendered new; and

F) a variety of textual and programmatic resources for addressing the needs of struggling readers, including those that are high-interest, low-readability.

4) Literature for Adolescents and Younger Adults

Effective middle grade literacy teachers understand:

A) works representing a broad historical and contemporary spectrum of the United States, Britain and the world, including non-Western literature;

B) works from a variety of genres and culture, including adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire and graphic novels;

C) works of poetry, including narrative poems, lyrical poems, free verse poems, sonnets, odes, ballads and epics;

D) works of one-act and multi-act plays, both in written form and on film;

E) works of literary nonfiction, including subgenres of exposition, argument and functional text in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, technical or economic accounts written for a broad audience;

F) works by female authors and authors of color; and

G) works that represent the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.

c) Using Research-Based Instructional Approaches

1) Decoding and Fluency

Effective middle school literacy teachers:

A) use a variety of developmentally appropriate approaches for teaching decoding (e.g., phonemes, sound-symbol relationships, spelling patterns, syllabication, structural analysis) of regular words, irregular words and multi-syllable words, in isolation and within texts; and

B) use a variety of approaches for supporting the fluent reading of text (i.e., with sufficient accuracy, rate and expression).

2) Reading Comprehension

Effective middle grade literacy teachers:

A) select high-quality texts that match student needs and educational goals;

B) identify text features that may impede comprehension (e.g., author's assumption of prior knowledge, use of unusual key vocabulary, complexity of sentences, unclear cohesive links, subtlety of relationships among characters or ideas, sophistication of tone, complexity of text structure, use of literary devices or data);

C) scaffold reading to enable students to understand and learn from challenging text (e.g., re-reading, pre-teaching of vocabulary or key information not provided in the text);

D) introduce texts efficiently, providing a clear purpose for reading (and without revealing information the students can learn from reading the text);

E) guide close reading discussions that require students to identify the key ideas and details of a text, to analyze the text's craft and structure (including the tone and meaning of words) and to critically evaluate the text;

F) teach students to recognize literary elements and devices across literary genres and forms of informational text;

G) teach students to trace and evaluate the argument and specific claims in a text and to distinguish claims that are supported by reasons and evidence from claims that are not supported;

H) provide instruction in interpreting graphic features (e.g., tables, charts, illustrations, tables of contents, captions, headings, indexes) and their relationship to text;

I) provide instruction in using note-taking, previewing, identification of main idea and supporting details, and review strategies to clarify and solidify comprehension;

J) ask high-level, text-dependent questions;

K) provide instruction in analyzing the organizational structure of texts (e.g., sequentially, causally, comparatively), and in considering how specific sentences, paragraphs and larger portions of the text relate to each other and the whole;

L) assist students with recognizing features of text common to individual disciplines;

M) provide instruction and opportunities for students to identify and analyze content in texts that indicates point of view, perspective, purpose, fact, opinion, speculation and audience;

N) guide the reading of multiple texts to enable students to comparatively analyze and evaluate information, and to synthesize information from the texts into a coherent understanding of a topic;

O) guide the reading of multiple texts across similar themes to compare the approaches taken by the authors, and how the structures contribute to meaning and style; and

P) teach students to use reading strategies to improve comprehension (e.g., predicting, purpose setting, sequencing, connecting, visualizing, monitoring, questioning, summarizing, synthesizing, making inferences, evaluating).

3) Writing

Effective middle grade literacy teachers:

A) teach students to write routinely for authentic purposes in multiple forms and genres to demonstrate the power and importance of writing throughout their lives;

B) engage students in using writing to develop an understanding of concepts and skills;

C) provide instruction in producing coherent and clear writing with organization, development, substance and style appropriate to the task, purpose and audience;

D) provide feedback to written work to guide students' revisions;

E) provide instruction in writing arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence;

F) provide instruction in creating a text that introduces an opinion on a topic, supports the opinion with information and reasons based on facts and details, uses appropriate transitional devices and concludes with a statement supporting the opinion;

