

Mathematics/Science
4-8

STANDARD ONE

The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches, can create learning experiences that make these aspects of subject matter meaningful for students and can link the discipline(s) to other subjects.

KNOWLEDGE

The teacher knows how to apply major concepts, assumptions, debates, processes of inquiry, and ways of knowing that are central to the discipline(s) he/she teaches.

The teacher has a multicultural perspective of his/her discipline(s).

The teacher knows how to relate higher disciplinary knowledge to other subject areas.

The teacher understands how students' conceptual frameworks and their misconceptions of an area of knowledge can influence their learning.

Evidences

The teacher knows about the National Research Council's (NRC) National Science Education Standards and the National Council of Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards for School Mathematics.

The teacher knows mathematical concepts including but not limited to:

- number systems and number sense including appropriate arithmetic skills using fractions, decimals, percents, ratio and proportion,
- real and complex numbers,
- measurement in English and metric units,
- scientific notation and significant digits,
- statistics and probability,
- patterns and functions,
- use of variables,
- geometric concepts in two and three dimensions,
- algebraic concepts including solving and graphing linear, quadratics, and exponential functions.

The teacher understands science and mathematics processes including scientific and mathematics phenomena, data analysis, interpretation of results, and communication of results.

The teacher knows how to apply science process skills such as sorting, classifying, observing, estimating, collecting, organizing and analyzing data, interpreting results, and drawing conclusions.

The teacher knows the metric system and standard units of measure for length, volume, mass, and temperature.

The teacher knows how to store, maintain, and dispose of chemicals safely.

The teacher knows safety rules and procedures as related to a mathematics/science classroom.

The teacher knows how to integrate the concepts of life, earth, and physical science.

The teacher knows basic science concepts such as:

- differentiating between physical and chemical changes,
- force and motion,
- electricity and magnetism,
- light and sound,
- ecosystems and homeostasis,
- cell biology,
- genetics,
- human body systems,
- personal and societal health,
- space systems,
- geological and evolving land forms,
- earth materials,
- environmental regions of Arkansas.

The teacher knows how to incorporate unifying concepts and processes such as:

- systems, order, and organizations,
- evidence, models, and explanations,
- change, consistency, measurements,
- evolution and equilibrium,
- form and function.

The teacher knows the history and nature of science, including:

- science as human endeavor,
- nature of scientific knowledge,
- historical perspectives.

The teacher knows the importance of science in personal and social perspectives:

- personal and community health,
- population growth,
- natural resources,
- environmental quality,
- natural and human induced hazards,
- science and technology and local, national, and global challenges.

The teacher knows how to design and facilitate laboratory and field experiences appropriate for an integrated middle school mathematics/science classroom.

The teacher knows central concepts of science inquiry.

The teacher knows about the contributions of cultural groups in mathematics and science.

The teacher has knowledge of the historical, philosophical, and legal basis of services for children both with and without special needs.

The teacher has knowledge of current trends and issues in general education and special education.

DISPOSITIONS

The teacher has enthusiasm for the discipline(s) he/she teaches and helps connect it to everyday life.

The teacher realizes that subject matter knowledge is not a fixed body of facts, but is a complex and ever-evolving construct of ideas.

The teacher accepts multiple perspectives.

The teacher values interdisciplinary teaching and learning.

Evidences

The teacher is willing to participate in professional development activities to increase the knowledge base, to learn innovative teaching strategies, to experience new methods of assessment, and to update current teaching practices in middle level mathematics and science.

The teacher appreciates relationships among the sciences, mathematics, technology, society, human issues, cultural values, and perspectives.

The teacher is willing to create an environment that is conducive to problem solving in science and mathematics by inviting student reasoning, inquisitiveness, and exploration.

The teacher is open to the idea that some problems have more than one solution and some problems can be solved in more than one way and some problems have no known solution.

The teacher values the process of problem solving without regard to subject matter.

The teacher is enthusiastic about teaching science and mathematics.

The teacher appreciates the importance of real world connections to science and mathematics.

The teacher appreciates the importance of historical contributions toward the development of mathematical and scientific theories.

PERFORMANCE

The teacher keeps abreast of new ideas and understandings in his/her discipline.

The teacher approaches the discipline critically and evaluates new claims and interpretations in the field.

The teacher effectively uses multiple representations and explanations of disciplinary concepts that capture key ideas and links them to students' prior understandings.

