Standards-Based, Thematic Units Integrate the Arts and Energize Students and Teachers

By Karen Bolak, Donna Bialach, & Maureen Dunphy

Imagine a middle school where teachers and administrators spiritedly collaborate, where parents and community members enthusiastically participate, and where young adolescents eagerly engage in the learning and discovery of meaningful content, look forward to attending school, have opportunities to excel, and show encouraging academic growth.

In our small mid-western urban school district, a planning committee, charged with restructuring the junior high schools, read *Turning Points* (Carnegie Council on Adolescent Development, 1989) and identified several critical issues challenging our schools:

- the educational challenges created by a gap between advantaged and disadvantaged students
- disappointing test scores
- lack of teacher enthusiasm
- lack of parental involvement
- community dissatisfaction
- absence of community partnerships.

As a result, a group of parents, community members, teachers, and administrators in our school district combined their talents, energies, and passions to try a different way to educate our children. They envisioned a middle school where:

- Educators and community members collaborate to plan interdisciplinary thematic units based upon core curricular standards and instructional methodologies reflecting best practices in middle level education.
- Students are eagerly engaged in the learning process and show measurable academic growth.
- Parents enthusiastically participate in the planning, implementation, and culmination of these units.

This vision was congruent with a major goal which emerged in *Turning Points 2000*, "to integrate what is known from education research and practice within a coherent approach toward adolescent education that educators can use in their own efforts to transform middle grade schools" (Jackson and Davis, 2000, p. xiii).

This article recounts our experience designing a program for one of our restructured middle schools that reflects a national movement in middle level reform.

Our Inspiration

A visit from Howard Gardner began our remarkable journey. Gardner (1993, 1999) believes humans possess at least eight different forms of intelligence, each reflecting an individual's potential to solve problems or to fashion products valued in cultural settings. The eight intelligences are logical/mathematical, verbal/linguistic, musical, spatial, bodily/kinesthetic, interpersonal, intrapersonal, and naturalist. Most often teachers use instructional strategies falling

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Figure 1
Overview of Multiple Intelligences

Intelligence	Key Features	Examples of Activities	How Students Learn Using the Intelligence
Verbal/Linguistic	Make sense of the world through language and communicate.	• Read fiction, biographies, textbooks. • Write poems, short stories, essays, or create newsletters. • Tell stories, recite poetry.	• Students learn the elements of fiction by reading and analyzing a narrative work. • Students learn about life in ancient Greece by reading the Greek myths. • Students learn persuasive writing by reading advertisements and composing their own.
Logical/Mathematical	Discern logical and numerical patterns and understand abstract relations.	• Create a timeline. • Design a geometric pattern. • Find the answer to a logic puzzle.	• Students learn the concept of tessellation by studying M.C. Escher's art and designing a tessellating quilt pattern. • Students learn simple machines by inventing a device that uses one or more simple machines. • Students learn the concept of gravity by calculating weights on different planets.
Visual/Spatial	Perceive visual or spatial information and transform this information to recreate visual images from memory.	• Draw football game plays. • Create a mind map. • Design a building.	• Students learn the geography of a country by constructing a topographical map. • Students learn how the economics of two countries compare by constructing a bar graph of statistical data. • Students learn the dynamics of a volcano by building a working model.
Bodily/Kinesthetic	Use all or part of the body to express ideas and feelings, create products, and solve problems.	• Role play using process drama. • Use manipulatives. • Participate in physical education activities.	• Students learn and gain perspective and empathy regarding issues of the Civil War era by participating in a process drama. • Students learn measurement by planning a menu, shopping for ingredients, preparing and serving a meal for their class camping experience. • Students learn the anatomy of a frog by dissecting one in the biology lab.
Musical/Rhythmic	Create, communicate, and understand meanings using sound.	• Create an original song. • Tap out a rhythm for a dance. • Listen to instrumental music from another culture.	• Students learn about indigenous birds by listening to their song. • Students learn the state capitals by singing a song that includes all the capitals. • Students learn the harmonies of classical music by listening to and analyzing Mozart etudes.
Interpersonal	Recognize and make distinctions about others' feelings and intentions.	• Work on a cooperative group project. • Serve on student council. • Conduct an interview.	• Students learn about the larger community by participating in community service projects. • Students interpret expository text by analyzing it in a cooperative group. • Students learn how to resolve conflict by participating in peer mediation training and mediation groups.
Intrapersonal	Reflect upon perceptions, experiences, and feelings to make decisions about one's life and identify personal strengths and weaknesses.	• Write in a journal. • Complete a self-assessment. • Create a personal timeline.	• Students learn if their eating habits promote personal health by collecting data for a week regarding snack choices and determining their nutritional content. • Students learn to evaluate their own work by using a rubric and deciding how to improve their grade in the future. • Students learn to assess their own achievement level by planning and participating in a student-led parent conference.
Naturalist	Distinguish among, classify, and use features of the environment to exhibit knowledge about the natural world.	• Classify and care for plants and animals. • Plan/participate in a family recycling project. • Plan/participate in a school environmental conservation project.	• Students learn about urban environmental concerns by designing a neighborhood plan that includes green areas, roads, housing, transportation, schools, government, retail and industrial complexes, and recreational areas for people to live and work. • Students learn how to care for wild and domestic animals by partnering with personnel at a shelter for abandoned animals. • Students learn about hydroponics by planting seeds and growing plants without the use of soil.