G) provide instruction in creating a narrative text based on real or imagined experiences or events that introduces a narrator and/or characters; uses dialogue, description and pacing to develop and organize a sequence of events; uses concrete words, phrases, sensory details and transitional devices; and uses a conclusion that follows from the experiences or events;

H) provide instruction in writing informative and explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization and analysis of content;

I) teach students to conduct research projects using evidence drawn from multiple sources, including how to select and develop topics; gather information from a variety of sources, including the Internet; synthesize information; paraphrase, summarize and quote and cite sources;

J) provide instruction in conducting online searches (i.e., assessing the credibility and accuracy of sources, avoiding plagiarism and following a standard format for citations);

K) provide instruction in the conventions of standard English grammar and usage (e.g., irregular plural nouns, past tense of irregular verbs, subject-verb agreement, pronoun-antecedent agreement, conjunctions, prepositions, interjections, perfect verb tenses);

L) provide instruction in the conventions of standard English capitalization, punctuation and spelling;

M) use sentence combining as a method to provide students with opportunities to embed words, phrases and clauses in a variety of grammatically appropriate forms of sentence structures;

N) provide instruction in using technology to produce and publish writing and to interact and collaborate with others; and

O) use "conferencing" to motivate and scaffold students' development throughout the writing process.

4) Speaking and Listening

Effective middle grade literacy teachers:

A) engage students in a variety of oral language activities, including whole and small group collaborative discussion, asking questions, reporting on a topic and recounting experiences;

B) instruct students in presenting ideas and information using facts and relevant details to support main ideas and using presentation software, media and visual displays appropriate to the purpose and audience;

C) provide instruction for students in using conventions of standard English, eye contact, voice projection and enunciation in formal presentations, and when to adjust speech to a variety of contexts and tasks;

D) teach students to listen actively and critically in order to understand, evaluate and respond to a speaker's message; and

E) engage students in critical analysis of different media and communication technologies and their effects on students' learning.

5) Vocabulary

Effective middle grade literacy teachers:

A) utilize authentic text to help students develop word consciousness;

B) for the instructional focus, select appropriate words central to the meaning of the text and likely to be unknown, academic vocabulary and word relationships;

C) introduce students to forms of language that enhance vocabulary and understanding of language (e.g., idioms, figurative language, poetic devices, synonyms, antonyms, homonyms, adages, proverbs);

D) teach the use of word-solving strategies for clarifying the meaning of unknown words, including contextual analysis, structural analysis and the use of reference materials;

E) actively engage students in using a wide variety of strategies for developing and expanding vocabularies;

F) provide instruction in oral and written language development and the use of newly acquired vocabulary across disciplines; and

G) understand and implement the forms and functions of academic language to help students develop and express content understandings.

d) Using Materials, Texts and Technology

Effective middle grade literacy teachers:

1) use a wide range of high-quality literature and informational texts, including primary sources;

2) select literature and informational texts that address the interests, backgrounds and learning needs of each student;

3) estimate the difficulty level of text using readability measures and qualitative factors and make text accessible to students;

4) use culturally responsive texts to promote students' understanding of their lives and society;

5) use a variety of technologies to support disciplinary literacy instruction (e.g., computers, cameras, interactive websites, blogs, online research);

6) use techniques for helping students navigate online sources, including the importance of critically evaluating the information available online by addressing sources, audience, purpose and currency; and

7) use research-based criteria for selecting and evaluating instructional materials for use in the teaching of the language arts.

e) Monitoring Student Learning through Assessment

Effective middle grade literacy teachers:

1) understand and use a wide range of developmentally appropriate literacy assessments and rubrics (e.g., standardized assessments, diagnostic measures, universal screening, curriculum-based assessments and progress monitoring), recognizing their purposes, strengths and limitations;

2) monitor student progress in meeting developmental benchmarks in literacy, and maintain and use accurate records of students' progress and performance;

3) assess students' interest, engagement and response to instruction to guide teaching;

4) use assessment data, student work samples and observations from continuous monitoring of student progress to plan and evaluate literacy instruction;

5) provide feedback to students on their work to help them understand their own progress and how to improve performance;

6) communicate results of assessments appropriately;