The teacher represents and uses a variety of viewpoints, theories, "ways of knowing," methods of inquiry, and standards of evidence characteristic of the discipline.

The teacher engages students in generating knowledge and testing hypotheses according to the methods of inquiry and standards of evidence characteristic of the discipline.

The teacher includes multicultural perspectives in his/her lessons and conveys to learners how knowledge is developed from the vantage point of the culture.

The teacher creates interdisciplinary learning experiences that allow students to integrate knowledge, skills and methods of inquiry from several subject areas.

The teacher ensures that what is taught and what is learned is accurate.

The teacher communicates effectively through reading, writing, speaking, and listening, and assists students in doing the same.

Evidences

The teacher facilitates personal research projects of individuals and groups by supervising the collection, organization, and interpretation of data using scientific process skills.

The teacher teaches the students to communicate effectively using a variety of methods such as charts, diagrams, graphs, journals, and portfolios.

The teacher keeps abreast of new ideas in mathematics and science by reading journals and participating in professional development opportunities.

The teacher uses mathematics as the precise language of communication and problem solving in science.

The teacher expands the system of real numbers to include complex numbers such as algebraic structures.

The teacher includes investigations of geometric concepts in two and three dimensions so that general properties emerge and spatial perception is developed.

The teacher incorporates, the their planning, historical perspectives and cultural contributions in the fields of mathematics and science.

The teacher enhances mathematical and scientific communication through reading, writing, speaking, listening, using visuals, and actively participating.

The teacher involves the students in a variety of investigative methods and problem solving strategies which apply to the students' environment.

The teacher uses the NRC National Science Evaluation Standards and the NCTM Curriculum and Evaluation Standards for School Mathematics to plan curriculum and conduct experiments developed around concepts of the Arkansas Science and Mathematics Frameworks.

The teacher links applications in mathematics and science to students' prior knowledge.

The teacher asks students to clarify and justify their ideas orally and in writing.

The teacher uses error analysis, student feedback, and teacher observations to identify students' misconceptions and to conduct appropriate remediation in mathematics and science.

The teacher implements aspects of problem solving, including formulating and posing problems, solving problems using different strategies, verifying and interpreting results, and generalizing solutions.

The teacher teaches mathematics and science concepts accurately and addresses common misconceptions.

The teacher stores, maintains, and disposes of chemicals safely.

The teacher stores and maintains science equipment and math manipulatives properly.

The teacher models and teaches proper lab safety procedures and techniques.

The teacher selects instructional materials and reflect current theory and valid scientific content.

STANDARD TWO

The teacher plans curriculum appropriate to the students, to the content, and to the course objectives.

KNOWLEDGE

The teacher understands principles of curriculum design and knows how to plan lessons, units, and courses of study.

The teacher knows how to apply interdisciplinary approaches to curriculum design.

The teacher recognizes the continuum of learning within the K-12 curriculum of the discipline(s) he/she teaches.

The teacher knows how to teach students to communicate effectively through reading, writing, listening, and speaking.

The teacher knows how to ask questions to stimulate discussion as well as creative and critical thinking.

The teacher knows how to use various instructional technologies to address individual and group needs.

The teacher knows how to construct and appropriately use a variety of measures, such as observations, tests, and performance-based assessments, to assess student growth and development.

Evidences

The teacher knows the elements of the “learning cycle” as related to science concepts (experimentation, concept development, application).

The teacher knows how to use math manipulatives (base ten blocks, Cuisenaire rods, algebra tiles, etc.) and science activities and laboratory equipment to develop concepts before applying abstract formulas.

The teacher is aware of emerging technology in the areas of mathematics and science.

The teacher knows how to organize and structure a mathematics or science laboratory to provide opportunities for reinforcing classroom content and analyzing scientific principles.

The teacher knows how to integrate all science (physical, earth and life) and mathematics concepts to allow students to understand the connections between mathematics and science.

The teacher knows how to communicate with students effectively using a variety of methods such as charts, diagrams, graphs, journals, and portfolios.

The teacher knows how to utilize the continuum of knowledge in K-12 mathematics and science curricula to plan effective middle level instruction and assessment.

The teacher knows how to evaluate mathematics and science learning through a full range of assessment techniques including performance based assessment, written laboratory reports, portfolios, journals, standardized testing, and traditional testing.