(adapted from Parkay & Stanford, 2004, p. 292)

within only two of the intelligences: logical/mathematical and verbal/linguistic (Figure 1). Consequently, traditional instructional strategies, narrow in scope, represent only part of a complete educational program. Gardner's (1993) theory introduced our community to the concept that the arts are more than an extra; they are vital to the balanced development of a child, cognitively as well as affectively.

We realized we were not addressing all our students' learning needs because we were not engaging all of their intelligences. We became convinced that the theory of multiple intelligences was part of the answer to ensuring all students, regardless of their profile of intelligences, become proficient learners.

Coming Together to Design a Program

For our district, merging theory with practice in the schools began with a team effort by teachers, administrators, and parents that identified our strengths as a school district and as a community. The first of these strengths was ethnic, racial, and socio-economic diversity. The community was proud of the 31 flags gracing the high school commons that recognize the heritage of each member of the student body. Being recognized statewide for its achievements, the school district was also proud of longstanding success with its music and drama programs. The planning team recognized that the arts employ many of the intelligences identified by Gardner. For example, whereas constructing a set for a performance relies heavily on logical/mathematical and visual/spacial intelligences, choreographing and performing a dance depends on musical, bodily/kinesthetic, visual/spatial, and interpersonal intelligences. Why not capitalize on our district strengths by applying Gardner's theory of multiple intelligences as well as current research to solve the educational challenges presented by our diverse middle school learners?

Arts Integration

Integrating the arts with the core curriculum is an energizing solution at the middle level. For those whose lives are richer because of a connection to the arts, the value of an arts-integrated academic program is clear. Fowler (1994) stated, "The arts … invite students to explore the emotional, intuitive, and irrational aspects of life … while affirming the interconnectedness of all forms of knowing. This is why an education without the arts is an incomplete education" (p. 9).

Hurley (2002) made a case for improving the school culture by fostering aesthetic experiences among staff members:

> Because we emphasize raising students' test scores in today's schools … aesthetic experiences provide an opportunity for principals to balance the intellectual and rational approaches [by] … experiencing and exploring human creativity. We reach our potential as we develop our aesthetic sensibilities and share them with others. (pp. 25-26)

Applying Current Brain Research

Current brain research supports integrating the arts with the core curriculum. Jensen (1998) repeated that, "today's biology suggests that it's the arts that lay the foundation for later academic and career success. A strong arts foundation builds creativity, concentration, problem solving, self-efficacy, coordination, and values attention and self-discipline" (p. 9).

Why not capitalize on our district strengths by applying Gardner's theory of multiple intelligences as well as current research to solve the educational challenges presented by our diverse middle school learners?

