The Framework for Grades 4-8 Program Guidelines

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WHY QUALITY TEACHER PREPARATION PROGRAMS ARE IMPORTANT

The fundamental purpose of a teacher preparation program approved by the Commonwealth of Pennsylvania is to admit, prepare, and support candidates for the teaching profession who, upon graduation, have the knowledge and skills to enable Pre K-12 students in Pennsylvania to achieve academic success. Pennsylvania's preparation of new teachers is one component of a Standards-Based Instructional System.

The six components of the Standards-Based Instructional System do not stand in isolation as supports for Pre K-12 student achievement in the Commonwealth of Pennsylvania. Design and delivery of high quality teacher preparation programs are functions of an aligned instructional system; institutional success in producing new teachers with the knowledge and skills to promote student learning is the ultimate outcome of the overall system. High quality teacher preparation programs are an essential part of Pennsylvania's efforts to build capacity for an aligned Pre K-16 system.

PHILOSOPHY FOR PREPARING HIGHLY EFFECTIVE PENNSYLVANIA TEACHERS

Six linked circles in the above standards-based system define core elements of Pennsylvania's emerging instructional system: standards, curriculum, instruction, materials and resources for instruction, fair assessments, and appropriate interventions. Together, these system components are intended to produce strong results for students. For this to happen, the work encompassed in each circle—such as instruction—must build capacity for the activities captured by the other five circles.

In the case of teacher preparation programs and their contribution to *(1) instruction*, all programs are expected to align their course content with *(2) state standards*. All teacher preparation programs are expected to provide all candidates with the knowledge and skills to teach a *(3) standards-based curriculum* effectively and successfully. Through university coursework and extensive, well-designed clinical experiences, all candidates for the profession are expected to learn how to use *(4) materials and resources for instruction* (including technology) to meet the individual needs of each student in their classroom. Each teacher preparation program is expected to give considerable attention to helping all candidates acquire and use *(5) assessment skills*, enabling them to understand and respond to pupil results on standardized tests (PSSA and others), local school or district assessments, and individualized assessments of the achievements and challenges of each pupil. Taken together, this set of knowledge and teaching skills must enable every candidate for the teaching profession in the Commonwealth to implement *(6) appropriate interventions* in the classroom to improve student learning. Teacher preparation programs and the new teachers who complete them will be judged according to their success in achieving the six key goals described above.

Since program and candidate success do not happen by accident, program design, the components of that design, and the ongoing assessment of their effectiveness must all point in the same direction. The needs and interests of Pre K-12 students and their schools are at the center of the program. This means that Pre K-12 teachers and administrators must be involved in program assessment activities, decisions about selection and use of clinical sites, and asked regularly for their feedback on candidate and program performance. Program outcomes must include strong subject matter content preparation, more extensive clinical experiences for students, and the use of technology in curriculum and instruction.

Because teaching is a clinical profession, candidates for the profession should spend extensive time in school settings—beginning early in their teacher preparation program sequence—guided by university faculty and appropriately prepared Pre K-12 mentor teachers. Teacher preparation programs must be able to demonstrate how they use evidence about program graduates and evidence about the Pre K-12 students of their graduates to make continuous program improvements.

INTRODUCTION

Pennsylvania's Elementary/Middle Level (referred to as "middle level" or "4-8" throughout the guidelines) preparation program guidelines include two design options. The first option allows for concentration in one academic area and three "generalist" academic content areas. The second option requires a concentration in two academic content areas. Both of these options require a Professional Core of courses, field experiences and student teaching. Courses in higher level content within the same area can be substituted for lower level content in mathematics, sciences, language arts and social studies if the college or university can demonstrate the candidate mastered the content outlined in these preparation program guidelines.

These guidelines discuss the 4-8 Program design, professional core rationale, candidate competencies, Pennsylvania standards, assessments in a standards aligned system, faculty, field experiences and student teaching, new teacher support, and appendices with design examples and course content information. Each content area for the 4-8 certification program corresponds with specific competencies that must be included in the preparation program design.

PROGRAM DESIGN

The Professional Core courses, competencies and experiences for the grade 4-8 teacher preparation program should be designed to address the broad set of issues, knowledge and competencies that are relevant to middle level teaching and learning. The program must prepare teachers who will be able to ensure students' mastery of academic standards and the content assessment anchors. The Professional Core component of the program design must be maintained regardless of the configuration or options that the training program selects, either from samples in this document or others it develops. Programs have flexibility in how they address adaptations, accommodations, and cognitive development of diverse students in an inclusive setting (9 credits or 270 hours, plus 3 credits or 90 hours, or equivalent combination). See Appendix E.

Professional Core for middle level teacher preparation must include:
- The organization and philosophy of middle school education.
- Young adolescent development.
- The fourth through eighth grade curriculum.
- Skills necessary for middle level instruction.
- Use of data for assessment.
- Effective classroom management strategies.
- Current skills in the use of education technology
- Design of successful interventions responsive to the needs of individual middle level students.
- Experience with monitoring the results of interventions designed to address the needs of individual middle level students.

The Professional Core of courses, competencies, and experiences for the Middle Level Teacher Preparation program must be designed to address the issues and knowledge that are relevant for middle level teaching and learning. The philosophy and standards

(Pennsylvania standards as well as those of the National Middle School Association) must permeate the candidates' course experiences as well as their field experiences and student teaching.

4-8 Professional Core

Development, Cognition and Learning (middle level cognitive development, early adolescent and adolescent development and learning theory)

Subject Matter Content and Pedagogy (middle level methods)

Assessment (assessment methods I: observation and informal**,** assessment methods II: interventions, summative, formative, diagnostic, benchmark)

Adaptations and Accommodations for Diverse Students in an Inclusive Setting and Meeting the Needs of English Language Learners

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Institutions are charged with producing evidence to demonstrate that their graduates understand and apply the knowledge, concepts, and skills essential for successful grade 4-8 instruction. The program design must describe clearly how the relevant set of knowledge, skills and competencies inform the program design, and the application must also indicate how the institution will assess whether candidates have acquired the required knowledge skills, and competencies.

For candidates preparing to be 4-8 grade teachers, all courses should be grounded in adolescent development and enable them to gain the knowledge and experience to work successfully with family members and the broader community. Faculty who teach in the professional core must have demonstrated expertise in education methods appropriate to the 4-8 grade content they are teaching, as well as advanced degrees in disciplines appropriate to teaching in the program.

PROGRAM DELIVERY

The Department of Education believes that 4-8 Certificate Preparation Programs should be comprehensive and delivered through a combination of university classroom and school settings. While some online courses may be a component of the program, programs that are delivered completely online will not be approved.

PROFESSIONAL CORE RATIONALE

For Pennsylvania teachers, Title 22 of the Pennsylvania Code, §354.25(3), as well as §354.32 (a)(1) and §354.33(1)(i)(A)-(H) enumerate aspects of the knowledge and skills that candidates for teaching in the Commonwealth are expected to learn and demonstrate. While this set of knowledge and skills is developed in university academic classroom settings and clinical practice, the program curriculum should reflect this centrality to the process of educator preparation.

The purpose of this section is to describe the rationale of the three key areas of the Professional Core which are:
1. Development, Cognition and Learning
2. Subject Matter Pedagogy
3. Assessment

The middle level program provides candidates with the skills, knowledge and competencies necessary to meet the needs of students. The adolescent development courses as well as their field work and student teaching must enable candidates to gain the knowledge and experience to work successfully with family members and with the broader community. Through their content courses and experiences in middle level school fieldwork, middle level teacher candidates must learn and be able to apply the major concepts and theories related to young adolescent development. This includes demonstrated understanding of the research on adolescent development, motivation, and learning styles. Cognitive and adolescent development coursework and field experiences must be designed and delivered so that faculty and students are able to make explicit connections with middle level content areas, cognitive development, literacy, special education, and English language learning. Course content, competencies and assessed outcomes must be aligned with the PDE 430 (particularly categories II and III), and with the National Middle School Association (NMSA) performance standards for middle level teacher preparation.

Preparation programs are charged with producing evidence to demonstrate that their graduates understand and apply the knowledge, concepts, and skills essential for successful middle level instruction. This means that the program design must describe clearly how the relevant set of knowledge and skills inform the program design, and the application also must indicate how institutions will assess whether candidates have acquired this knowledge and skills.

Development, Cognition, and Learning
Through the content and experiences in the 4- 8 programs, candidates for middle level certification must develop and be able to apply the major concepts and theories associated with young adolescent development. Candidates must become familiar with the research on adolescent development, motivation, and learning styles. The courses must be designed and taught in such a way that faculty and candidates are able to make explicit connections with middle level content areas, cognitive development, literacy, special education, and English language learning.

Subject Matter Content and Pedagogy
Each of the core subject areas have important content to master; middle level methods courses supplement that content with evidence-based methods for engaging middle level students with the content. Programs should take into consideration the range of reading abilities in grades 4-8, and provide candidates with strategies to meet the literacy needs of these learners.

English/Language Arts and Reading Overview
The middle level preparation program design in the area of English/language arts is intended to prepare prospective teachers for the challenging work of developing the literacy skills of their students. The recommendations are based on two key assumptions:
1. Some—perhaps many—middle level students will need foundational work (normally addressed in early childhood and elementary education) because of educational deficits, individual learning challenges, and other issues; and

2. As a result of this student need, middle level teachers need deep knowledge, understanding, and practical experience in addressing adolescent literacy instruction for students having a wide range of abilities.

To be approved by PDE, middle level program course content must be aligned with Pennsylvania's Academic Standards and with the Assessment Anchor Content Standards in reading established for grades 3-8 and 11. Successful alignment and course content development will require university faculty to collaborate with practicing middle level teachers and administrators to design and develop coursework. Middle level program proposals submitted for review by PDE will be expected to include evidence of successful alignment and evidence of significant collaboration.

Courses must be designed to enable new teachers to understand and use effective instructional strategies, including cooperative learning and other evidenced-based best practices. Coursework, field experiences, skills in assessment, and skills in developing intervention strategies need to be organized coherently to address the literacy areas. The sequence of courses and related experiences also must include direct and specific linkages to content courses in mathematics, the sciences, and social science so that candidates acquire and demonstrate knowledge and skills for domain-specific literacy instruction, assessment, and interventions.

Although course content about instructional methods and materials is included in other literacy courses required for middle level program approval, focused attention to these issues requires a dedicated block of credit hours, class time, and practice opportunities. Learning how to teach this complex material, creating a successful learning environment for students, incorporating technology into instruction, and acquiring expert knowledge of materials must be core elements of this content. The International Reading Association (IRA) argues that, "Effective literacy instruction does not occur in a vacuum. Teachers engage learners with instructional materials and other texts inside a rich literary environment that supports their teaching. They know and can apply strategies to create this high-quality classroom environment—that includes attention to children's and young adult literature, classic texts in different genres, commercial reading series, electronic-based information sources, and locally created materials—and to engage students within it" (IRA, 2007, page 5). Among the methods and technologies to develop instructional skills supported by research is the use of videos, role-playing, coaching, reflection, and further guided practice. Instruction must directly address seven of the nine elements of instructional improvement in adolescent literacy (Biancarosa & Snow, 2006):
>   1. Direct, explicit comprehension instruction
>   2. Effective instructional principles embedded in content
>   3. Motivation and self-directed learning;
>   4. Text-based collaborative learning;
>   5. Strategic tutoring;
>   6. Diverse texts; and,
>   7. Technology as both a tool and a topic of instruction.

Mathematics Overview
The middle level program design in the area of mathematics is intended to prepare prospective teachers for a wide variety of middle level students: those who have mastered third grade arithmetic and are making the transition from arithmetic to mathematics; those rising fourth graders and other middle level students who have not yet mastered arithmetic but must do so in order to understand and perform successfully more rigorous mathematics;

and middle level students who will need to master progressively more rigorous mathematical content as they move through middle grades toward high school.

Courses in this sequence must be designed to enable new teachers to understand and use effective instructional strategies, including cooperative learning and other evidenced-based best practices, as they apply their knowledge of mathematics to teach in Pennsylvania middle level classrooms. Through the mathematics courses, the methods course, and the professional core for middle level teacher preparation, new middle level teachers and their students will develop the depth and breadth of knowledge to understand and solve real world problems with mathematics.

The principle of the curriculum is to integrate instructional theory, learning theory and developmental theory through the mathematics courses, the methods courses, field experiences and the cognitive science courses by providing the candidate with opportunities to experience and practice this integration directly through classroom field experiences. There must be a strong and direct linkage between content and methods: the mathematics courses required by the program must be linked explicitly to learning theory and methods courses and to Pennsylvania's Academic Standards for mathematics and Assessment Anchor Content Standards for grades 3 through 8 and 11. This will enable candidates to understand and practice what they are learning about mathematics, about teaching, and about how children develop and acquire knowledge. Program design must include school-based methods courses to maximize the likelihood that content knowledge, pedagogical content knowledge, and teaching skills in mathematics will be developed in optimal ways by each candidate.