The teacher knows common characteristics of middle-level students and their development and knows how to select appropriate instruction based on that knowledge.

The teacher knows how to create successful learning environments appropriate for middle level mathematics/science students.

The teacher knows appropriate language, research skills, and technical writing skills for mathematics and science.

The teacher knows how to build connections between science concepts and community issues.

The teacher knows how to use effective strategies for collaboration with other professionals and how to participate with families, students, and others in the development of individualized education plans/family service plans/transition plans for students.

DISPOSITIONS

The teacher is willing to respond with different approaches until students succeed.

The teacher is disposed to be a learner about organization, presentation, and assessment of content.

The teacher is inclined to use a variety of resources.

The teacher is open to and appreciates multiple perspectives of the disciplines and of the students.

The teacher is willing to explore and use technology as an instructional tool in the classroom.

The teacher is committed to improving practice based on a variety of assessments, both formal and informal.

The teacher is committed to lifelong learning.

Evidences

The teacher is willing to incorporate a variety of resources, technology, and instructional strategies to ensure student success in mathematics and science.

The teacher is willing to adjust teaching strategies based on the result of a full range of student assessments.

The teacher is committed to lifelong learning through participation in staff development, workshops, classes, and other learning opportunities.

The teacher is willing to work with other faculty members for vertical and horizontal alignment of mathematics and science curriculum.

The teacher shows enthusiasm in helping students learn mathematics and science concepts.

The teacher is willing to admit there is a limitation to his/her knowledge base and willing to say "I don't know".

The teacher is open to innovative curriculum and instructional strategies that strengthen middle level mathematics and science.

PERFORMANCE

The teacher plans lessons, units, and courses of study that are appropriate to the students, to the content, and to single discipline or interdisciplinary course objectives.

The teacher adapts the curricula to accommodate individual student abilities and needs.

The teacher evaluates and uses teaching resources and curriculum materials for comprehensiveness, accuracy, and usefulness.

The teacher develops and uses curricula that encourage students to see, question, and interpret ideas from diverse perspectives.

The teacher effectively integrates the communication skills of reading, writing, listening, and speaking into all curricula.

The teacher asks questions to stimulate discussion as well as creative and critical thinking.

The teacher creates learning experiences which encourage critical and creative thinking, problem-solving, and other higher order thinking skills.

The teacher uses technology, as appropriate, to improve learning and instruction.

The teacher constructs and uses a variety of assessment techniques to assess student growth and development.

The teacher uses feedback and assessment to improve practice.

The teacher provides opportunities for students to acquire the skills necessary to become lifelong learners.

Evidences

The teacher uses appropriate technology such as math manipulatives, electronic technology, and scientific equipment to enhance the mathematics and science curriculum.

The teacher provides problem solving situations for students and allows students to create problems based on experiences.

The teacher continually interacts with students using a variety of assessment techniques during the learning process to promote critical and creative thinking.

The teacher uses multicultural literature to present multiple perspectives of mathematics and science.

The teacher uses an interdisciplinary approach to teaching that incorporates mathematics and science with other content areas.

The teacher uses a minimum of 25% student contact time for hands-on/laboratory activities.

The teacher models and teaches scientific theory methods at an appropriate level of understanding.

The teacher uses the elements of the “learning cycle” to develop mathematics and science concepts (experimentation, concept development, application).

The teacher uses a multicultural approach to delivery.

The teacher uses assessment information to establish goals and objectives that are appropriate for an individual student which requires the ability to communicate assessment results and integrate assessment data from others when preparing individualized plans for students with disabilities.

The teacher plans and implements developmentally and individually appropriate curriculum and instructional practices based on knowledge of individual students, the family, the community, and curriculum goals and content.

The teacher identifies educational, developmental, functional, vocational, and social outcomes for students with diverse cognitive, motor, and/or social/behavioral needs at various ages.

The teacher has the ability to cooperatively develop and evaluate an individualized education program/individualized family service plan/individualized transition plan.

The teacher develops lesson plans and adapts curricula, materials, and methods of average and diverse students (e.g., gender, gifted to low functioning, various disabilities, high to low SES, varying learning styles, culturally and linguistically diverse, and social problems specific to the community [e.g., drugs, poverty, guns]).

The teacher infuses speech skills into the academic areas as consistent with mode or philosophy espoused and ability of the student who is deaf/hard of hearing.