Sylwester's (1998) neurobiological research indicated that by using the arts, students develop a variety of channels in the brain, enhancing their ability to connect their learning experiences to better construct meaning and make sense of the world. An arts-integrated model is also consistent with Marzano, Pollock, and Pickering's (2001) research synthesis on best classroom practices. They reviewed psychologists' findings regarding learning through nonlinguistic representation or imagery. When students are encouraged to discover and apply knowledge using graphic representations or drawing, making physical models, or engaging in kinesthetic activity, the effects on achievement are strong. "By learning and practicing in the visual and performing arts, the human brain actually rewires itself to make more and stronger connections" (Kolb & Whishaw, 1990 as quoted in Chan & Petrie, 1998).

Envisioning a Paradigm Change

Ultimately, district stakeholders envisioned a middle level program that would:

- apply Gardner's theory of multiple intelligences
- include the arts as a cornerstone
- transfer current middle level educational research and theory into practice
- involve community partnerships
- employ integrated thematic units
- authentically assess student learning
- create teams for program planning and implementation
- choose from a variety of appropriate teaching models
- provide professional development opportunities.

The thematic units would integrate content from the core academic areas and extensively use four arts areas to support learning. The state content standards and benchmarks in language arts, social studies, science, and math—integrated with the national standards in arts for music, creative movement, visual arts, and drama—would be the starting point for planning. The selected standards would be clearly referenced. Student outcomes would be measured by:

- rubric assessment by students and teacher
- teacher-made tests
- personal reflection by the students
- national norm-referenced tests.

After much discussion and refining of vision, we presented our plan to the Board of Education as a new district program for middle level students that would incorporate a broad range of educational goals.

The Board Gives the Go-Ahead

The Board approved a one-year integrated arts pilot program for two classes of sixth grade students and their teachers who were headed for a restructured middle school the following fall. The superintendent selected a pilot program principal who understood the importance of standards-based, integrated thematic units, teaching teams, collegiality, flexibility within an organization, and the value of community partnerships. A member of the district long-range strategic planning committee and a leader in professional development, the principal had just written a proposal for a Comprehensive School Reform Demonstration (CSRD) grant. The CSRD grant was awarded to the district middle school where the pilot students and teachers would be placed the following year.

The principal overseeing this pilot program recognized that the district strategic planning goals for restructuring the middle schools, the CSRD grant goals, and the pilot program objectives matched. Moreover, the staff's professional development goals were congruent with the pilot program objectives:

- increase achievement for all learners while integrating the curriculum
- form collegial teams to transfer best practices in middle level theory to practice in the classroom and to integrate the arts through thematic instruction
- improve parental and community participation.

To manifest these goals, the pilot program principal spearheaded a team whose members shared the belief that the responsibility for change lies with educators, parents, and community members who come together believing that the effort is worthwhile for their children.

Designing an Arts-Integrated Program

On a hot mid-August day, with water bottles everywhere, volumes of Michigan state curricular standards lay open on the table. Based on our understanding of Glickman (2002), we knew that the most successful schools are those whose staff members share and collaborate. Thus, a team—middle school core, visual arts, physical education, and music teachers; the high school drama teacher; the district's gifted and talented coordinator and the district's fine arts coordinator; the principal; parents; and members of the community—began creating the first arts-integrated thematic unit for the 51 sixth graders in the pilot program.

A teacher-friendly planning framework guided the process that helped meld research-based curriculum models with the theory of multiple intelligences. Student outcomes, areas of integration, focus questions, and key concepts were clearly articulated in the framework. (See Figures 2 through 5 which include some sample concepts for lesson development as well.) Selected standards and benchmarks from the core curriculum and the arts curriculum were referenced and addressed as we developed the thematic units. Higher order thinking skills were always considered in lesson development. Assessment was formative and summative, standardized and authentic. (See Figures 6 and 7 for sample rubrics which are authentic and summative.)

Figure 2
Integration Plan for Thematic Unit Using Multiple Intelligences

Integration Plan for Thematic Unit Using Multiple Intelligences	Theme: ***Celebrating Our Cultures***	Grade: ***6***

Thematic Statement: (Student Outcomes) In celebrating world cultures, we recognize and appreciate the diversity, inventiveness, and creativity of the world's peoples.