Science Overview
The middle level preparation program design in the area of science is intended to prepare prospective teachers for a wide variety of middle level students, those coming to middle school with previous exposure to high quality science instruction, those with learning challenges in numeracy and literacy, and students whose innate curiosity about the world around them has yet to be tapped by effective science instruction. In all these cases, science learning in the classroom requires curricula based on factual knowledge and conceptual development, helping children build on their natural curiosity to develop skills and knowledge in the sciences. The college or university must create a structure that allows collaboration among education, science, engineering, and mathematics departments to ensure that prospective teachers have a solid foundation in the relevant science knowledge and skills each will need to be successful classroom teachers. For children to learn the sciences successfully, their teachers must know science content, know how students learn science, and understand how to plan effective instruction (National Research Council, *Taking Science to School: Learning and Teaching Science in Grades K-8*, chapter 11, page 10).

The goal of teacher preparation for middle level science instruction is to enable teachers to "evaluate each child's knowledge and conceptual and skill development, as well as the child's level of meta-cognition about his or her own knowledge, skills, and concepts. A key question for instruction is thus how to adapt the instructional goals to the existing knowledge and skills of the learners, as well as how to choose instructional techniques that will be the most effective" (National Research Council, *Taking Science to School*, chapter 2, page 8). Courses must include effective instructional strategies, including cooperative learning and other evidenced-based best practices as they apply to the sciences. In general, teachers will be effective instructors in the schools of Pennsylvania when they complete the science

component in the middle level preparation program curriculum with the knowledge and skills to: "know, use, and interpret scientific explanations of the natural world; generate and evaluate scientific evidence and explanations; understand the nature and development of scientific knowledge; [and] participate productively in scientific practices and discourse" (NRC, *Taking Science to School*, page 11-2). Only when their teachers have this capacity will students develop the same set of age appropriate knowledge and skills.

The authors of *How Students Learn: History, Mathematics, and Science in the Classroom* argue that all students and teachers come to science education with preconceptions that make effective instruction more difficult. They also make the case that many students and their teachers have "weak foundational knowledge" about science (page 545). Methods courses, the science content courses, clinical experiences, and support from program faculty are needed along the way so that teachers: understand the students' learning context in science; learn how to recognize and respond to preconceptions and limited knowledge; and have extensive opportunities to practice instructional strategies to address these issues. As with the mathematics sequence for the middle level certificate, there must be a strong and direct linkage between content and methods: the sciences courses required by the program must be linked explicitly to learning theory and methods courses. This will enable candidates to understand and practice what they are learning about science content and the scientific process, about teaching, and about how children develop and acquire knowledge. Program design must include school-based methods courses to maximize the likelihood that content knowledge, pedagogical content knowledge, and teaching skills in science will be developed in optimal ways by each candidate.

Social Studies Overview
While Pennsylvania has not adopted academic standards devoted specifically to social studies as a content area, students are expected to learn a variety of content knowledge at different grade levels. The public school curriculum in Pennsylvania includes content in five Academic Standards that are related to social studies disciplines:
> 1. *Geography.*—defined as "the science of space and place on Earth's surface" and including attention given to basic geography understanding, physical characteristics of places and regions, human characteristics associated with places and regions, and interaction between people and places.
> 2. *History.*—including
>> a. *Pennsylvania History.*—Identify and explain the political and cultural contributions of individuals and groups to Pennsylvania history from Beginnings to 1824; identify and explain primary documents, material artifacts and historic sites important in Pennsylvania history from Beginnings to 1824; identify and explain how continuity and change have influenced Pennsylvania history from the Beginnings to 1824;
>> b. *United States and World History.*—including tools to comprehend, interpret, and conduct historical research.
> 4. *Economics.*—a basic understanding of economic systems, markets, economic interdependence, and economic aspects of work and earnings.
> 5. *Civics and government.*—the principles, structures, and operation of government in a democratic society, citizenship rights and responsibilities, and international components of government and policy.

These are interdisciplinary subjects across the social sciences, but successful teaching also requires explicit, detailed knowledge of the sciences, mathematics, and literacy. Middle level preparation programs approved in Pennsylvania must build candidate knowledge, teaching

skills, and assessment skills in and across these subject areas. Courses must be designed to enable new teachers to understand and use effective instructional strategies in social studies, including cooperative learning and other evidenced-based best practices. Effective instruction in social studies depends on teachers with knowledge in the social science disciplines; knowledge about the ways in which students learn these disciplines; the ability to plan and deliver effective instruction; and skills in assessing student learning in order to modify instruction and deliver successful interventions.

The authors of *How Students Learn: History, Mathematics, and Science in the Classroom* argue that all students and teachers come to social studies education with preconceptions that make effective instruction more difficult. In addition, new insights from the cognitive sciences make it clear that teaching and learning in social studies involves much more than discovering and memorizing "the facts."

In social studies, values and debates about values influence teaching, texts, curricula, and assessment. The teaching of history, like all aspects of historical study, involves choice and selection: One cannot avoid choices; one cannot simply 'include more.' Methods courses, the social studies content courses, clinical experiences, and support from program faculty are needed along the way so that teachers:
- understand the student learning context in social studies;
- learn how to recognize and respond to preconceptions and limited knowledge; and
- have extensive opportunities to practice instructional strategies to address these issues. (The competencies for these areas are presented in Appendix B , in the document entitled "Accommodations and Adaptations for Students with Disabilities in an Inclusive Setting and Meeting the Needs of English Language Learners.")

Assessment Overview
Assessment skills, extensive practice, and the application of assessment results to design effective individualized interventions are essential middle level teaching skills. Successful demonstration of these abilities is an expected outcome through the PDE 430, *Pennsylvania Statewide Evaluation Form for Student Professional Knowledge and Practice.* Assessment knowledge has an important role in the standards and rubrics adopted by the National Middle School Association (NMSA). The "Assessment in a Standards Aligned System" section of this document has an overview of the types of assessments used in Pre K-12 settings and competencies for all professional education candidates.

The preparation program coursework content should be organized to provide candidates with the knowledge and skills to recognize students having difficulty, identify student challenges, design interventions (with collaborative assistance from colleagues when needed) and test the effectiveness of appropriate interventions. Course content must enable candidates to learn how to understand and use data about student learning (standardized tests and other assessment practices), adapt and modify instruction, use technology appropriately, and adapt curriculum successfully. Translating diagnostic information about student learning into successful teaching strategies that will improve student learning requires formal preparation, proficiency with assessment tools, and extensive practice under careful supervision and mentoring. The content must also include explicit attention to Pennsylvania's Academic Standards and Assessment Anchor Content Standards for grades 4 through 8, as well as be consistent with authentic, screening, diagnostic, formative, benchmark, and summative diagnostic assessments.

Definitions of Assessments
The following definitions describe different types of assessments used in classroom settings. The definitions for diagnostic, benchmark, formative, and summative can be found on the "Standards Aligned System" web pages on the PDE Education Hub. This web portal contains resources helpful to teacher candidates as well as classroom teachers on designing standards based curriculum and assessments. Candidates are expected to understand the differences between screening, authentic, diagnostic, formative and summative assessments. The program design of a program must include instruction and assessments of candidates demonstrating the appropriate use of each type of assessment.

Authentic. A form of assessment in which, students are asked to perform real world tasks that demonstrate meaningful application of essential knowledge and skills. The assessment usually includes a task for students to perform and a rubric is used to evaluate their performance.

Screening. Screening assessments are used to determine which students may be at risk. Poor performance on the screening assessment identifies those students needing additional, in-depth assessment of strengths and weaknesses. The primary purpose of screening assessments is to identify children early who need additional instructional (or behavioral) intervention. An essential element of using a screening assessment is implementing additional identified intervention(s) (instructional, behavioral, or medical).

Diagnostic. The purpose of diagnostic assessments is to ascertain, prior to instruction, each student's strengths, weaknesses, knowledge, and skills. Using diagnostic assessments enable the instructor to remediate students and adjust the curriculum to meet each pupil's unique needs. (Examples of diagnostic assessments are: DRA's, Running Records, GRADE, GMADE)

Formative. Pennsylvania defines formative assessment as classroom based assessment that allows teachers to monitor and adjust their instructional practice in order to meet the individual needs of their students. Formative assessment can consist of formal instruments or informal observations. The key is how the results are used. Results should be used to shape teaching and learning. Black and Wiliam (1998) define formative assessment broadly to include instructional formats that teachers utilize in order to get information that when used diagnostically alter instructional practices and have a direct impact on student learning and achievement. Under this definition, formative assessment encompasses questioning strategies, active engagement check-ins, (such as response cards, white boards, random selection, think-pair-share, popsicle sticks for open-ended questions, and numbered heads) and analysis of student work based on set rubrics and standards including homework and tests. Assessments are formative when the information is used to adapt instructional practices to meet individual student needs as well as providing individual students corrective feedback that allows them to "reach" set goals and targets. Ongoing formative assessment is an integral part of effective instructional routines that provide teachers with the information they need to differentiate and make adjustments to instructional practice in order to meet the needs of individual students.

When teachers know how students are progressing and where they are having trouble, they can use this information to make necessary instructional adjustments, such as re-teaching, trying alternative instructional approaches, or offering more opportunities for practice. The use of ongoing formative classroom assessment data is an imperative. Effective teachers seamlessly integrate formative assessment strategies into their daily instructional routines.

Benchmark. Assessments that are designed to provide feedback to both the teacher and the student about how the student is progressing toward demonstrating proficiency on grade level standards. Well-designed benchmark and standards-based assessments:
- measure the degree to which students have mastered a given concept
- measure concepts, skills, and/or applications
- are reported by referencing the standards, not other students' performance
- serve as a test to which teachers want to teach
- measure performance regularly, not only at a single moment in time

(Examples of benchmark assessments are: 4Sight, DIBELS, Work Sampling System)

Summative. Summative assessments seek to make an overall judgment of progress at the end of a defined period of instruction. Often these assessments occur at the end of a school level, grade, or course, or are administered at certain grades for purposes of state or local accountability. These are considered high-stakes assessments and the results are often used in conjunction with federal and state accountability, such as for the No Child Left Behind Act (NCLB) and Adequate Yearly Progress (AYP). They are designed to produce clear data on the student's accomplishments at key points in his or her academic career. Performance on these assessments are often part of the student's permanent record and serve as an indication of overall performance on a set of standards. Results from summative assessments are of interest to parents, faculty, administration, the press, and the public. The data from summative assessments are the basis of accountability systems. (Examples of summative assessments: PSSA, Terra Nova)

CANDIDATE COMPETENCIES

This section outlines the competencies required for certification by Chapter 354: "The preparing institution shall ensure that candidates complete a well planned sequence of professional educator courses and field experiences to develop an understanding of the structure, skills, core concepts, facts, methods of inquiry and application of technology related to each academic discipline the candidates plan to teach or in the academic disciplines related to the non-instructional certificate categories in which they plan to serve." (22 Pa. Code §354.25(b) (3)).

I. Middle Level Education
Candidates will demonstrate their ability and understanding of:

A. Philosophy of Middle School Education
1. Believe that all young adolescents can learn and accept responsibility to help them do so;
2. Hold high, realistic expectations for the learning and behavior of all young adolescents;
3. Implement the middle level curriculum;
4. Distinguish the rationale and characteristic components of developmentally responsive middle level schools;
5. Translate the implications of young adolescent development in the context of the school organization and components of successful middle level programs and schools;
6. Assist and be supportive of all young adolescents developing to their full potential;
7. Implement the philosophical foundations of developmentally responsive middle level programs and schools;

8. Participate fully in the team process as a structure for school improvement and student learning.

B. Adolescent Development
1. Recognize and implement the major concepts, principles, theories, and research related to young adolescent development;
2. Identify the range of individual differences of all young adolescents and the implications of these differences for teaching and learning;
3. Describe issues of young adolescent health and sexuality;
4. Identify how the development of all young adolescents occurs in the context of classrooms, families, peer groups, communities and society;
5. Respect and appreciate the range of individual developmental differences of all young adolescents;
6. Utilize student assistance and student support programs that attend to the social and emotional needs of young adolescents.

C. Student Transition
1. Design and implement strategies that provide students with appropriate skills in making the transition from an elementary school environment to the middle school environment and then to the high school environment;
2. Develop supports for students moving to an environment with multiple teachers, changing classrooms and required course decisions;
3. Recognize and plan for supporting student adjustment to the changing relationships with teachers and the impact of peer pressure;
4. Incorporate knowledge of adolescent development into educating students in goal setting and decision making;

D. Instructional Strategies
1. Employ teaching/learning strategies that take into consideration and capitalize upon the developmental characteristics of all young adolescents;
2. Create positive, productive learning environments where developmental differences are respected and supported, and individual potential is encouraged;
3. Create learning opportunities that reflect an understanding of the development of all young adolescent learners;
4. Engage young adolescents in activities related to their interpersonal, community, and societal responsibilities;
5. Deliver curriculum that is relevant, challenging, integrative, and exploratory;
6. Make connections among subject areas when planning and delivering curriculum;
7. Incorporate young adolescents' ideas, interests, and experiences into instruction;
8. Use direct and explicit comprehension instruction;
9. Use effective instructional principles explicitly in course content;
10. Motivate students within the context of each subject;
11. Design successful interventions responsive to the needs of individual middle level students;
12. Strategically tutor students whose assessments indicate the need for additional instruction.