The teacher selects media and technology appropriate to instructional goals and objectives and uses assistive technology needed by students with vision, hearing, motor, or other disabilities.

The teacher involves students in self-evaluation of products by providing students with information about performance results for the purpose of developing self-evaluation skills and supporting progress and by other means.

The teacher modifies tests for students with disabilities.

The teacher modifies the physical environment to ensure maximum performance on tests for students with disabilities.

The teacher collects, documents, and analyzes performance information through systematic observations and recordings of student learning, behavior patterns, and responses in the areas of social, developmental, functional academic, and/or vocational behaviors.

The teacher selects and administers assessment instruments and procedures based on the purpose of the assessment being conducted and in compliance with established criteria and standards.

The teacher involves families as active participants in the assessment process.

The teacher participates and collaborates with other professionals as a team member in conducting family-centered assessments.

The teacher collaborates with other professionals in evaluating the student.

The teacher modifies a student's program as indicated by results of various types of evaluations, e.g., task analysis, error pattern analysis, curriculum-based assessments, and similar tools that allow for comparison of current performance with criterion outcomes.

The teacher develops and uses formative and summative program evaluation to ensure comprehensive quality of the total environment for children, families, and the community.

The teacher teaches for generalization of skills and transfer of knowledge by students and assisting them to develop learning strategies and independent study behaviors.

STANDARD THREE

The teacher's planning and instruction is based upon human growth and development, learning theory, and the needs of students.

KNOWLEDGE

The teacher knows concepts of human growth and development.

The teacher can evaluate and knows how to apply appropriate techniques and strategies based on different learning theories.

The teacher knows how to evaluate and use a variety of materials to support different instructional strategies.

The teacher understands how students' physical, social, emotional, and cognitive development influences learning, and applies these factors when making instructional decisions.

The teacher is aware of expected developmental progressions and ranges of individual variation within each domain (physical, social, emotional and cognitive); the teacher can differentiate levels of readiness for learning and understands how development in any domain may affect performance in another domain.

The teacher understands the importance of peers to intellectual development.

The teacher knows how to find information and services to support students.

Evidences

The teacher knows how to organize and manage the classroom to take into account the peer pressure that affects the mid-level student.

The teacher knows the unique characteristics of mid-level students and can design developmentally appropriate learning activities.

The teacher knows a wide range of instructional strategies needed to vary the teaching techniques within the classroom to meet the needs of mid-level students.

The teacher knows how to adjust mathematics and science instruction to meet various levels of progression through each domain: physical, social, emotional, and cognitive.

The teacher knows how to use/apply scientific inquiry methods.

The teacher knows how to use age appropriate technology to enhance science instruction and to address student learning styles.

The teacher encourages students to use their individual strengths to demonstrate and communicate to peers their understanding of scientific concepts.

The teacher knows how to recognize and develop student potential in science and technology.

The teacher knows how to make science instructional decisions based on results of a variety of science assessment activities.

The teacher knows how to use questioning techniques that allow for individual differences.

The teacher knows how to use a variety of materials to support different instructional strategies.

The teacher knows how to identify the developmental stages of his or her students and modifies learning experiences accordingly.

The teacher has knowledge of and access to support services available for student support; these may include local school personnel and area health and human service agencies.

The teacher knows how to identify the developmental stages of his or her students and modifies lessons accordingly.

The teacher knows how to use multiple evaluation methods such as portfolio, pen and paper tests, projects, and oral presentations.

The teacher knows how to evaluate the influence of mental, social, and emotional development on the learning process.

The teacher knows how to develop concepts pertaining to individuals with exceptionalities; pre-, peri-, and post-natal development and the developmental consequences of stress and trauma; the development of mental health; and the importance of supportive relationships.

The teacher knows techniques for crisis preventions.

The teacher knows how to provide students with frequent response opportunities, appropriate practice, and corrective feedback during all phases of instruction.

The teacher knows how to use resources, aids, and materials for teaching students with special needs.

The teacher knows and understands how exceptionalities and medications may affect behaviors and educational, vocational, social, and psychological status at various age levels.

The teacher has an understanding of peer coaching skills.

The teacher knows and understands indicators of exceptionalities, curricular approaches, learning styles, and special counseling needs of students with exceptionalities.