7) engage students in self-assessment;

8) interpret and use assessment data to analyze individual, group and classroom literacy performance and progress; and

9) recognize how to maintain and use accurate records of students' performance and progress in meeting literacy standards.

f) Meeting the Needs of Diverse Learners

Effective middle grade literacy teachers:

1) understand the impact of cultural, linguistic, cognitive, academic, physical, social and emotional differences on language development and literacy learning;

2) plan and implement targeted literacy instruction that is responsive to the strengths and needs of each student (e.g., English language learners, struggling learners, gifted learners) to ensure high rates of success;

3) seek and provide for appropriate assistance and support for struggling readers and writers;

4) collaborate and plan with other professionals to deliver a consistent, sequenced and supportive instructional program for each student across all areas of the curriculum;

5) differentiate strategies, materials, pace, levels of text and language complexity to introduce concepts and skills to meet the diverse learning needs of each student;

6) make content accessible in appropriate ways to English language learners;

7) use data-based decision-making to target interventions to needs of struggling readers;

8) deliver literacy instruction within a multi-tier system of support in order to meet the needs of all students; and

9) deliver instruction explicitly to struggling readers (i.e., modeling, prompting, guided practice, response, corrective feedback).

g) Constructing a Supportive Language and Literacy Environment

Effective middle grade literacy teachers:

1) understand motivation and engagement and the use of the "gradual release of responsibility" approach to design learning experiences that build student self-direction and ownership of literacy learning;

2) establish classroom routines that promote independence, self-direction, collaboration and responsibility for disciplinary literacy learning, and

incorporate student choices in determining reading and writing materials and activities; and

3) build collaborative classroom communities that support and engage all students in reading, writing, listening, speaking, viewing and visually representing their thoughts and ideas.

SUBPART D: STANDARDS FOR MATHEMATICS TEACHERS

Section 21.150 Mathematics Standards for Mathematics Teachers in the Middle Grades

In addition to the standards set forth in Subpart B of this Part, each mathematics teacher in the middle grades shall possess the knowledge and skills articulated in this Section.

a) Core Content Area Knowledge

1) Calculus

Effective middle grade mathematics teachers:

A) demonstrate knowledge of properties and notation of real numbers, properties of exponents and radicals, factoring techniques, solving polynomial equations and operations with rational expressions;

B) on the Cartesian Plane, graph polynomial, rational and radical functions and circles, and find horizontal and vertical asymptotes, and points of intersection of curves;

C) define function, domain, range, inverse functions, operate on functions, and use functional notation;

D) define one-sided, general and at infinity limits, and evaluate them by using the properties of limits;

E) define and apply the properties of continuous functions and determine discontinuities;

F) define first-order and higher-order derivatives and evaluate them using constant power, constant multiple, product, quotient and chain rules and by implicit differentiation;

G) apply the rules of derivatives to find tangent line, slope, rate of change, velocity and acceleration, marginal analysis, increasing and decreasing functions, curve sketching with maxima and minima and concavity, and solving optimization problems;

H) demonstrate knowledge of properties of exponential and logarithmic functions and their derivatives;

I) demonstrate knowledge of basic anti-derivatives, explore integration using the notion of "area under the curve" to determine definite integrals and understand the "Fundamental Theorem of Calculus" as a tool to evaluate definite integrals and relate integration and differentiation; and

J) apply the above knowledge and skills to applications from natural, physical and social sciences.

2) Statistics

Effective middle grade mathematics teachers:

A) construct, identify and interpret frequency distributions, histograms, cumulative frequency tables, ogives and box plots;

B) identify, calculate and interpret measures of central tendency and dispersion;

C) identify, calculate and apply the methods of counting;

D) identify, calculate and interpret probabilities and expected value;

E) define random variables and analyze and interpret the probability distributions they generate;

F) identify and describe the sampling distribution of sample means and sample proportions;

G) create and interpret confidence intervals for single population means and proportions;

H) identify, analyze and perform formal tests of hypotheses concerning single population means and single population proportions; and

I) identify, calculate and interpret the correlation coefficient and regression equations.