E. Technology and Materials
1. Incorporate technology into instruction on a regular and frequent basis;
2. Use materials designed explicitly for middle level grades;
3. Engage students with instructional text to support teaching in specific subjects;

4. Utilize children's and young adult literature, classic texts in different genres, commercial reading series, electronic-based information and locally created materials;
5. Make decisions about curriculum and resources that reflect an understanding of young adolescent development;
6. Integrate technology in curriculum planning and in lesson delivery;
7. Assess and select curriculum materials that are academically challenging and personally motivating for young adolescents;
8. Integrate a range of technologies in curriculum, instruction, and assessment;
9. Use appropriate technology during instruction to enhance the understanding of subject matter.

F. Classroom Management
1. Create and maintain supportive learning environments that promote the healthy development of all young adolescents;
2. Demonstrate effective adolescent behavior strategies for the classroom;
3. Use appropriate organizational techniques for the classroom;

G. Professionalism
1. Act as positive role models, coaches, and mentors for all young adolescents;
2. Communicate deep content knowledge in subjects taught;
3. Serve on advisory program, co-curricular activities and other programs supporting the curriculum;
4. Uphold high professional standards;
5. Interact with various professionals that serve young adolescents (e.g., school counselors, social service workers, home-school coordinators);
6. Participate fully in teaming and collaborative grade and building level structures;
7. Utilize research/data-based decision-making.

II. Subject Matter Content and Pedagogy
Candidates will be able to:

A. English/Language Arts and Reading
1. Foundations in Research
   a. Demonstrate expertise in language and reading development;
   b. Implement foundational knowledge from current literacy research;
   c. Provide effective instruction in word-level strategies that result in student literacy gains;
   d. Demonstrate an understanding of the relationship between decoding and comprehension in reading instruction, critical literacy knowledge and skills in decoding;
   e. Implement effective instructional principles embedded in content, including language arts teachers using content-area texts and content-area teachers providing instruction and practice in reading and writing skills specific to their subject area;
   f. Demonstrate concepts, knowledge, and skills essential for direct and explicit reading instruction, particularly in comprehension;
2. Word Level Instruction
   a. Provide phonemic awareness and phonics instruction for students who struggle in decoding;

b. Provide instruction in deep syntax, semantics, morphology and speaking in vocabulary development;

3. Text Level Comprehension
   a. Explicitly address comprehension instruction directly to academic anchors and standards, conduct assessment and design appropriate interventions;
   b. Provide instruction in vocabulary and text comprehension;
   c. Provide direct explicit comprehension instruction in the strategies proficient readers use to understand what they read, e.g., summarizing, monitoring one's own comprehension;
   d. Implement text-based collaborative learning, which involves students interacting with one another around a variety of texts;
   e. Demonstrate proficiency with strategic tutoring, which provides students with intense individualized reading, writing, and content instruction based on assessment;
   f. Provide instruction from multiple sources of diverse texts, which are texts at a variety of difficulty levels and on a variety of topics;

4. Reading-Writing Connection
   a. Develop effective skills in writing;
   b. Provide intensive writing instruction including instruction connected to the kinds of writing tasks students will have to perform well in high school and beyond;
   c. Supply prompts that support thinking;
   d. Develop ideas in writing that go beyond the superficial;
   e. Direct instruction in reading strategies for the content areas;
   f. Use content-area texts and content-area instruction and practice in reading and writing skills specific to subject areas;
   g. Make overt connections between and across the curriculum, students' lives, literature, and literacy;
   h. Provide strategies for reading content;
   i. Provide rubrics that students review, use, and even develop;

5. Instructional Approaches and Materials
   a. Design models and guides that lead students to understand how to approach each task;
   b. Include technology as a tool for and a topic of literacy instruction, including using technology-based reading materials;
   c. Utilize a variety of text material at different difficulty levels and on a variety of topics;
   d. Adapt and modify instruction, use technology appropriately, and adapt curriculum successfully;
   e. Design follow-up lessons that cause students to move beyond their initial thinking.
   f. Develop skills in listening;
   g. Plan lessons that connect with each other, with test demands, and with students' growing knowledge and skills;

6. Assessment in Literacy
   a. Conduct ongoing, formative assessment of students, which is informal, and often daily assessment of how students are progressing under current instructional practices;
   b. Apply assessment skills, extensive practice, and the application of assessment results to design effective individualized interventions that are essential literacy teaching skills;

c. Recognize students having difficulty in reading, writing and speaking, and assist in diagnosing their areas of need;
d. Design and test the effectiveness of appropriate interventions;
e. Translate diagnostic information about student learning into successful teaching strategies which require formal preparation.

B. Mathematics
1. Develop, implement, assess and modify curriculum and lessons as evidenced by their ability to teach students how to:
   a. Demonstrate factual knowledge needed to have students understand a mathematical problem or phenomenon;
   b. Demonstrate the conceptual knowledge necessary to enable a student to determine what kind of a math problem is presented through a coherent representation of the situation;
   c. Demonstrate strategic knowledge of the approaches needed to solve problems;
   d. Implement procedural knowledge (or computational skill) such as addition, subtraction, or solving equations;
   e. Model procedural skills that require teachers to have deep content knowledge in order to understand and apply mathematical concepts to a wide range of classroom learning situations and to help middle level students at all levels of ability and achievement to improve their knowledge of mathematics.
2. Numbers and Operations, Algebra and Functions—candidates will be able to develop, implement, assess and modify curriculum and lessons as evidenced by their ability to teach students how to:
   a. Illustrate the different roles numbers and operations play;
   b. Illustrate the structure of the rational number system and the real number system;
   c. Develop a deep understanding of rational numbers and operations on rational numbers;
   d. Teach the mathematics that underlies standard algorithms;
   e. Make sense of large and small numbers and use scientific notation;
   f. Demonstrate mastery in the different roles algebra plays as a study of patterns, as a symbolic language useful in many areas of life, and as a tool for problem solving;
   g. Develop a deep expertise of variables and functions;
   h. Represent physical situations symbolically:
      i. Graph linear, quadratic, exponential functions and their inverses;
      ii. Solve linear and quadratic equations and inequalities;
      iii. Exhibit fluency in working with symbols.
3. Geometry and Measurement—candidates will be able to develop, implement, assess and modify curriculum and lessons as evidenced by their ability to teach students how to:
   a. Represent the roles geometry and measurement play in middle level mathematics;
   b. Identify two- and three-dimensional shapes and know their properties;
   c. Develop spatial reasoning through physical and mental activities;
   d. Connect geometry to other mathematical topics;
   e. Connect geometry to nature and to art;
   f. Apply measurement processes;
   g. Use measurement techniques and formulas proficiently.
4. Data Analysis, Statistics, and Probability—candidates will be able to develop,

implement, assess and modify curriculum and lessons as evidenced by their ability to teach students how to:

   a. Operationalize and experience data analysis, probability and statistics in real world everyday applications;

   b. Design simple investigations and collect data (through random sampling or random assignment to treatments) to answer specific questions;

   c. Use a variety of ways to display data, including bar graphs and pie charts for categorical data, interpret and use histograms, line graphs, stem-and-leaf plots, and box plots for continuous data, and interpret and use scatter plots, regression lines, and correlations for bivariate data;

   d. Explore and interpret data by observing patterns and departures from patterns in data displays, with particular emphasis on shape, center, and spread;

   e. Anticipate patterns by studying, through theory and simulation, those produced by simple probability models;

   f. Draw conclusions with measures of uncertainty by applying basic concepts of probability;

   g. Demonstrate and provide examples about current uses of statistics and probability in fields relevant to middle level teaching and learning such as the sciences and social studies.

5. Calculus Concepts and Applications

   a. Demonstrate mastery of functions, including logarithmic, exponential, and trigonometric function;

   b. Apply data analysis and matrices;

   c. Introduce finite mathematics and discrete mathematics.

6. Mathematical Modeling and Applications of Mathematical Understanding — candidates will be able to develop, implement, assess and modify curriculum and lessons as evidenced by their ability to teach students how to:

   a. Build new mathematical knowledge through problem solving, solve problems that arise in math and other discipline areas, and know how to apply appropriate strategies to solve these problems;

   b. Provide ways in which mathematics can be applied to a variety of real world situations;

   c. Use reasoning and proof successfully, make and investigate mathematical conjectures, develop and test arguments and proofs, and use various forms of reasoning in mathematics and related applied contexts;

   d. Make mathematical connections, enabling middle level students to recognize and use connections among ideas in mathematics, apply math in contexts outside of mathematics, and demonstrate their understanding of how mathematical ideas interconnect within and outside the discipline;

   e. Represent and apply representations of mathematical ideas, select and apply mathematical representations to solve problems, and use them to interpret phenomena from math, the sciences, and the social sciences; and

   f. Use technology in mathematics instruction and learning.

C. Science

1. Develop, implement, assess and modify curriculum and lessons as evidenced by their ability to:

   a. Demonstrate proficiency with science learning that requires curricula based on factual knowledge and conceptual development;

   b. Assist students to build on their natural curiosity to develop skills and knowledge in the sciences;

c. Effectively assess each child's knowledge and conceptual skill development;
d. Adapt instructional goals to the existing knowledge and skills of the learners, as well as choose instructional techniques that will be the most effective;
e. Use and interpret scientific explanations of the natural world;
f. Generate and evaluate scientific evidence and explanations;
g. Understand the nature and development of scientific knowledge and participate productively in scientific practices and discourse;
h. Implement pedagogy for the concepts that students find most difficult, as well as ways to support their understanding of those concepts;
i. Use curriculum materials that are particularly effective for teaching specific topics;
j. Assess student knowledge in multiple ways;
k. Provide unifying themes incorporated into science content and methods to include concepts such as systems, models, patterns, scale, change, and the importance of evidence and measurement;
l. Implement research-based instruction to develop professional knowledge and skills in science and science teaching with a curriculum and management that reflects the importance of science teaching as an essential profession with its own specialized needs and functions;
m. Demonstrate proficiency with sufficient laboratory, computer technology, curriculum, and other resources to support the most effective teaching of science at a designated level of teaching specialization;
n. Develop descriptions, explanations, predictions, and models using evidence, recognizing and analyzing alternative explanations and predictions;
o. Use prior knowledge to pose problems and generate data rather than thinking about science as truths to be memorized;
p. Explicitly teach data collection, interpreting data, testing inferences, and the search for patterns in data;
q. Directly have students test ideas through experimentation;
r. Provide explanatory frameworks for students to study: systems, order, and organization; evidence, models and explanation; evolution and equilibrium; form and function;
s. Explain observations and test models against additional data and identify strengths and limitations of various explanatory models;
t. Use patterns in observations to develop explanations and predictions;
u. Develop causal models to explain patterns in observed or collected data;
v. Demonstrate scientific arguments and reasoning in order to make ideas public and learn to revise models in light of data that do not work;
w. Categorize conceptions and preconceptions of science and scientific knowledge;
x. Clarify misunderstandings of science and scientific inquiry processes;
y. Recognize student preconceptions, student reasoning patterns, problematic explanations for observed phenomena;
z. Promote conceptual change in student understanding of scientific knowledge and processes;
2. Standards – apply their knowledge of established local, Pennsylvania, and national standards (e.g., those published by the National Science Education Teachers Association, the PA Academic Standards, etc.) and incorporate those standards in their teaching:
a. Unifying themes and processes in science;
b. Science as inquiry;
c. Physical science, chemistry and physics;

    d.   Biological science;
    e.   Earth and space science;
    f.   Science and technology;
    g.   Science in personal and social perspectives;
3. Ecology standards – understand and know Pennsylvania's grade 4 - 8 Academic Standards for Environment and Ecology including:
    a.   Watersheds and wetlands;
    b.   Renewable and non-renewable resources;
    c.   Environmental health;
    d.   Agriculture and society;
    e.   Integrated pest management;
    f.   Threatened, endangered and extinct species;
    g.   Humans and environment;
    h.   Environmental laws and regulations.
4. Physical sciences—demonstrate an understanding of the nature of science by specific applications to the physical sciences regarding:
    a.   Forces and motion;
    b.   Physical properties of matter;
    c.   Chemical properties of matter;
    d.   Energy and interactions between matter and energy (light, heat, electricity, magnetism, sound);
    e.   Laboratory investigations in the physical sciences.
5. Life sciences—demonstrate an understanding the nature of science by specific applications to the life sciences regarding:
    a.   Structure and function of living things (characteristics of organisms);
    b.   Reproduction and heredity;
    c.   Adaptation and evolution (organisms and their environments;
    d.   Ecological behavior and systems (regulation and behavior);
    e.   Relationships between organisms and the environment;
    f.   Laboratory investigations in the life sciences.
6. Earth and space sciences—demonstrate an understanding of the nature of science, applied to earth and space sciences regarding:
    a.   Structure and function of earth systems;
    b.   Earth features and processes;
    c.   Cycles in earth systems;
    d.   Energy;
    e.   Weather and climate;
    f.   Solar system and the universe (objects in the sky, changes in the earth and sky);
    g.   Investigations in the earth and space sciences.
7. Science and inquiry:
    a.   Teach science as a process of inquiry;
    b.   Illustrate the process of scientific inquiry by having students think critically and logically to make the relationships between evidence and explanations;
    c.   Model how scientists "do science" in different disciplines, such as scientific inquiry and methods in the physical, life, earth, and space sciences; types of scientific investigations;
    d.   Explore approaches to scientific reasoning and investigative strategies through learner-centered principles of instruction such as engaging students in activities or discussions;
    e.   Demonstrate scientific reasoning through showing how scientists develop, analyze, and test different explanations for their findings;

     f. Communicate scientific procedures and explanations by using the range of scientific investigations appropriate to a discipline and to a problem;

     g. Represent the historical development of science and the role of logical reasoning and verifiable evidence;

     h. Construct scientific arguments and present and defend results of a scientific investigation.