The teacher knows how to use community resources and allied health professionals which may be used by students and families and how to make referrals and collaborate with community program personnel.

The teacher knows how to use questioning techniques that allow for individual differences.

The teacher knows how to use a variety of materials to support different instructional strategies.

The teacher knows how to identify the developmental stages of his or her students and modifies learning experiences accordingly.

The teacher has knowledge of and access to support services available for student support; these may include local school personnel and area health and human service agencies.

The teacher knows how to identify the developmental stages of his or her students and modifies lessons accordingly.

The teacher knows how to use multiple evaluation methods such as portfolio, pen and paper tests, projects, and oral presentations.

The teacher knows how to evaluate the influence of mental, social, and emotional development on the learning process.

The teacher knows how to develop concepts pertaining to individuals with exceptionalities; pre-, peri-, and post-natal development and the developmental consequences of stress and trauma; the development of mental health; and the importance of supportive relationships.

The teacher knows of ethical consideration inherent in classroom behavior management.

The teacher knows the techniques for crisis prevention, students with various cultural backgrounds, and students with exceptional learning needs.

The teacher knows how to provide students with frequent response opportunities, appropriate practice, and corrective feedback during all phases of instruction.

The teacher knows how to use resources, aids, and materials for teaching students with special needs.

The teacher knows and understands how exceptionalities and medications may affect behaviors and educational, vocational, social, and psychological status.

The teacher knows and understands how exceptionalities and medications may affect behaviors and educational outcomes at various age levels.

The teacher has an understanding of peer coaching skills.

The teacher understands and knows indicators of exceptionalities, curricular approaches, learning styles, and special counseling needs of students with exceptionalities.

The teacher knows how to use community resources and allied health professionals which may be used by students and families and how to make referrals and collaborate with community program personnel.

DISPOSITIONS

The teacher is willing to provide and maintain a positive classroom environment.

The teacher believes that all children can learn at high levels and persists in helping all children achieve success.

The teacher accepts the responsibility to create an environment that motivates students to learn by building on their strengths and interests.

The teacher appreciates individual variations among students, shows respect for their diverse talents and abilities, and is committed to helping them develop their self-confidence and competence.

The teacher is willing to find and use different teaching materials, teaching techniques, and strategies to meet the learning needs of students.

The teacher recognizes that all students are capable of sharing knowledge.

Evidences

The teacher believes that all students can be successful in an integrated mathematics and science-rich environment.

The teacher is committed to personal excellence in teaching through participation in professional activities.

The teacher is committed to using available materials and resources and experiments with innovative techniques.

The teacher has a positive attitude and enthusiasm for mathematics and science teaching which motivates students to question and research ideas.

The teacher is patient, loving and accepting of all mid-level students.

The teacher is willing to be an active participant in an educational community that encourages student responsibility, nurtures collaboration, invites dialogue, and models attitudes and values of inquiry learning.

The teacher is willing to identify personal attitudes and behaviors that may affect student behavior and the classroom environment.

The teacher believes that all students can learn at high levels and persists in helping all students achieve success including students with exceptionalities.

The teacher is committed to allowing students with exceptionalities to participate in ALL classroom activities where safety is not a factor.

The teacher is willing to use assistive technology.

The teacher values allowing students to demonstrate their knowledge.

The teacher positively reinforces appropriate behavior.

The teacher is willing to learn from students.

The teacher values learning materials from diverse cultures.

The teacher is willing to identify personal attitudes and behaviors that may affect student behavior and the classroom environment.

PERFORMANCE

The teacher applies concepts of human growth and development to classroom instruction.

The teacher varies instruction using different learning techniques and strategies as appropriate for his/her students and the content.

The teacher selects, procures, and maintains appropriate materials to support different instructional strategies.

The teacher stimulates student reflection on prior knowledge, links new ideas to familiar ones, and makes connection to students' experiences.

The teacher provides students with opportunities for active engagement, for testing of ideas and materials, and for assuming responsibility for shaping their learning tasks.

The teacher provides opportunities for both individual and group learning.

The teacher finds and uses information and services to support students.

The teacher flexibly applies appropriate learning theories for individual students.

The teacher creates an environment which motivates students to learn by building on their strengths and interests.

Evidences

The teacher uses a variety of age appropriate materials and teaching strategies to accommodate diverse student needs, interests, abilities, and experiences so that students understand and value mathematics and science.