b) The Mathematics Curriculum

Effective middle grade mathematics teachers:

1) understand the Illinois Learning Standards for Mathematics (see 23 Ill. Adm. Code 1.Appendix D), their organization, progressions and the interconnections among the domains; and

2) know the developmental sequence of mathematics skills, along with age-level or grade-level benchmarks of development.

c) Foundational Knowledge

1) Standards for Mathematical Practice

Effective middle grade mathematics teachers enable students to acquire the skills necessary for strong mathematical practice in that they are able to:

A) make sense of problems and persevere in solving them;

B) reason abstractly and quantitatively;

C) construct viable arguments and critique the reasoning of others;

D) model with mathematics;

E) use appropriate tools strategically;

F) attend to precision;

G) look for and make use of structure; and

H) look for and express regularity in repeated reasoning.

2) Ratio and Proportional Relationships

Effective middle grade mathematics teachers are prepared to develop student proficiency and address common misconceptions related to ratio and proportional relationships and:

A) understand and apply fractions as numbers that can be modeled from a length perspective (number line), an area perspective (pattern blocks, geoboards, etc.), and a discrete perspective (set of dots or circles);

B) understand and apply the concept of unit fractions, benchmark fractions and the whole (referent unit) as defined in the Illinois Learning Standards for Mathematics;

C) extend the associated meanings of the properties of operations from whole numbers to fractions;

D) understand and use equivalent fractions, including those of whole numbers, to reveal new information and as a tool for comparison or to perform operational procedures;

E) understand and apply the connection between fractions and division, and how fractions, ratios and rates are connected via unit rates, and solve problems and formulate equations for proportional relationships;

F) describe the relationship between fractions and terminating, periodic and delayed-periodic decimals;

G) reason about how quantities vary together in a proportional relationship, using tables, double number lines and tape diagrams as supports;

H) distinguish proportional relationships from other relationships, such as additive relationships and inversely proportional relationships; and

I) understand the connection between a proportional relationship and a linear relationship.

3) The Number System

Effective middle grade mathematics teachers are prepared to develop student proficiency and address common misconceptions related to the number system and:

A) understand how the place value system relies on repeated groupings of any fixed natural number quantity (including ten) and can show how to use objects, drawings, layered place value cards and numerical expressions to help reveal place value structure, and extend place value system knowledge to negative, rational,

irrational and real numbers;

B) efficiently use place value computation methods for addition, subtraction, multiplication and division with an understanding of composing and decomposing numbers using the commutative, associative and distributive properties, and, using multiple models, explain why rules for multiplying and dividing with negative numbers make sense;

C) derive various (multiple) algorithms and recognize these as summaries of reasoning, rather than rules, and distinguish between and understand the appropriate use of computation strategies and computation algorithms as defined in the Illinois Learning Standards for Mathematics, recognizing the importance of "mental math";

D) understand and explain methods of calculating products and quotients of fraction, by using area models, tape diagrams and double number lines, and by reading relationships of quantities from equations;

E) understand the concepts of greatest common factor, least common multiple, units, scale, origin, quantities, integer exponents, rational exponents, irrational numbers, complex numbers and radicals; and

F) understand the connections between fractions and decimals, particularly with regard to decimal computations.

4) Expressions and Equations

Effective middle grade mathematics teachers are prepared to develop student proficiency and address common misconceptions related to expressions and equations and:

A) understand operations and their associated inverses, and use properties of operations to rewrite polynomial expressions to reveal new information and to solve equations;

B) illustrate the meaning of 0 and why division by 0 leads to an undefined answer;

C) explain each step in solving an equation as following from the

equality asserted at the previous step, while using the equal sign appropriately;

D) create and solve, using multiple representations, one-variable and two-variable equations and inequalities with letters representing an unknown quantity, defining constraints as necessary, and understand and illustrate what it means to be a solution of one-variable and two-variable equations and inequalities;

E) use the structure of an expression to identify ways to rewrite it, and choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression;

F) strategically use algebraic tools, such as tape diagrams, number lines, double number lines, graphing calculators and computer algebra systems, to solve problems and connect the strategy for the solution to standard algebraic techniques;

G) validate or dismiss the chains of reasoning used to solve equations and systems of equations;

H) understand proportional relationships and arithmetic sequences as special cases of linear relationships;

I) derive and justify multiple forms for the equations of non-vertical lines; and

J) understand and apply properties of integer exponents and radicals to generate equivalent numerical expressions and solve problems.