D. Social Studies

1. Develop, implement, assess and modify curriculum and lessons as evidenced by their ability to apply the standards and thematic strands of social studies as identified by the National Council for the Social Studies (http://www.ncss.org/standards/) including:

    a. The study of culture;

    b. Time, continuity and change—helping students to know how to understand and reconstruct the past;

    c. People, places, and environments—giving students the perspective of a world beyond "their personal locations";

    d. Individual development and identity—affected by culture, groups, and by institutions;

    e. Individuals, groups, and institutions—knowledge about how institutions (social, economic, religious, governmental) are formed and operate;

    f. Power, authority, and governance—the historical development and functions of governmental institutions, the exercise of power, individual rights, and related concepts;

    g. Production, distribution, and consumption—focuses on the economy, production of goods and services, resource allocation, and labor, capital, and management;

    h. Science, technology, and society—deals with the development and use of technology, the pace of change and its impact on society, and promoting broader access to technology within and across societies;

    i. Global connections—theme of interdependence;

    j. Civic ideals and practices—described as topics, values, and issues related to citizenship, rights and responsibilities;

2. Principles – demonstrate implementation of the five overarching principles for social studies instruction:

    a. Social studies teaching and learning are powerful when they are meaningful;

    b. Social studies teaching and learning are powerful when they are integrated;

    c. Social studies teaching and learning are powerful when they are values-based;

    d. Social studies teaching and learning are powerful when they are challenging by expecting students to strive to accomplish the instructional goals, both as individuals and as group members;

    e. Social studies teaching and learning are powerful when the learning is active.

3. Standards –demonstrate the ability to incorporate into instructional planning the local, Pennsylvania, and national learning standards, grades 4 through grade 8, for social studies, specifically:

    a. Geography

    b. Basic geographic literacy

    c. Physical characteristics of places and regions

    d. Human characteristics of places and regions

    e. The interactions between places and people

    f. History

    g. Historical analysis and skills development

h. Pennsylvania history
i. United States history
j. Economics
k. Economic systems
l. Markets and functions of governments
m. Scarcity of choice
n. Economic interdependence
o. Work and earnings
p. Civics and government
q. Principles and documents of governments
r. Rights and responsibilities of citizenship
s. How governments work
4. Geography and world cultures – demonstrate proficiency in:
   a. Basic geographic literacy, including the ability to use geographic tools and knowledge of places and regions;
   b. Physical characteristics of places and regions, with attention to understanding the physical system and its properties;
   c. Human characteristics of places and regions—including knowledge and understanding of population, culture, exploration and settlement, economic activity and political activity;
   d. Interactions between people and places—how physical environments affect people, and how humans affect the places where they live and work.
5. Research and history:
   a. Equip students with tools to comprehend, interpret, and conduct historical research;
   b. Outline and delineate historical developments;
   c. Make effective use of inquiry and analysis tools (documents, web resources, analyses, as well as relevant subject matter in other disciplines such as economics, political science, and the natural sciences);
   d. Differentiate the contributions of individuals and groups;
   e. Use and understanding documents, artifacts, and the significance of historical places;
   f. Describe historical implications of continuity and change;
   g. Distinguish between conflict and cooperation among groups;
   h. Categorize the discipline of history with key concepts such as time, change, cause and causation, evidence;
   i. Interpret historical accounts.
6. Economics – demonstrate proficiency in representing, clarifying and imparting the basic understanding of:
   a. Economic systems;
   b. Markets;
   c. Economic interdependence;
   d. Economic aspects of work and earnings.
7. Government and citizenship:
   a. Represent, clarify and communicate the principles, structures, documents, and operation of government in a democratic society
      i. United States of America
      ii. Commonwealth of Pennsylvania;
   b. Represent, clarify and communicate the citizenship rights and responsibilities;
   c. Analyze relationships among nations and peoples;

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     d. Clarify and analyze how government works, including the branches of government at the state and federal levels;

     e. Acquire knowledge and understanding international relations
         i. American foreign policy
         ii. The role of the United States in world affairs, and roles of international organizations.

III. Assessment Skills

A. Use assessment data to guide instruction;

B. Monitor the results of interventions and alter instruction accordingly;

C. Use multiple assessments (authentic, screening, diagnostic, formative, benchmark, and summative) that are developmentally appropriate for young adolescent learners;

D. Implement technology in student assessment measures;

E. Use multiple assessment strategies that effectively measure student mastery of the curriculum in more than one way;

F. Design assessments that target academic standards and assessment anchor content standards in subject areas.

ALIGNMENT WITH PENNSYLVANIA'S ACADEMIC STANDARDS AND ASSESSMENT ANCHOR CONTENT STANDARDS

The grades 4 – 8 teacher must have deep understanding and mastery of the Academic Standards and the Assessment Anchor Content Standards for those grade levels, including Alternate Academic Content Standards (See below). Section 49.14 (iii) of the Pennsylvania School Code identifies how the Academic Standards are included in certification programs: "Institutions are able to demonstrate that educator candidates have participated in instructional activities that enable the candidates to provide instruction to students to meet the provision of Chapter 4 (relating to academic standards and assessment)." Further more, preparation programs must be designed to enable candidates to integrate general, core, and professional coursework so the candidate can teach and assist public school students in achieving the academic standards under Chapter 4 (22 Pa. Code §354.25(b)).

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│        Pennsylvania Academic Standards (22 Pa. Code § 4.12)       │
│                                                                   │
│           (1) Science & Technology*ᵃ                              │
│           (2) Environment & Ecology*ᵃ                             │
│           (3) Social Studies                                      │
│                   (i)History                                      │
│                                      (ii)Geography                │
│                   (iii)Civics & Government                        │
│                   (iv) Economics                                  │
│           (4) Arts & Humanities                                   │
│           (5) Career Education & Work                             │
│           (6) Health, Safety & Physical Education                 │
│           (7) Family & Consumer Science                           │
│           (8) Reading                                             │
│                   (i) Reading*ᵃ                                   │
│                   (ii) Writing                                    │
│                   (iii) Speaking & Listening                      │
│           (9) Mathematics*ᵃ                                       │
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The preparing institution's program should enable candidates to identify the difference between the Academic Standards and the Assessment Anchor Content Standards. Candidates must also be able to demonstrate their awareness of standards for the earlier and later grades to ensure that there is a continuum of Pre K-12 student academic growth. Knowing the continuum of grade level standards is especially important for the 4-8 middle level teacher, where Assessment Anchor Content Standards exist at all grade levels within the certificate. This knowledge will enable the candidate to address the needs of students who have not met the standards including students with disabilities or English Language Learners in inclusive settings.

Candidates must demonstrate mastery beyond superficial levels in order to be able to prepare students to be successful on state and local assessments. This mastery will allow the candidate to guide and assist the public school student in achieving proficiency on all state assessments. The annual Pennsylvania System of School Assessment (PSSA) is a standards based criterion-referenced state assessment used to measure a student's attainment of the academic standards while also determining the degree to which school programs enable students to attain proficiency of the standards. Every Pennsylvania student in grades 3 through 8 and grade 11 is assessed in reading and math. Every Pennsylvania student in grades 5, 8 and 11 is assessed in writing. Every Pennsylvania student in grades 4, 8, and 11 is assessed in science.

The preparation program requirements must function together so that candidates understand and make effective use of the academic standards, have the skills to develop and implement appropriate interventions to improve student learning, have the content and pedagogical knowledge to teach the curriculum effectively, understand and make regular use of standardized and curriculum-based assessment data, and use the instructional materials and resources necessary to support standards-based instructional practices. Preparing institutions must provide evidence that there is an alignment of the candidates'

course work, clinical experiences, and assessments with the standards adopted by the Commonwealth. Collaboration among "professional educator faculty and faculty from liberal arts and other academic disciplines in program planning and evaluation of all facets of the curriculum" is essential to facilitating deep understanding of the standards by candidates (as regulated by 22 Pa. Code §354.26(a)(1)).

Electronic Access to Standards

This link provides access to the [State Board of Education Academic Standards website](). It contains the Pennsylvania Academic Standards, the Assessment Anchor Content Standards, the Alternate Academic Content Standards, the Early Learning Standards, and the Language Proficiency Standards for English Language Learners.

FACULTY

Certification programs submitted for review to the Department will include the qualifications of faculty assigned to teach each course within the professional core of the program. Faculty who teach in the professional core must have demonstrated expertise in middle level education, as well as advanced degrees in disciplines appropriate to teaching in the program. Additionally, program proposals will be expected to include evidence of successful alignment and evidence of significant collaboration between arts and sciences faculty and education faculty, along with current practicing middle level teachers and administrators in all content areas (refer to Chapter 354.25 and 354.26).

FIELD EXPERIENCES AND STUDENT TEACHING

All professional educator programs must include the components of field experiences and student teaching into the program design. As regulated by Chapter 354 of the Pennsylvania Code (Title 22), the planned sequential field experiences may begin as early as the initial semester of college enrollment, prior to the required minimum 12 week full-time student teaching experience (§354.25(d)&(f). These experiences are to benefit the candidates preparation by providing opportunities to apply principles and theories from the program to actual practice in the classroom; provide practice with diverse populations, ages, and school settings (§354.25(d)(1-2).

Field Experience and Student Teaching Requirements
The professional education program is required to provide evidence of the candidate's participation in developmental field experiences and student teaching, under the supervision of college personnel and cooperating teachers who are well trained, highly qualified, and who demonstrate competence in teaching and mentoring in the field of 4 – 8 education. The program must also provide evidence that the criteria and competencies required for exit from the 4 – 8 certification programs are assessed through coursework, field experiences and student teaching. In addition to incorporating a self-reflective emphasis, the program is expected to require candidates to demonstrate their knowledge and competence in fostering student learning and child well-being. To the extent possible, candidates should be assigned to field experiences and student teaching sites in which staff have Elementary or Middle Level certification or are able to provide supervision from an external certified teacher.

Definitions of Field Experience and Student Teaching
There are four stages of field experience and student teaching. Each one is progressively more intensive and requires the candidate to assume gradually more responsibility. The experiences should take place in collaborative settings to give candidates a flavor for the values, culture, and working styles of learning environments. This includes learning about the socio-emotional and academic traits of students, and gaining experience with the teaming approach to teaching through direct observation and participation in teamwork and collaboration at the elementary/middle level.

Field experiences are defined as a range of formal, required school and community activities participated in by students who are enrolled in teacher preparation programs. These activities generally do not include student teaching under the supervision and mentorship of a classroom teacher. Effective field experiences provide candidates with increasing exposure to schools, under the guidance of program faculty and trained teacher mentors, throughout the preparation program. Institutions should explain:
1. How they implement field experiences to allow candidates to progress from observing, to working with small groups of students, to teaching small groups of students under the direction of a certified teacher, to the culminating student teaching experience.
2. The duration of candidate field experiences.
3. How these experiences are closely integrated with coursework, assessment practices, and program goals.

Student teaching is defined as a set of organized and carefully planned classroom teaching experiences required of all student teachers in a preparation program. Student teachers are assigned to one or more classrooms, closely supervised and mentored by a certified teacher, the cooperating teacher, who provides regular feedback to the student on his or her classroom teaching performance. General supervision of student teachers is provided by a university or college professional educator.

Field Experience Guiding Principles:
- Field experiences are designed and delivered for candidates to make explicit connections with content areas, cognitive development, motivation and learning styles.
- Field experiences allow teacher candidates to observe, practice, and demonstrate coursework competencies, under the supervision of education program faculty and under the mentorship of certified teachers.
- Field experiences must allow teacher candidates to progress from observation to teaching small groups of students under the mentorship of a certified educator at the pre-student teaching level, to the culminating student teaching experience.
- Field experiences are on-going throughout the program, aligned with coursework, and include varied experiences in diverse environments.
- Candidates need time to learn and demonstrate the complex competencies and responsibilities required by teachers.