The teacher orchestrates the group process for problem solving, ensuring that all students contribute to the end product.

The teacher encourages students to share ideas or questions and validates alternative approaches or products while guiding inquiries to mathematics and science.

The teacher manages the classroom with organization, structure, and flexibility.

The teacher sets high expectations in mathematics and science for all students which are visible in classroom goals, actions, and decisions.

The teacher responds to the students' diverse intellectual, social, and emotional needs and provides a non-judgmental, equitable environment for learning mathematics and science.

The teacher encourages students to evaluate and judge the value of math/science reasoning from other students or the teacher by using a variety of communication skills.

The teacher provides access to a variety of technological resources for mathematics and science such as computers, calculators, print media, manipulatives, science materials and equipment, adequate and safe space and is evidenced by displays of students' end products.

The teacher uses a variety of teaching techniques that includes, but is not limited to, hands-on, analytical activities, resource materials and people, and provides for variations in the individuality of students enabling all students to be successful in their mathematics and science educational opportunities.

The teacher engages students to actively participate in individual and group problem solving stimulating students to make connections between the mathematics and science subject areas and the relationship to real life experiences.

The teacher assesses prior knowledge and utilizes student diversity to design activities that build on individual student needs.

The teacher exhibits characteristics of inquiry including the identification of meaningful questions, providing research opportunities through individual and group problem solving strategies, executing research plans to solve problems utilizing science and mathematics process skills, and communicating mathematically and/or scientifically the results of their investigation.

The teacher uses multiple technologies such as calculators, videos, manipulates, VCRs, overhead projectors, computers, or laser discs for classroom instruction to motivate students and accommodate different learning styles.

The teacher presents tasks that allow knowledge of a diverse population's understanding, background, interests, and experiences by such methods as journaling, individual interaction, portfolios, standardized tests and aims for worthwhile tasks and life experiences which apply familiar and new information.

The teacher applies science instructional techniques to lead students from concrete to abstract thinking.

The teacher applies concepts of human growth and development to classroom instruction, including application of typical and atypical child development theories in learning situations in the context of the family and the community.

The teacher uses or adapts learning techniques/strategies as needed for students with exceptionalities, providing opportunities for high success rates in each stage of learning, grouping students appropriately for learning, and facilitating family/child interactions as appropriate for optimum learning.

The teacher selects, procures, and maintains appropriate materials, devices, and aids for students with exceptionalities.

The teacher assists students in developing independent study behaviors.

The teacher makes appropriate referrals to community health and social services.

The teacher plans appropriate physical laboratory arrangements and activities in the classroom observing safe laboratory procedures.

The teacher implements basic health, nutrition, and safety management practices, including specific procedures for students of various ages and with various exceptionalities regarding illness and communicable diseases.

The teacher models acceptance of all students through proximity.

The teacher enforces a positive set of rules.

The teacher demonstrates high expectations for all students by using encouraging statements, setting challenging and achievable tasks, and guiding students to their successful achievement.

The teacher demonstrates a positive attitude toward diverse cultures by using examples/references from those cultures.

The teacher elicits and acknowledges responses from all students.

The teacher determines levels and styles of students and uses a variety of teaching strategies such as questioning, demonstration, lecture, (composition) writing (written and oral) assignments.

The teacher applies concepts of human growth and development to classroom instruction, including application of typical and atypical child development theories in learning situations in the context of the family and the community.

The teacher uses and adapts learning techniques/strategies as needed for students with exceptionalities, providing opportunities for high success rates in each stage of learning, grouping students appropriately for learning, and facilitating family/child interactions as appropriate for optimum learning.

The teacher uses materials, devices, and aids for students with exceptionalities.

The teacher assists students in developing independent study behaviors.

The teacher helps students work and cooperatively interact with their peers and to use play, environmental routines, and parent-mediated activities for learning.

The teacher makes appropriate referrals to community health and social services.

The teacher plans appropriate physical arrangements and activities.

The teacher implements basic health, nutrition, and safety management practices, including specific procedures for students of various ages and with various exceptionalities regarding illness and communicable diseases.

STANDARD FOUR

The teacher exhibits human relations skills which support the development of human potential.

KNOWLEDGE

The teacher is familiar with students, the communities from which they come, and other factors which shape their outlook, values, and orientation toward schooling.