5) Geometry

Effective middle grade mathematics teachers are prepared to develop student proficiency and address common misconceptions related to geometry and:

A) compose and decompose shapes, classify shapes into categories and justify the relationships within and between the categories, and summarize and illustrate the progression from visual to descriptive to analytic to abstract characterizations of shapes;

B) use multiple models to informally explain and prove geometric theorems about angles, angle relationships, parallel and perpendicular lines, circles, parallelograms and triangles, including the Pythagorean theorem and its converse;

C) describe the connections (relationships) between geometric properties and arithmetic and algebraic properties, including proportional relationships, and adapt a problem in one domain to be solved in the other domain;

D) use the coordinate plane to reason about spatial locations, graph shapes and solve problems;

E) derive area formulas, such as the formulas for areas of triangles and parallelograms, considering the different height and base cases, including oblique cases;

F) demonstrate an understanding of dilations, translations, rotations and reflections, and combinations of these using dynamic geometry software and constructions;

G) understand congruence in terms of translations, rotations and reflections; understand similarity in terms of translations, rotations, reflections and dilations; solve problems involving congruence and similarity in multiple ways; and explain the criteria for triangle congruence and apply the congruence properties to prove geometric theorems and properties; and

H) understand area and volume, and give rationales for area and volume formulas that can be obtained by compositions and decompositions of unit squares or unit cubes, and solve real-world problems involving area, volume and surface area of any two-dimensional or three-dimensional shape.

6) Statistics and Probability

Effective middle grade mathematics teachers are prepared to develop student proficiency and address common misconceptions related to statistics and probability and:

A) use data displays to ask and answer questions about data in real-life situations and demonstrate an understanding of measures used

to summarize data, including but not limited to, shape, center, mean, median, interquartile range, mean absolute deviation, spread and standard deviation;

B) examine the distinction between categorical and numerical data, reason about data displays and recognize the connection to statistical variability and distributions;

C) develop an understanding of statistical variability and its sources, and the role of randomness in statistical inference;

D) explore and explain relationships between two variables by studying patterns in bivariate data and two-way frequency tables;

E) use technology, including calculators, spreadsheets and tables, to create scatter plots, linear models, dot plots, histograms and box plots, as well as calculate correlation coefficients of data; and

F) calculate theoretical and experimental probabilities of simple and compound events, and understand why their values may differ for a given event in a particular experimental situation.

7) Functions

Effective middle grade mathematics teachers are prepared to develop student proficiency and address common misconceptions related to functions and:

A) define and use appropriately the concepts of function, input, output, domain, range, rate of change, intercept, interval, end behavior, function notation, relative maximum and minimum, symmetry, zeros, graphical transformation, recursive formula, explicit formula, arithmetic and geometric sequence.

B) examine and reason about functional relationships represented using tables, graphs, equations and descriptions of functions in words, and translate between representations of graphs, tables, real-life situations or equations; and

C) examine the patterns of change in proportional, linear, inversely proportional, quadratic and exponential functions, and the types of real-world relationships these functions can model, and write

expressions, equations and/or functions based on these patterns.

d) Using High-Leverage Instructional Practices

Effective middle grade mathematics teachers:

1) choose and use mathematical tasks that entail complex mathematical work, build basic skills and allow for multiple answers or methods;

2) teach and use the content-specific language of mathematics;

3) lead whole-class math discussions (e.g., math talks) that engage all learners;

4) respond productively to student "errors" by probing the underlying thinking and providing targeted feedback;

5) appraise, choose and modify tasks and texts for a specific learning goal;

6) use specific mathematically focused positive reinforcement;

7) use public recording (e.g., posters, whiteboard) to collect and probe mathematical thinking (e.g., demonstrating multiple answers and methods; exploring when an algorithm may be the best solution and when another approach may provide a more efficient solution);