Types of Field Experiences and Student Teaching
Each candidate must participate in field experiences. At least one experience during Stage 3 or student teaching must include students in inclusive settings. An inclusive setting is defined as an educational setting which includes children with and without special needs. An inclusive setting includes at least one child with an IFSP/IEP. At least one experience during Stage 3 or student teaching must be in a public school setting.

The student teaching component of approved programs in the Commonwealth is expected to involve institution faculty with knowledge and expertise in the certification area being pursued by a teacher candidate. Classroom mentor teachers (sometimes called cooperating teachers), under whose direct supervision the student teachers work, are expected to be trained by the institution, preferably in 4 – 8 best practices, and to have appropriate certification.

Candidates must learn to identify and conduct themselves as members of the profession. They need to know and use ethical guidelines and other professional standards related to 4 – 8 best practices. Candidates must also have opportunities to collaborate with other professionals and become informed advocates for sound educational practice and policies.

Professional Behaviors to be Demonstrated throughout the Field Experiences
- Understand and adhere to Codes of Conduct
- Appreciate the need for, and maintain, student, family, and staff confidentiality
- Acquire and maintain appropriate clearances
- Understand and adhere to policies and procedures of the specific institution
- Advocate for high quality, child-centered teaching practices utilizing the appropriate supervisory channels, including requirements related to mandated reporter status

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Field Experience Stages
The following section describes the four stages of Field experience required for all certificate areas. A complete summary is shown on the next page in Table 2.

Stage 1: Observation
Candidates are observers in a variety of education and education related settings (e.g., community organizations, tutoring programs). Programs are expected to design this phase so that candidates participate before formal admission to the teacher education program. Apart from community and after-school programs, there must be a range of school and classroom experiences (e.g., urban, suburban, rural; high- and low-performing schools)—all taking place in middle level grades—so that candidates have a broad experience and learn as much as possible about middle level learners and middle level education philosophy.

Stage 2: Exploration
This stage may be called the "assistant" phase of field experience—it is where the candidate works under a certified teacher's direction with a small group of students. Activities could include tutoring, helping with reading assignments, and so forth. Ideally, this stage would also occur before admission to the teacher preparation program.

Stage 3: Pre-student teaching

Pre-student teaching is where candidates will work with small groups of students, in school or in after school settings under the supervision of a certified teacher. For this phase of clinical (field) experience, middle level candidates will be admitted to the education program, have taken at least one methods course, but will not be in full control of a class.

Stage 4: Student Teaching

There is a minimum of 12 weeks full-time student teaching required in §354.25(f). The student teacher must be supervised by faculty with knowledge and experience in the area of certification and a cooperating teacher with appropriate professional educator certification (3 years certified teaching experience and 1 year experience in the placement school) who is trained by the preparation program faculty (22 Pa. Code, §354.25(f)).

Table 2

Field Experiences and Student Teaching Required for Grade 4-8 Education

Stage #	1 & 2	3	4
Stage Title	Observation (1) and Exploration (2)	Pre-Student Teaching	Student Teaching
Description	Linked to Pre K- 4 education competencies and Pre K- 4 education courses that require a minimum number of hours across various grade levels and content areas.	Linked to Pre K- 4 education competencies and Pre K- 4 education courses that require a minimum number of supervised hours across various grade levels and content areas. Pre-student teaching experiences include teaching small to large groups of students under the supervision of Pre K- 4 higher education faculty and the mentorship of a certified Pre K- 4 education teacher. Pre-student teaching experiences are closely integrated with coursework, assessment practices, and program goals.	Student Teaching includes a minimum of 12 weeks full time in the classroom with increasing teaching responsibility to completely simulate the role of the Pre K - 4 educator. For greater than half of the student teaching experience, the teacher candidate will assume full responsibility as demonstrated by effective methods for the planning and delivery of instruction in the classroom
Required Elements	1. Observation log signed by cooperating teacher. 2. Observation write-up by teacher candidate with feedback provided by university instructor. 3. Group meeting once a week with university instructor so that field experience is linked to current courses and practices. This can include the class meeting time.	1. Course assignments (e.g., journal, time log, reflective teaching) with feedback provided by university instructor. 2. Observation and feedback provided by university instructor 3. Group meeting once a week with university instructor so that pre-student teaching experience is linked to current courses and practices.	1. Observation log signed by cooperating teacher. 2. Observation write-up by teacher candidate. 3. Observation feedback provided by university instructor. 4. Onsite visitation by university instructor. 5. Group meeting once a week with university instructor so that field experience is linked to current courses and practices. 6. PDE 430 Form

* At least one experience during field experience 3 or student teaching must include students with special needs in inclusive settings. An inclusive setting is defined as an educational setting which includes children with and without special needs. An inclusive setting includes at least one child with an IFSP/IEP.

NEW TEACHER SUPPORT

According to §49.16 (22 Pa. Code), all school entities (LEAs) must submit a plan for the induction experience for first-year teachers. This plan is submitted as part of the LEA's strategic plan written every 6 years as required by Chapter 4. Preparing institutions have a role in a new teacher's induction experience. The preparing institution shall provide, "…ongoing support for novice educators in partnership with local education agencies during their induction period, including observation, consultation and assessment." (22 Pa. Code §49.14(4)(ix))

APPENDICES

Appendix A: Mathematics Background Information and References

Appendix B: English/Language Arts and Reading Background Information and References

Appendix C: Science Background Information and References

Appendix D: Social Studies Background Information and References.

Appendix E: Accommodations and Adaptations for Students with Disabilities in an Inclusive Setting and Meeting the Needs of English Language Learners.

Appendix A

Mathematics Background Information and References:

Recommendations for essential middle level teacher content knowledge, pedagogical content knowledge, teaching skills, and clinical experience have been made by the National Council of Teachers of Mathematics (NCTM), the Education Testing Service (ETS), the Conference Board of the Mathematical Sciences (CBMS), the National Research Council (NRC), and others. References to publications and web sites are provided below. In addition to understanding and being able to apply this knowledge and skills, middle level teachers must also know a great deal about adolescent development, and about the middle school as a setting for effective teaching and learning. For the mathematics preparation of middle level teachers, ETS and the Conference Board have identified essential knowledge and skills that must be acquired and demonstrated by all middle level teachers:

ETS Middle Level Math for Pennsylvania	Conference Board Recommendations for Middle Level Teacher Preparation in Math
Arithmetic and basic algebra	Algebra and functions
Functions and graphs	
Geometry and measurement	Geometry and measurement
Data, probability and statistical concepts	Data analysis, statistics, and probability
Number theory The real number system and sub-systems	Numbers and operations
	Calculus concepts and applications
Application of mathematical understanding: problem-solving, reasoning and proof, connections, representations, technology	Mathematical modeling: understanding the ways in which mathematics can be applied

Mathematics Components for Middle Level Teacher Preparation

Required courses, content, competencies, and clinical skills to teach mathematics in middle level grades come from these program components:

- Mathematics courses
- Mathematics education courses
- Cognitive development
- Adolescent development
- Assessments and interventions course
- Literacy in the content area for mathematics
- Clinical skills through field experiences and student teaching

This is an interconnected set of knowledge, skills, and abilities needed by middle level teachers to ensure successful student learning. The mathematics courses are discussed in this section. The Professional Core section of the Middle Level Program describes requirements related to mathematics education, cognitive development, adolescent development, assessment knowledge and skills, and clinical skills. The English Language Arts section includes details about literacy in the middle level content areas. Drawing on the cognitive sciences, mathematics, and mathematics education, Mayer has identified five knowledge areas needed for students and their teachers to be successful in mathematics. These five areas fit well with NCTM's content and process standards, Pennsylvania's

academic standards, and studies and reports used as resources in designing the middle level program: in *The Role of Knowledge in the Development of Mathematical Reasoning* (In Robert Sternberg and Rena Subotnik, eds. <u>Optimizing Student Success in School with the Other Three R's: Reasoning, Resilience, and Responsibility</u>. Information Age Press, 2005), Mayer discusses the five strands of knowledge needed to support reasoning in mathematics—by students and by their teachers:

- *Factual knowledge* needed to understand a mathematical problem or phenomenon (e.g., that there are one hundred cents in a dollar), including what Mayer calls "linguistic knowledge;"
- *Conceptual knowledge* enabling a student to determine what kind of a math problem is presented through a coherent mental picture of the situation;
- *Strategic knowledge* of the strategies needed to attack a problem ("solution planning and monitoring");
- *Procedural knowledge* (or computational skill) such as addition, subtraction, or solving equations; and
- *Attitudinal knowledge*, which refers to beliefs about solving problems (e.g., that success in mathematics is the result of hard work or because one is "born to do math").

Middle school teachers must have gained this type of knowledge related to mathematics in order to teach successfully in a middle school. The descriptions of each knowledge domain make it clear that teachers acquire the needed knowledge from many different sources—hence the need for a carefully designed and coherent program that spans several disciplines and a broad range of teacher candidate experiences. All of this is consistent with the [NCTM Standards](#) identifying what students must know and be able to do, as well as the NCTM ***[process standards](#)*** for middle level teachers. These are particularly relevant to the course that addresses mathematical modeling and applications of mathematical understanding. The so-called "process standards" require teachers to have deep content knowledge in order to understand and apply process knowledge to a wide range of classroom learning situations and to help middle level students at all levels of ability and achievement to improve their knowledge of mathematics.

Appendix B

English/Language Arts and Reading Background Information and References:

Through its work with the Adolescent Literacy Funders Forum, the Carnegie Corporation of New York identified 15 key elements to improve adolescent literacy achievement. Nine of these are directly relevant to middle level teacher preparation, covering knowledge and skills development that must be embedded in course design and course content. Others have to do with the skills and abilities the teacher preparation program will develop in candidates and assess at various stages during the program. These foundational requirements for adolescent literacy development are instructional skills that can only be acquired, refined, and improved by well-designed clinical practice components of the preparation program.

<u>Content Coverage in the English/Language Arts and Reading Curriculum</u>

Proposals for middle level teacher preparation programs may include a variety of course titles to meet the English/Language Arts component requirements, but the courses and related candidate experiences must describe clearly how the content knowledge and skills development described below is embedded in the proposed program. The program design requirements in literacy draw on recent publications about adolescent literacy and teacher preparation. These include:

- *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction* (National Institute of Child Health and Human Development, 2000. Report of the National Reading Panel. NIH Publication No. 00-4769. Washington, DC: U.S. Government Printing Office);
- "Teacher Education and Reading Instruction," (National Institute of Child Health and Human Development, 2000. Report of the National Reading Panel. Teaching children to read: an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups. NIH Publication No. 00-4754. Washington, DC: U.S. Government Printing Office);
- *Adolescent Literacy and the Achievement Gap: What Do We Know and Where Do We Go From Here?* Prepared for the [Carnegie Corporation](#) of New York's Adolescent Literacy Funders Meeting by Catherine Snow and Gina Biancarosa;
- *The Fifteen Key Elements of Effective Adolescent Literacy Programs*, A Report to the [Carnegie Corporation](#) of New York;
- *[Teaching Literacy in the Turning Points School](#)* (Boston: Center for Collaborative Education;
- *Reading Next: A Vision for Action and Research in Middle and High School Literacy*, Alliance for Excellent Education, Washington, DC, 2004 (retrieved from the [Carnegie Corporation](#));
- *[Supporting Young Adolescents' Literacy Learning](#)*: A Position Paper Jointly Adopted by the International Reading Association and National Middle School Association, 2001;
- *Intermediate and Adolescent Literacy: The State of Research and Practice*, Notes from Meeting held at [Carnegie Corporation](#) of New York, 2002;
- *Child and Adolescent Development Research and Teacher Education: Evidence-based Pedagogy, Policy, and Practice*, (National Institute of Child Health and Human

Development, NIH, DHHS. Washington, DC: U.S. Government Printing Office, 2007). Retrieved from ww.nichd.nih.gov/publications/pubs_details.cfm?from=&pubs_id=5684;

- *Teaching Reading Well: A Synthesis of the International Reading Association's Research on Teacher Preparation for Reading Instruction*, 2007.

As the International Reading Association (IRA) recommends in *Teaching Reading Well*, teachers need a firm grounding in "language and reading development as well as deep understanding of learning and motivation theory" (IRA, 2007, page 2). This course must address directly concepts, knowledge, and skills essential for direct and explicit comprehension instruction; understanding student motivation and self-directed learning; and learning theory relevant to the successful practice of assessment and intervention in student learning. Foundational knowledge about literacy research and theory must be embedded in other English/Language Arts course content and reflected in syllabi submitted by institutions seeking program approval.