The teacher understands how students' learning is influenced by individual experiences, talents, prior learning, as well as language, culture, family, and community values.

The teacher understands the importance of treating others with respect and dignity.

The teacher knows how to communicate effectively with multiple audiences.

Evidences

The teacher recognizes community cultures in which the students live and the contributions of these cultures to mathematics and science.

The teacher knows how to effectively communicate mathematics and science concepts.

The teacher knows the unique emotional characteristics that impact the learning of mid-level students.

The teacher knows about careers which use mathematics and science concepts.

The teacher knows about barriers and biases related to careers in mathematics and science.

The teacher recognizes controversial issues in the study of science.

The teacher knows how to use individual improvement plans to modify science lessons for students with special needs.

The teacher knows motivational techniques to encourage students with low self-esteem in mathematics and science.

The teacher knows how to apply family systems theory and knowledge of the dynamics, roles, and relationships within families and communities as they affect the middle level mathematics and science classroom.

The teacher knows how to facilitate the integration of students with exceptionalities into the middle level math/science classroom.

DISPOSITIONS

The teacher respects, accepts, and supports ALL students.

The teacher appreciates the importance of effective communication.

The teacher is committed to the expression of democratic values in the classroom and in school.

Evidences

The teacher values the democratic process in the classroom.

The teacher appreciates the uniqueness of mid-level students by encouraging student input, ensuring equity for all students and valuing individual opinions so that self-esteem is enhanced.

The teacher values tasks which engage all students in mathematics to the fullest extent.

The teacher is willing to sponsor extra-curricular activities such as math and science contests, clubs, or fairs.

The teacher is willing to modify mathematics and science equipment and activities for special needs students.

The teacher is sensitive to community and cultural attitudes toward mathematics and science issues.

The teacher is sensitive to gender or cultural attitudes toward achievement in mathematics and science.

The teacher is open to listening and discussing opposing points of view relative to science issues.

PERFORMANCE

The teacher promotes positive interpersonal relationships among students/parents/guardians, and the community.

The teacher expresses empathy and warmth in interpersonal relationships.

The teacher treats all others with the same respect and dignity with which he/she expects to be treated.

The teacher communicates effectively with diverse populations among students, parents/guardians, peers, and community.

The teacher creates an environment which nurtures self-confidence, self-respect, and competence.

The teacher considers the development of character, aspiration, and civic virtues in making instructional decisions.

Evidences

The teacher advises and encourages students to continue the study of mathematics and science during high school.

The teacher maintains a respectful, positive, and accepting learning environment for mathematics and science instruction by encouraging multiple perspectives and strategies.

The teacher demonstrates through the selection of methods and materials how the uniqueness of mid-level students impacts learning in mathematics and science.

The teacher provides opportunities for students to explore career options in mathematics and science.

The teacher treats all students equitably.

The teacher models civic virtues and positive behaviors to aid in the development of student character and to build student self-esteem.

The teacher effectively communicates mathematics and science concepts, appropriate use of technology, and laboratory and safety procedures to multiple audiences.

The teacher welcomes the families of students as allies and cultivates their support to help deal with the adolescent transition.

The teacher shows interest by talking with students on a personal level and being available to offer the assistance many mid-level students need.

The teacher fosters compassion and the skills of cooperation, decision making, and goal setting.

The teacher teaches students to be their own advocates.

STANDARD FIVE

The teacher works collaboratively with school colleagues, parents/guardians, and the community to support students/learning and well being.

KNOWLEDGE

The teacher understands the importance of reflecting on practice to improve instruction.

The teacher knows how to translate, evaluate, and apply current education research.

The teacher understands legal obligations as represented by statute, regulation, school board directive, court decision, or other policy.^{Page 2}

The teacher understands the process of change.

The teacher understands schools as organizations within the larger community context.

The teacher understands the importance of family/guardian involvement.

The teacher understands how student groups function and influence people and how people influence students.

Evidences

The teacher knows how to interpret, evaluate, and apply current mathematics and science research in the mid-level classroom.

The teacher knows school and public policies and legal implications of safety procedures, environmental concerns, and controversial science concepts in the mid-level classroom.

The teacher knows what community resources are available to be used to enhance physical/earth science studies.

The teacher knows how to communicate about science curriculum and issues with a wide range of stakeholders.

The teacher knows how to network with other science professionals and the community.