8) diagnose common (and not so common) patterns of student thinking; and

9) assess students' mathematical proficiency and teach responsively.

e) Using Materials, Tools and Technology

Effective middle grade mathematics teachers:

1) apply mathematical content and pedagogical knowledge to select and use instructional tools, such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, websites and mathematics-specific technologies (e.g., graphing tools, interactive geometry software), recognizing both the insight to be gained and any limitations;

2) empower students to make sound decisions about the appropriate use of mathematical tools;

3) when making mathematical models, recognize that technology can enable one to visualize the results of varying assumptions, explore consequences, examine characteristics and compare predictions with data;

4) select mathematical examples that address the interests, backgrounds and learning needs of each student; and

5) evaluate curricular materials for appropriate level and depth of content, focus on and relevance to required learning goals and incorporation of the standards set forth in subsection (c)(1) of this Section.

f) Monitoring Student Learning through Assessment

Effective middle grade mathematics teachers:

1) engage in purposeful classroom assessment aligned to appropriate learning expectations for every student and monitor student progress in meeting developmental benchmarks in mathematics;

2) provide a variety of well-designed one-step, two-step, and complex multi-step assessment items and performance tasks that incorporate real-life situations, to allow students to demonstrate their learning;

3) ensure that assessments are responsive to, and respectful of, cultural and linguistic diversity and exceptionalities, and are not influenced by factors unrelated to the intended purposes of the assessment;

4) guide students in developing the skills and strategies for them to assess their work and set appropriate goals for their progress as mathematicians;

5) analyze student work to determine misunderstandings, misconceptions, predispositions and newly developing understandings, and use the results of this analysis to guide instruction and provide meaningful feedback; and

6) communicate the purposes, uses and results of assessments appropriately and accurately to students, parents and colleagues.

g) Meeting the Needs of Diverse Learners

Effective middle grade mathematics teachers:

1) understand the impact of cultural, linguistic, cognitive, academic, physical, social and emotional differences on mathematics development and progression of knowledge;

2) plan and implement mathematics instruction that capitalizes on strengths and is responsive to the needs of each student;

3) use a variety of approaches and classroom-based intervention strategies to respond to the needs of each student, particularly those who are struggling or advanced;

4) seek appropriate assistance and support for struggling and/or advanced learners;

5) collaborate and plan with other professionals to deliver a consistent, sequenced and supportive instructional program for each student;

6) differentiate strategies, materials, pace and levels of cognitive complexity to introduce concepts and skills to meet the learning needs of each student; and

7) make content accessible in appropriate ways to English language learners and students with exceptionalities.

h) Constructing a Supportive Mathematics Environment

Effective middle grade mathematics teachers:

1) create an environment that empowers every student to engage in the practices set forth in subsection (d) of this Part;

2) motivate and engage students by designing learning experiences that build self-direction, perseverance and ownership of mathematics;

3) guide students to work productively and collaboratively with each other to achieve mathematics learning goals by using a strategic combination of individual, group and whole class instruction to meet the learning needs of each student efficiently and effectively;

4) provide tools that are accessible and developmentally appropriate;

5) establish norms and routines for classroom discourse that allow for the respectful analysis of mistakes and the use of mathematical reasoning for mindful critique and argument; and

6) create opportunities and expectations that all students, including English language learners and students with exceptionalities, use appropriate written and oral mathematical language.

i) Professionalism, Communication and Collaboration

Effective middle grade mathematics teachers:

1) continually engage in intensive, ongoing professional growth opportunities that serve to increase mathematical knowledge for teaching, such as lesson study or continuing coursework;

2) use self-reflection to analyze instruction and make improvements and make use of strategies such as journal writing, video self-analysis and peer observation;

3) communicate and collaborate with other professionals, such as within a professional learning community, to plan teaching, discuss student needs, secure special services for students and manage school policies;

4) communicate and collaborate with families to support student needs and discuss student progress; and

5) maintain professional connections to improve mathematics instruction at local, State, regional and national levels.