Word and Text Comprehension

Middle level teachers must understand how to provide effective instruction in word-level strategies that result in student literacy gains. This course must include material on phonemic awareness and phonics instruction; syntax and semantics; and the roles of reading, writing, and speaking in vocabulary development. Course content must address direct, explicit comprehension instruction, skills in promoting "strategic tutoring" as defined above; and demonstrated ability to conduct assessment and design appropriate interventions. More information is available from the *Report of the National Reading Panel* (pages 7-11).

Vocabulary development, fluency, guided oral reading, independent reading, comprehension strategies, vocabulary instruction, text comprehension and instruction, critical literacy, and some exposure to reading strategies for the content areas must be addressed in this course. The domain-specific focus is developed further by additional courses outlined below. Instructional knowledge and skills in text comprehension may also include learning to implement teaching strategies such as collaborative student learning, as well as expertise in selecting and using diverse written text materials, and using technology-based reading materials. The National Reading Panel offers information on these topics (pages 11-16).

Literacy in the Content Areas

This is aimed at ensuring that middle level teachers are able to respond to the literacy needs of their students. Such topics as academic language and language acquisition would be included. It must set the stage for going much deeper into the literacy issues associated with each of the middle level content areas. The IRA comments that "specific reading instruction in areas such as science, social studies, and math leads to improved reading comprehension in students. Teachers need intensive focused preparation in how to provide instruction and feedback to students so that they acquire and use these strategies for reading text from specific disciplines" (IRA, 2007, page 4). At least five of the nine Carnegie elements for improving literacy achievement are relevant to coursework that prepares middle level teachers along these lines:

- <u>Effective instructional principles embedded in content</u>, including language arts

teachers using content-area texts and content-area teachers providing instruction and practice in reading and writing skills specific to their subject area;

- Text-based collaborative learning, which involves students interacting with one another around a variety of texts;
- Diverse texts, which are texts at a variety of difficulty levels and on a variety of topics;
- Intensive writing, including instruction connected to the kinds of writing tasks students will have to perform well in high school and beyond; and,
- A technology component, which includes technology as a tool for and a topic of literacy instruction.

Reading, writing, and oral competencies in each of the core content areas are crucial parts of adolescent literacy development. Snow and Biancarosa note that, "students are expected to read and write across a wide variety of disciplines, genres, and materials with increasing skills, flexibility, and insight" (page 5). Domain-specific vocabulary, knowledge, and teaching skills are essential to promote successful student outcomes in the middle level content areas—these are about knowledge and skills needed by teachers, as well as requirements for their students. To ensure that middle level teachers have the knowledge and skills to promote this development, the program must include courses with explicit links between literacy and each of the main content areas.

Literacy in the Middle Level Content Areas: Mathematics, Science, and Social Studies

The content area literacy sequence must be scheduled after students have completed at least some of their content-area coursework in the middle level subject areas. It would also be helpful if the content ran simultaneously with literacy-based field experiences.

Mathematics. The relevance of literacy to mathematics learning and achievement is well established in the research literature. Content must emphasize mathematical connections with reading and writing, the use of various texts, as well as the ability to interpret and write about non-verbal representations such as graphs and charts. Using technology to link numeracy and literacy in the classroom must also be included in this course. The Center for Applied Special Technology offers resources supporting a "Universal Design for Learning." Among them are its "Teaching Every Student" program, one of many resources that may be useful. Other programs, strategies, and interventions are discussed by Snow and Biancarosa (pages 7-17), and by the National Reading Panel report (pages 17-18).

Science. The same needs and challenges are present in the sciences. Candidate content knowledge, as well as the ability to integrate literacy skills with content teaching of students, is essential attributes of the effective middle level teacher. Content here must focus on the integration of learning science with reading and writing, use of texts, and graphical representations. Technology-based applications and curriculum materials that build the science content-literacy bridge are widely available, including CAST, the University of Michigan initiative known as Guided Inquiry Supporting Multiple Literacies), and others suggested by the National Science Teachers Association.

Social Studies. Student literacy (and numeracy) skills are essential for intellectual growth and academic achievement in the social sciences. Here, too, prospective teachers need

explicitly connected preparation and practice to be effective. Content must address the five Carnegie elements, the role of technology in teaching and learning for literacy in the social sciences, and what the IRA calls "an integrated system of reading, discussion, and writing about literary and informational text" (IRA, page 4). Numerous technology-based resources are appropriate and useful in developing candidate competence in these skills. One is the Universal Design for Learning Toolkit, including model lessons for geography and social studies, and case studies in how to cope with reading challenges in social studies.

Literacy Assessments and Interventions

Assessment skills, extensive practice, and the application of assessment results to design effective individualized interventions are essential literacy teaching skills. The joint IRA/NMSA Statement on Young Adolescents' Literacy Learning argues that, "Large scale assessment programs that focus on student groups… are not sufficient. Adequate assessment measures must be supported by strong informal reading assessments that take place in classrooms and involve both teachers and students in the process. These plans must be used to shape and reshape instruction so that it meets the needs of all students" (page 2).

The content must be organized to provide candidates with the knowledge and skills to recognize students having difficulty and diagnose their challenges, and to enable candidates to design (with collaborative assistance from colleagues when needed) and test the effectiveness of appropriate interventions. Content must enable candidates to learn how to adapt and modify instruction, use technology appropriately, and adapt curriculum successfully. Translating diagnostic information about student learning into successful teaching strategies requires formal preparation, proficiency with assessment tools, and extensive practice under careful supervision and mentoring.

The course must also include explicit attention to the Pennsylvania Academic Standards and the state Assessment Anchors for reading in grades 3-8.

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Content Sequence and Field Experiences

The required coursework in English Language Arts and Reading and literacy-related content for the middle level certificate must be organized in a sequence that builds logically on the growing knowledge of domain-specific and literacy-related concepts and skills acquired by the candidate. ***Students should take content simultaneously with relevant field experiences***. Program design in the literacy sequence must reflect these ideas, drawn from *Teaching Reading Well* (IRA, 2007, page 10):

- Explicit explanation of the material;
- Model various thinking processes to stimulate active and engaged candidate learning;
- Multiple opportunities to practice what is learned—in the college classroom, in community settings, and in middle level classrooms.

Aside from many (and early) clinical practice opportunities in schools and other settings, these IRA principles ought to characterize the academic experiences that take place in the college and university classroom. That is, university faculty must model the teaching

strategies, assessment practices, and uses of technology for instruction that their students will be expected to learn to become effective middle level teachers.

The proposed curriculum for the middle level certificate program must indicate clearly that courses in the sequence are accompanied—in the same semester—by field experiences supervised by certified reading specialists or content-certified teachers in the classrooms of certified teachers, allowing the candidate to observe and even practice some of the knowledge and skills acquired in each course. Opportunities to learn how to develop effective intervention strategies—based on assessment of individual student learning accomplishments and challenges—must be included in coursework. Field experiences, student teaching, and faculty assessment of candidates must provide multiple chances to practice these skills, receive timely feedback, apply the results of this guidance to candidate practice, and obtain further feedback to promote continuous development of assessment and intervention skills for adolescent literacy development.

Examples of challenging and relevant clinical experience components in literacy are described in the IRA report (*Teaching Reading Well*, pages 12-13), by numerous examples in *Teaching Literacy in the Turning Points School*, and from literacy teacher preparation program curricula such as the Hunter College courses on Diagnosis of Reading Difficulties and Practicum in Remedial Reading, in which candidates do what is essentially an extended case study with one student.

Appendix C

Science Background Information and References:

The science component design is based on the Pennsylvania academic standards and assessment anchors, and on what research, science organizations, and respected policy groups (like the National Science Teachers Association and the National Middle Schools Association) define as high quality middle level science teaching. Content must be aligned with the Pennsylvania academic standards and with the Assessment Anchors in science established for grades 3 and 8. Successful alignment and content development will require arts and sciences/education collaboration in design and development of coursework. Middle level program proposals submitted for review by PDE will be expected to include evidence of successful alignment and evidence of significant collaboration between arts and sciences faculty in the sciences, and with science educators.

The Pennsylvania academic standards and assessment anchors for science in grades 4 and 8 signal the content coverage required for middle level teachers to be equipped with the knowledge to teach science successfully to middle school students.

For middle level students, successful achievement in science comes from their ability to develop "organized knowledge" through high quality curriculum materials and specific guidance from teachers (National Research Council, *How Students Learn: Science in the Classroom*, page 462). This requires teachers who have sufficient subject matter knowledge, including aspects of the culture of science that guide knowledge production" (NRC, page 468).

Successful preparation of middle level teachers requires programs to focus on an interconnected set of scientific knowledge, skills, and abilities. The science courses needed by middle level teachers to ensure successful student learning are discussed in this section. The Professional Core section of the Middle Level Program describes requirements related to cognitive development, adolescent development, assessment knowledge and skills, methods courses, and clinical skills.

[1]Unifying themes, which must be incorporated into the science content and methods courses, include concepts such as systems, models, patterns, scale, change, and the importance of evidence and measurement. They are discussed under the heading, Understanding the Nature of Science.

[2]Inquiry and design concepts must also be embedded in the science content and methods courses. They include the nature of science, process skills, and the understanding and use of statistics to interpret data and findings.

Relatively weak knowledge of science and methods of scientific inquiry among students, teachers, and the general public in the United States led organizations such as the National Science Teachers Association (NSTA), the American Association for the Advancement of Science (AAAS), the National Research Council (NRC) and others to propose ways of improving curriculum, teacher education, curriculum materials, and assessment practices from elementary school through graduate and professional education. For PreK-12 teachers and the programs that prepare them, NSTA argues in its *Position Statement on Science Teacher Preparation* that these programs must demonstrate certain core traits, many of

which are quite consistent with Pennsylvania's expectations for high quality programs of teacher preparation:

While these recommendations are for science teacher preparation *in general*, their application to middle level teacher education will produce, according to NSTA, middle school teachers of science who are "fully qualified to teach science in their state and have a strong knowledge of science content; attain a high level of knowledge about educational research on how middle level students learn, best practices, and effective instructional strategies for middle level students, and [are] able to use this knowledge in the classroom; deal positively with the variability of behavior patterns of emerging adolescents; support diverse learners effectively, deal with gender/equity issues, model a multidisciplinary approach to learning, and exhibit a desire to be a lifelong learner; [and] create a safe environment in which students can engage in inquiry-based science instruction in the classroom, in the laboratory, and in field settings…" (NSTA, *Science Education for Middle Level Students*).

Understanding the Nature of Science

There is widespread consensus among researchers and experts on science education about ways to approach teaching science. As a starting point, teachers need to understand science and the scientific process. "Teaching content alone is not likely to lead to proficiency in science, nor is engaging in inquiry experiences devoid of meaningful science content" (*Taking Science to School*, page 9). The concepts and course content described for *Understanding the Nature of Science* are drawn from *How Students Learn*, Project 2061, include:

- The nature of scientific inquiry, how to judge scientific models and explanations
  - General: how to develop descriptions, explanations, predictions, and models using evidence; recognizing and analyzing alternative explanations and predictions.
  - Using prior knowledge to pose problems and generate data rather than thinking about science as "truths to be memorized."
  - Data collection, interpreting data, testing inferences, and the search for patterns in data.
  - Testing ideas through experimentation.
  - Concepts and processes within an explanatory framework: systems, order, and organization; evidence, models and explanation; evolution and equilibrium; form and function.
  - The role of models to explain observations; testing models against additional data; strengths and limitations of various explanatory models.
  - Using patterns in observations to develop explanations and predictions; developing causal models to explain patterns in observed or collected data.
  - Scientific argumentation and reasoning: making ideas public and learning to revise models in light of data that don't fit and to critiques from others.

- Conceptions and preconceptions of science and scientific knowledge
  - Misunderstandings of science and scientific inquiry processes.
  - Recognizing student preconceptions, student reasoning patterns, problematic explanations for observed phenomena.
  - Promoting conceptual change in student understanding of scientific knowledge and processes.
  - Exploring approaches to scientific reasoning and investigative strategies through

learner-centered principles of instruction ("engaging students in activities or discussions that draw out *what* they know or *how* they know," NRC, page 414).

- The process of scientific inquiry: learning to "do science"
  - o General: thinking critically and logically to make the relationships between evidence and explanations; communicating scientific procedures and explanations; understanding how to use the range of scientific investigations appropriate to a discipline and to a problem.
  - o Learning about science as a process of inquiry ("rather than simply having 'inquiry times' that are appended to an existing curriculum," NRC, p 405).
  - o Historical development of science and the role of logical reasoning, and verifiable evidence.
  - o How scientists "do science" in different disciplines: scientific inquiry and methods in the physical, life, earth, and space sciences; types of scientific investigations.
  - o Scientific reasoning and making investigative choices: how scientists develop, analyze, and test different explanations for their findings.
  - o Scientific argument: presenting and defending results of a scientific investigation
  - o Judging scientific models and explanations.