The teacher knows how to collaborate with K-16 colleagues to maintain a coherent mathematics curriculum.

The teacher knows how to develop a plan for acquiring needed science equipment.

The teacher knows how to reflect learning outcomes, modify teaching strategies, and practice to improve instruction, and actively seeks opportunities to grow professionally.

The teacher knows how to act in accordance with public law and school regulations.

The teacher knows assurances and due process rights related to assessment, eligibility, and placement of students who are culturally and/or linguistically diverse.

The teacher knows how to use stress management skills.

The teacher knows how to use interagency collaboration in planning behavior interventions and of the roles of the variety of community services, agencies, and professionals who support students with diverse cognitive, motor, and/or social/behavioral needs and their families.

The teacher knows how to plan for involving parents in the mathematics instructional process.

The teacher knows how to involve parents and students in the establishment of behavioral programs, self-recording, and self-management.

The teacher knows how to encourage and assist families to become active participants in the educational team.

The teacher knows how to respect parents' choices and goals for students and communicate effectively with parents about curriculum and student progress.

DISPOSITIONS

The teacher is committed to research, reflection, assessment, and learning as an ongoing process.

The teacher appreciates the need for change in a dynamic organization.

The teacher believes that he/she can make an important contribution to enhancing the education of students and to school improvement.

The teacher is willing to collaborate in school-improvement activities.

Evidences

The teacher is willing to serve on school committees to represent mathematics and science perspectives.

The teacher is willing to participate in the change process and accepts consensual changes in mathematics and science curriculum, instruction, assessment, materials, and technology.

The teacher is willing to share science and mathematics expertise with colleagues.

The teacher is willing to be actively involved with extracurricular science and mathematics activities.

The teacher appreciates that science learning is a continuous process that affects the entire community.

The teacher believes that what he/she is doing in mathematics and science education is important to the community.

The teacher is concerned with the students' safety in all science activities.

PERFORMANCE

The teacher reflects on his/her teaching to improve instruction.

The teacher utilizes research to improve instruction.

The teacher assumes responsibility for his/her own professional development.

The teacher fulfills his/her legal obligations as represented by statute, regulation, school board directive, court decision, or other policy.

The teacher works collaboratively for students and school improvement.

The teacher seeks and uses human, material, community, and financial resources to improve student learning and to improve the school.

The teacher is an advocate for student learning and school improvement.

The teacher develops and maintains a professional presence and maintains a professional growth plan.

Evidences

The mid-level mathematics and science teacher seeks appropriate partnerships with businesses, governmental agencies, and other organizations.

The teacher values parents, volunteers, and community members and makes them feel their involvement in mathematics and science education is meaningful.

The teacher supports and assists parents and families in creating and sustaining positive home learning environments focusing on mathematics and science.

The teacher provides a wide variety of opportunities for parent and community involvement in mathematics and science activities.

The teacher networks with K-16 mathematics and science teachers, curriculum specialists, applied mathematicians and scientists, and others to improve student learning and well-being.

The teacher engages in professional development through opportunities provided by professional organizations, educational service cooperatives, regional partnerships, local school districts, and institutions of higher education.

The teacher seeks funds and technical support to implement changes in materials and methods based on evolving mathematics and science research (i.e., laboratory based science, mathematics manipulatives).

The teacher participates in collaborative projects including interdisciplinary teams and various committees at local, regional, and state levels to improve mathematics and science education for all students.

The teacher plans opportunities such as conferences or extracurricular activities to allow flexibility for special family or cultural situations.

The teacher exhibits characteristics of a reflective practitioner working in collaboration with colleagues and community members to improve mathematics and science instruction for mid-level children.

The teacher serves as an advocate in the community for the mathematics and science needs of the mid-level student.

The teacher encourages families and the community to take advantage of opportunities provided for involvement in support of mathematics and science education.

The teacher reads and critically applies research and recommended practices for effective management of teaching and learning.

The teacher uses state, local, regional, and national resources to aid in the delivery of services for students.

The teacher matches home, school, and community resources with student needs.

The teacher demonstrates knowledge of the roles and utilization of paraprofessionals in an instructional program.

The teacher employs adult learning principles in supervising and training other adults.

The teacher facilitates the identification of staff development needs and strategies for professional growth.

The teacher communicates program needs, processes, and outcomes.

The teacher advocates on behalf of children and their families.