- Metacognition—helping students to learn reflective scientific practice
  - o Reflective assessment strategies and practices to build "metacognitive habits of mind" in students and their teachers.
  - o Recognition of how students construct new understanding on "a foundation of existing understandings and experiences" (NRC, page 4).
  - o Factual knowledge and conceptual frameworks for understanding science.
  - o Learning how students learn: understanding and fostering metacognitive processes in students.
  - o Writing and communicating as steps in the learning process.

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Those interested in a fuller description of the content and competencies for each required course can find this information in the appendix to this document.

Physical Sciences
Physical Science investigations

- Understanding the nature of science, applied to the physical sciences
- Forces and motion (position and motion of objects)
- Physical properties of matter (objects and materials)
- Chemical properties of matter
- Energy and interactions between matter and energy (light, heat, electricity, magnetism, sound)
- Laboratory investigations in the physical sciences: 3 lab hours per week

Life Sciences
Life Sciences Investigations

- Understanding the nature of science, applied to the life sciences.
- Structure and function of living things (characteristics of organisms).

- Reproduction and heredity.
- Adaptation and evolution (organisms and their environments).
- Ecological behavior and systems (regulation and behavior).
- Relationship between organisms and the environment.
- Laboratory investigations in the life sciences: 3 lab hours per week.

Earth and Space Sciences
Investigations

- Understanding the nature of science, applied to earth and space sciences.
- Structure and function of earth systems.
- Earth features and processes.
- Cycles in earth systems—water.
- Energy, weather, and climate.
- Solar system and the universe (objects in the sky, changes in the earth and sky).
- Investigations in the earth and space sciences: 3 hours per week in laboratory, observatory, or related experiences.

Numeracy Skills in Teaching Science

Computational tools are essential for children in order to learn science. The mathematics component of the middle school program requirements includes rich mathematics content and applications to real world settings. The literacy component provides a required course linking mathematics and literacy, with obvious implications and benefits for science education. Prospective middle school teachers need an advanced version of the same set of computational and literacy tools.

Since mathematics is an indispensable learning tool for students—and for their teachers—to learn science, middle level program designs must sequence math and science courses in a way that promotes the logical development of mathematical knowledge in candidates. At the same time, however, innovative teacher preparation programs may want to propose interdisciplinary or other innovative combinations of math and science coursework that provide the necessary knowledge and skills.

Technology

Science education benefits from the availability of many well-developed technology resources. Candidates must know about these resources and have the opportunity to learn how to integrate them into instruction, assessment, and intervention activities. Through the work of the national Science Foundation, the National Research, Council, NSTA and others, there are web-based links to a wide array of these technologies. They include—but are not limited to:

- FOSS
- Knowledge Integration Environment
- SenseMaker
- Belvedere
- The Progress Portfolio

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Sources for the section on science include:

- Iris Weiss, Joan Pasley, P. Sean Smith, Eric Banilower, and Daniel Heck, *Highlights Report, Looking Inside the Classroom: A Study of K-12 Mathematics and Science Education in the United States*. Chapel Hill, NC: Horizon Research, Inc., 2003 (retrieved from Horizon Research)
- National Academy of Sciences, National *Science Education Standards*, 1996
- National Committee on Science Education Standards, *Assessment in Science Education*. Washington, DC: National Research Council, 1996.
- National Research Council, *How Students Learn: History, Mathematics, and Science in the Classroom*. Washington, DC: National Academy of Sciences, 2005
- National Research Council, *Taking Science to School: Learning and Teaching Science in Grades K-8*. Washington, DC: National Academy of Sciences, 2007
- National Science Teachers Association, *Standards for Science Teacher Preparation*. Washington, DC: National Science Teachers Association, 2003
- National Science Teachers Association, *Position Statement on Science Teacher Preparation*. Washington, DC: National Science Teachers Association, 2004
- National Science Teachers Association, *Position Statement on Science Education for Middle Level Students*. Washington, DC: National Science Teachers Association, 2003
- Richard Shavelson, *On the Integration of Formative Assessment in Teaching and Learning: with Implications for Teacher Education*. Palo Alto, CA: Stanford Education Assessment Laboratory, 2003

Appendix D

Social Studies Background Information and References:

Course content must be aligned with the Pennsylvania's academic standards for geography, history, economics and civics and government. Successful alignment and course content development will require arts and sciences/education collaboration in design and development of coursework, along with current practicing middle level teachers and administrators. Middle level program proposals submitted for review by PDE will be expected to include evidence of successful alignment and evidence of significant collaboration between arts and sciences faculty in the social sciences disciplines, and with social science educators.

The National Council for the Social Studies (NCSS) has published guidance for educators and teacher preparation programs intended to promote academic achievement in the social sciences. NCSS has identified key "principles" that underpin high quality teaching in social studies. The first is that "social studies teaching and learning are powerful when they are meaningful" (National Council for the Social Studies, *National Standards for Social Studies Teachers*, 2002). This happens in classrooms when students are able to learn "connected networks of knowledge, skills, beliefs, and attitudes" with explicit connections in- and out-of-school. Classroom instruction promoting this kind of academic success puts the focus on "depth of development of important ideas," rather than rote memorization of facts. NCSS argues that teachers and students must conduct "sustained examination of a few important topics," with curriculum, instruction and assessment organized around the "most important ideas" in the material before them.

The second NCSS principle highlights the fact that "social studies teaching and learning are powerful when they are integrative" (NCSS, *National Standards*, page 12). This means that subject matter is taught across disciplines, and that instruction makes good use of technology. As noted above, integrative teaching and learning draws directly (and often) on other disciplines—especially the sciences, mathematics, and literacy. This approach supports the NCSS principle that "social studies teaching and learning are powerful when they are challenging" (NCSS, *National Standards*, page 13). Here, students are expected to respond to high expectations as individuals and as a group; teachers model "seriousness of purpose and a thoughtful approach to inquiry," use instructional strategies to bring out the same qualities in their students, and they "demand well-reasoned arguments rather than opinions." The latter is a key element of "doing science," suggesting again that a cross-disciplinary focus will pay dividends in every content area. Finally, the NCSS makes the claim that "social studies teaching and learning are powerful when the learning is active" (NCSS, *National Standards*, page 13). The focus here is on "reflective thinking and decision-making" by students and teachers, and on "interactive discourse" to promote learning for understanding.

Teachers with the ability to instruct successfully in social studies are the products of preparation programs that build, assess, and support candidates as they develop these skills and the appropriate knowledge base. The result is classrooms where "teachers gradually move from providing considerable guidance by modeling, explaining, or supplying information that builds student knowledge, to a less directive role that encourages students to become independent and self-regulated learners. Teachers emphasize authentic activities that call for real-life applications using the skills and content of the field" (NCSS, *National Standards*, page 13).

This outcome—teachers with the knowledge and skills to help students become successful learners with measurable levels of academic achievement—does not happen by accident. Nor is it a routine result of teacher preparation in the social studies. Programs must provide these characteristics:

- "Substantial instruction" in the academic disciplines of the social sciences, including US and world history, political science and government, economics, geography, and behavioral science (NCSS, *National Standards*, page 48).
- One or more courses that enable candidates for the teaching profession to develop "pedagogical content knowledge that deals specifically with the nature of the social studies and with ideas, strategies, and techniques for teaching social studies" (NCSS, page 48).
- Qualified faculty, able to "demonstrate teaching that models exemplary practice for their students" (NCSS, page 49), including at least some faculty with successful PreK-12 teaching experience, and specialists in social studies education.
- "Multiple clinical experiences" in social studies classrooms, closely supervised and supported by certified and experienced social studies teachers.
- Finally, the NCSS argues that programs "preparing social studies teachers should provide and expect prospective social studies teachers to complete—in addition to professional and major courses, general arts and science courses that reach across several areas of study—including language arts, humanities, languages, mathematics, physical sciences, and technology" (NCSS, page 50).

Courses in the social sciences sequence must be designed to enable candidates and their students to develop sufficient depth and breadth of knowledge in each of the social sciences to prepare them for success in later grades as well as for life after school, and to solve real world problems in the various social sciences. Some courses will take place in the general education component of the candidate's degree program.

Developing numeracy skills is essential to doing and teaching social science successfully. Teachers and their students must have the mathematical knowledge to observe, measure, chart, graph, and explain historical, geographical, economic, and related phenomena. Mathematical concepts and skills ought to be infused into the social sciences courses taken by prospective middle level teachers, and the overall middle level program design places strong emphasis on numeracy skills development.

Understanding and using technology in middle level social science teaching is another critical skill. Technology must be incorporated into the design of each content course, with regular opportunities to use software, and other appropriate equipment, and learning tools. Numerous web-based resources have been developed in recent years for social studies

teacher educators, teachers, and students. These kinds of resources ought to be integrated into the courses taken by candidates.

For the National Council for the Social Studies (NCSS), ten themes thread through its conception of standards in the social studies. They are summarized here as a suggested guide to unifying themes that cut across specific courses and disciplines in the required program curriculum. Learning and teaching social studies must be understood as much more than a collection of courses taken by candidates in separate academic departments on the campus—an approach which forces prospective teachers to carry the full weight of trying to synthesize and connect content knowledge and knowledge about how middle level students learn social studies. A more effective approach—which must be embedded in the program design—starts with connections and makes them an explicit component of the program.

Appendix E

![Pennsylvania Department of Education logo]

ACCOMMODATIONS AND ADAPTATIONS
FOR STUDENTS WITH DISABILITIES IN AN INCLUSIVE SETTING
AND MEETING THE NEEDS OF ENGLISH LANGUAGE LEARNERS
PROGRAM GUIDELINES

INTRODUCTION

Pennsylvania's teacher preparation programs must include the competencies and skills needed to equip teachers to accommodate and adapt instruction for students with disabilities in an inclusive setting and to assist English language learners.

Final rulemaking of the State Board of Education published in the *The Pennsylvania Bulletin* on September 22, 2007 requires **all instructional and educational specialist preparation programs to include the following by January 1, 2011:**

> 1. At least 9 credits or 270 hours regarding accommodations and adaptations for students with disabilities in an inclusive setting (instruction in literacy skills development and cognitive skill development for students with disabilities must be included); and
> 2. At least 3 credits or 90 hours regarding the instructional needs of English language learners. (22 PA Code, Chapter 49, §49.13(b) (relating to policies)).[1]

Competencies and skills to accommodate and adapt instruction for students with disabilities in an inclusive setting and to assist English language learners must be identifiable during the program review process. Candidates who apply for a Pennsylvania instructional and/or educational specialist certificate on or after **January 1, 2013** must have completed the credits/hours described above

DESIGN

Applicable hours are limited to a combination of seat hours of classroom instruction, field observation experiences, major research assignments and development and implementation of lesson plans with accommodations and adaptations for diverse learners in an inclusive setting. In order to help all teachers better understand ways to accommodate and adapt learning for students with disabilities in an inclusive setting, it is essential that courses and course content be developed and taught by faculty who have thorough knowledge and expertise in using evidence-based practices to teach individuals with disabilities. The preferred approach is the use of faculty with post-graduate training and certification in special education. While preparation programs may infuse the candidate competencies related to accommodations and

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[1] (4) Evaluation and approval of teacher education programs leading to the certification and permitting of professional personnel.
  (i) The evaluation by the Department will provide assurance that, on or before January 1, 2011, teacher education programs will require at least 9 credits or 270 hours, or an equivalent combination thereof, regarding accommodations and adaptations for students with disabilities in an inclusive setting.
Within the content of these 9 credits or 270 hours, instruction in literacy skills development and cognitive skill development for students with disabilities must be included, as determined by the institution. At least 3 credits or 90 additional hours, or an equivalent combination thereof, must address the instructional needs of English language learners. For purposes of this requirement, 1 credit equals 30 hours of coursework. Applicable hours are limited to a combination of seat hours of classroom instruction, field observation experiences, major research assignments, and development and implementation of lesson plans with accommodations and adaptations for diverse learners in an inclusive setting. (22 Pa. Code §49.13(4)(i)).

adaptations for students with disabilities into existing courses or add additional courses as appropriate, it is the explicit application and relationship to students with disabilities that require faculty who deliver the content to have thorough knowledge and expertise in Special Education. Training for higher education faculty may include the use of modules and other educational activities prepared by special education faculty.

COMPETENCIES: ACCOMMODATIONS AND ADAPTATIONS FOR STUDENTS WITH DISABILITIES IN AN INCLUSIVE SETTING
(9 CREDITS OR 270 HOURS)

The following outline includes the competencies for the 9 credits or 270 course hours addressing the academic needs and adaptations for students with disabilities.

I. Types of Disabilities and Implications for Learning
Candidates will be able to:

A. Demonstrate an understanding of and ability to plan for: type, identification and characteristics of different types of disabilities, as well as effective, evidence-based instructional practices and adaptations.
B. Demonstrate an understanding of the legal rights and responsibilities of the teacher related to special education referral and evaluation and the rights and procedural safeguards that students are guaranteed.
C. Demonstrate an understanding of possible causes and implications of over-representation of minorities in special education to avoid misinterpretation of behaviors that represent cultural, linguistic differences as indicative of learning problems.

II. Cognitive Skill Development to Ensure Achievement of Students with Disabilities in Standards Aligned System to include All School Environments

A.   **Cognitive** – Delineate how individuals acquire and process information.
1. Design learning environments to facilitate encoding, storage and retrieval of knowledge and information for memory, attention, perception, action, and problem solving.
2. Describe the developmental patterns of change, physical, cognitive, and psychosocial areas that have been identified for each stage of development.
3. Apply concepts of human development to education and learning regarding attention, memory, conceptual knowledge and its formation, reasoning, decision-making, problem-solving, executive functioning, principles and mechanisms of development, intelligence, action, and motor control.
4. Specify the experiences children need from birth to age eight to prepare them to learn, read, and succeed in school.
5. Identify early interactions with adults and peers, the early childhood education teaching methods and curricula, and comprehensive early childhood interventions that support learning and development, specifically in domains that prepare children from diverse backgrounds for kindergarten and the early grades.

B. Physical – Recognize patterns of typical physical developmental milestones and how patterns of students with disabilities may be different, and plan effectively for possible accommodations and/or modifications which may be necessary to implement effective instructional practices.

C. Social – Initiate, maintain and manage positive social relationships with a range of people in a range of contexts.
1. Recognize areas of development for students with disabilities and plan effectively for: interpersonal processes, forming and maintaining relationships (including parent-child, caregiver, peer, friend, sibling), and attachment models and their effects on learning.
2. Apply principles in social competence, social withdrawal, social role formation and maintenance, and prosocial behaviors, and aggression as they affect learning.

D. Behavioral – Recognize patterns of typical behavioral milestones and how patterns of students with disabilities may be different, and plan effectively for positive teaching of appropriate behaviors that facilitate learning.

E. Language – Apply reading predictors, analyzing the effect of individual differences in specific perceptual, linguistic, and cognitive skills and how they affect a child's ability to read.
1. Apply principles of early learning to language development in the following areas: language comprehension, language expression, language form and syntax, morphology and semantics.
2. Apply and teach skills of spoken language as a precursor of reading and academic development.

F. Positive Environments for Learning for Students with Disabilities
1. Define the scientific principles influencing academic and social behavior.
2. Implement positive behavioral interventions based on a functional analysis of behavior.
3. Create an optimal learning environment by utilizing, evaluating, modifying and adapting the classroom setting, curricula, teaching strategies, materials, and equipment.

G. Collaboration and Communication
1. Identify effective co-planning and co-teaching strategies.
2. Identify collaborative consultative skills and models (i.e., understanding role on the IEP team; teaming; parallel teaching).
3. Identify instructional levels of students through collaboration with members of the IEP team.
4. Understand the role of the general educator as part of the team for transition planning across transition points (i.e., preschool to school entry, grade level to grade level, school to school, to post school outcomes).
5. Demonstrate an understanding of the meaningful roles that parents and students play in the development of the student's education program.
6. Demonstrate sensitivity for multicultural and economic perspectives in order to encourage parent participation.
7. Demonstrate an understanding of how to support student and family communication and meaningful participation into the student's educational program.
8. Work collaboratively with all members of the student's instructional team including parents and non-educational agency personnel.

III.   Assessments
Candidates will be able to:

A. Identify, administer, interpret, and plan instruction based on each of the following assessment components in a standards aligned system.

1. Authentic – A form of assessment in which, students are asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills. The assessment usually includes a task for students to perform, and a rubric is used to evaluate their performance.

2. Screening- Screening assessments are used to determine which students may be at risk. Poor performance on the screening assessment identifies those students needing additional, in-depth assessment of strengths and weaknesses. The primary purpose of screening assessments is to identify children early who need additional instructional (or behavioral) intervention. An essential element of using a screening assessment is implementing additional identified intervention(s) (instructional, behavioral, or medical).

3. Diagnostic – The purpose of diagnostic assessments is to ascertain, prior to instruction, each student's strengths, weaknesses, knowledge, and skills. Using diagnostic assessments enable the instructor to remediate students and adjust the curriculum to meet each pupil's unique needs. (Examples of diagnostic assessments are: DRA's; Running Records; GRADE; GMADE)

4. Formative- Pennsylvania defines we are defining formative assessments as are classroom based assessments that allows teachers to monitor and adjust their instructional practice in order to meet the individual needs of their students. Formative assessments can consist of formal instruments or informal observations. The key is how the results are used. Results should be used to shape teaching and learning. Black and Wiliam (1998) define formative assessments broadly to include instructional formats that teachers utilize in order to get information that are used diagnostically to alter instructional practices and have a direct impact on student learning and achievement. Under this definition, formative assessment encompasses questioning strategies, active engagement check-ins (such as response cards, white boards, random selection, think-pair-share, popsicle sticks for open-ended questions, and numbered heads), and analysis of student work based on set rubrics and standards including homework and tests. Assessments are formative when the information is used to adapt instructional practices to meet individual student needs as well as to provide individual students corrective feedback that allows them to "reach" set goals and targets. Ongoing formative assessment is an integral part of effective instructional routines that provide teachers with the information they need to differentiate and make adjustments to instructional practice in order to meet the needs of individual students. When teachers know how students are progressing and where they are having trouble, they can use this information to make necessary instructional adjustments, such as re-teaching, trying alternative instructional approaches, or offering more opportunities for practice. The use of ongoing formative classroom assessment data is an imperative. Effective teachers seamlessly integrate formative assessment strategies into their daily instructional routines.

5. Benchmark – Assessments that are designed to provide feedback to both the teacher and the student about how the student is progressing towards demonstrating proficiency on grade level standards. Well-designed benchmark assessments and standards-based assessments: measure the degree to which students have mastered a given concept; measure concepts, skills, and/or applications; are reported by referencing the standards, not other students' performance; serve as a test to which teachers want to teach; measure

performance regularly, not only at a single moment in time. (Examples of benchmark assessments are: 4Sight, Riverside 9-12, DIBELS)

6. Summative –Summative Assessments seek to make an overall judgment of progress at the end of a defined period of instruction. Often these summative assessments occurs at the end of a school level, grade, or coursed, or is administered at certain grades for purposes of state or local accountability. These Summative assessments are considered high-stakes assessments and the results are often used in conjunction with the No Child Left Behind Act (NCLB) and Adequate Yearly Progress (AYP). They are designed to produce clear data on the student's accomplishments at key points in his or her academic career. Performance on these assessments are often part of the student's permanent record and serve as an indication of overall performance on a set of standards. Results from summative assessments are of interest to parents, faculty, administration, the press, and the public. The data from summative assessments are the basis of accountability systems. (Examples of summative assessment: PSSA; Terra Nova)

B. Demonstrate an understanding of the types of assessments used (e.g., screening, diagnostic, formative, summative) and the purpose of each assessment in a data-based decision making process.

C. Demonstrate the use of formal and informal assessment data for instructional, behavioral, and possible eligibility for special education based on the type of assessment, level of the students being assessed, and the purpose of and the quality of instruction.

D. Demonstrate an understanding of the multi-disciplinary evaluation process and an ability to articulate the findings presented in an evaluation report including grade-level equivalents, percentile rank, standard scores, and stanines.

E. Demonstrate an understanding of the components of the Individualized Education Plan (IEP) process, with emphasis on understanding measurable goals based on present levels, specially designed instruction, adaptations, accommodations, supplementary aids and services, and supports for school personnel.

F. Articulate differences between achievement tests, aptitude tests, and observational data used in special education placement decisions.

G. Create an instructional plan using assessment information related to individual student achievement.

H. Analyze and interpret formative assessment (e.g., curriculum based assessment, CBA).

I. Demonstrate an understanding of the purpose and intent of standardized assessments and progress monitoring as one of the multiple indicators used in overall student evaluation.

J. Systematically monitor student performance to identify areas of need.

K. Use evaluative data on an individual, class and district level to identify and implement instructional and/or programmatic revisions for quality improvement.

L. Demonstrate an understanding of legally acceptable modifications and accommodations for assessment for students with disabilities.

M. Demonstrate an understanding of ethical practice for assessment.

N. Recognized the need to consult with multi-disciplinary team when cultural, economic, or linguistic differences are present in order to avoid biased assessment.

IV. **Literacy Development and Instruction in Core and Intervention Areas**
Candidates will be able to:

A. Demonstrate an ability to match instructional research-validated literacy interventions to identified student needs.

B. Demonstrate a conceptual understanding of the components of reading and describe how these areas pose challenges for students with disabilities:
>   Phonological Awareness & Phonics
>   Fluency
>   Vocabulary
>   Comprehension
>   Language
>   Word Study (investigate & understand the patterns in words)

C. Demonstrate an ability to review and evaluate literacy programs for purpose, quality, effectiveness, and research-base and show knowledge of commonly available programs.

D. Identify evidence-based instructional practices to be used with students with disabilities in the area of literacy.

E. Demonstrate an understanding of the evidence-based connection between literacy and behavior.

F. Demonstrate a conceptual understanding of the components of writing and describe how these areas pose challenges for students with disabilities:
>   Text production
>   Spelling
>   Composition for different types of writing

G. Clearly articulate and model the use of explicit and systematic instruction in the teaching of literacy (reading and writing) for students with disabilities across all reading levels.

H. Clearly articulate and model the use of explicit and systematic instruction in the teaching of content area literacy for all students with disabilities across all reading levels.

I. Demonstrate instructional strategies to enhance comprehension of material.

J. Demonstrate an understanding of the challenges that students with specific disabilities face in content area literacy.

K. Assess the readability of content area reading materials.

L. Demonstrate the ability to adapt content area material to the student's instructional level.

M. Utilize assessment tools with appropriate accommodations in the area of literacy to identify effectiveness of the standards based curriculum (core literacy program for students with disabilities).

N. Establish and maintain progress monitoring practices aligned with the identified needs of each student to adjust instruction and provide rigor in the area of literacy for students with disabilities.

O. Establish and maintain progress monitoring practices within the content area aligned with the identified needs of each student to adjust instruction and provide rigor in the area of literacy for all students with disabilities.

V. Effective Instructional Strategies for Students with Disabilities in Inclusive Settings
Candidates will be able to:

A. Identify effective instructional strategies to address areas of need.

B. Scaffold instruction to maximize instructional access to all students.

C. Monitor student progress to provide mediated scaffolding and increase academic rigor when appropriate.

D. Provide feedback to students at all levels to increase awareness in areas of strength, as well as areas of concern.

E. Strategically align standard based curriculum with effective instructional practices.

F. Identify and implement instructional adaptations based on evidence-based practices (demonstrated to be effective with students with disabilities) to provide curriculum content using a variety of methods without compromising curriculum intent.

G. Analyze performance of all learners and make appropriate modifications.

H. Design and implement programs that reflect knowledge, awareness and responsiveness to diverse needs of students with disabilities.

I. Use research supported methods for academic and non-academic instruction for students with disabilities.

J. Develop and implement universally designed instruction.

K. Demonstrate an understanding of the range and the appropriate use of assistive technology (i.e., no tech, low tech, high tech).

L. Demonstrate efficient differentiated instruction and an understanding of efficient planning, coordination and delivery for effective instruction required for inclusive settings.

MEETING THE INSTRUCTIONAL NEEDS OF ENGLISH LANGUAGE LEARNERS (ELL) (3 CREDITS OR 90 HOURS)

The following outline includes the competencies for the 3 credits or 90 course hours addressing the academic needs and adaptations for ELL students.

I.   Foundations for Preservice Candidates
Candidates will be able to:

A. **Language**
1. Demonstrate knowledge of language systems, structures, functions, and variation.
2. Identify the process of acquiring multiple languages and literacy skills, including the general stages of language development.
3. Identify the differences between academic language and social language.

B. Culture
1. Identify sociocultural characteristics of ELLs including educational background and demographics.
2. Describe how ELLs' cultural communication styles and learning styles affect the learning process.
3. Describe how ELLs' cultural values affect their academic achievement and language development.
4. Identify bias in instruction, materials and assessments.
5. Demonstrate cross-cultural competence in interactions with colleagues, administrators, school and community specialists, students and their families.
6. Observe culturally and/or linguistically diverse instructional settings.

II.   Applications for Pre-service Candidates
Candidates will be able to:
A. Standards-based Instruction
1. Apply research, concepts and theories of language acquisition to instruction.
2. Implement appropriate research-based instructional strategies to make content comprehensible for all ELLs.
3. Demonstrate effective instructional planning and assessment integrating the PA Language Proficiency Standards for English Language Learners PreK-12 (ELPS) and PA academic standards.

B. Assessment specific to ELL
1. Use PA ELPS to design content assessment.
2. Identify issues related to standards-based formative and summative assessment for *all* ELLs.
3. Use assessment data to differentiate and modify instruction for optimal student learning.

C. Professionalism
1. Describe the legal responsibilities related to serving ELLs.
2. Demonstrate collaborative, co-teaching models for serving ELLs.
3. Define common terms associated with English Language Learners.
4. Identify professional resources and organizations related to serving ELLs.