Areas of Integration: Language Arts, Social Studies, Science, Math, Visual Arts, Music, Creative Movement, and Drama.

KEY: **R** – Required **O** – Optional activity **S** – Supporting program, **C** – Culminating event **A** - Assessment

Focus Questions:
1. How do different cultures meet their needs through invention?
2. How do individuals and groups within cultures construct scientific knowledge?
3. How do different cultures express their beliefs and human spirit through the arts?
4. How do we celebrate our own culture?

Key Concepts:
- Appreciation for diverse cultures
- Geography of the Western Hemisphere
- Invention/Newton's laws
- Writing in a variety of genres
- Reading for a variety of purposes
- Extensive use of the arts to support learning

Sample concepts for lesson development:

Verbal/Linguistic	**Logical/Math**	**Visual/Spatial**	**Bodily/Kinesthetic**	**Musical/Rhythmic**	**Interpersonal**	**Intrapersonal**	**Naturalist**
After doing research, make a pop-up book depicting scenes from each celebration: Christmas, Mexican Christmas, Kwanzaa, Hanukkah, and Thanksgiving. Write a brief history and explanation of the customs for each holiday. R C A	Follow a recipe to make a holiday dish for the class holiday celebration. O	Using clay, sculpt a bust of a famous inventor. Make a plaque to go with it that gives highlights of the inventor's life. R A	Learn a folk dance from a different country. Use costumes/props for the dance and perform it at the holiday celebration. R C A	Listen to and analyze instrumental music from another culture. In a group, create an original piece in the spirit of that culture. R A	Interview a senior citizen about life before some modern inventions. O	After reading a book about a cultural celebration, reflect in your journal about your own family traditions. Discuss those you will carry on when you have your own home. Describe one new tradition you would like to start. R	Create clay vessels. Decorate them by making impression designs with natural materials from the Western Hemisphere. R
Listen to a story and view the quilt related to the story (provided by the Metro Quilt Guild). Write a script about the quilt makers. S	Use tessellations and measurements to create a quilting pattern symbolic of a culture. R	Make a quilted hanging to give as a gift. Use a basic shape that represents your holiday. O	With your group perform a creative mime to show the mechanical movement of an invention. O	Research and, if possible, bring in instruments from other cultures or find pictures of or draw the instruments. Relate them to more familiar band instruments. R	Learn about the technology that is available in your school and determine how it improves the learning environment. R	Choose several pieces of art from Western Hemisphere cultures that reflect these emotions: joy, fear, peace. O	Research how another culture has related to nature and how it has exhibited that relationship in art, music, dance, or traditions. Share your findings with the class. O
Research an invention developed in a culture outside the U.S. and describe how it improves the quality of life for its people. R	Make a plan for an invention. Describe the plan in writing, make the invention, present to the class. R A	Design a flip-book for Newton's Laws. R A	Create a demonstration using wind-up toys to illustrate Newton's Laws. R	Select a song with "heart" in it from your own culture and play or sing the song for the class. O	In a group write an adventure story related to the Western Hemisphere. Make a scratchboard to go along with the story. R A	Write a poem that tells about a special characteristic of your own culture. R	Consider ways inventions have harmed the environment and write a proposal to reverse the damage. R A

Planning the First Integrated Thematic Unit

After analyzing the state content standards and benchmarks for each core area, the team decided that our first thematic unit would be "Exploring the Universe" because the universe was a concept that lent itself to integration across the disciplines. The theme could be well supported by the arts—music, visual arts, creative movement, and drama—and would provide opportunities for engaging all the intelligences. The team developed a thematic statement containing the student outcomes to guide our planning:

> Through the exploration and study of the universe we learn how people can live and work in space; how people, from ancient times to the present, look to the skies to explain natural phenomena; and how the heavens have provided the world's cultures with inspiration for the arts.

As a way of targeting these student outcomes, we composed focus questions:

- How do people live and work in space?
- How have people explained natural phenomena by studying the skies?
- How have people of different cultures demonstrated their interest in space and their understanding of the universe?
- How have the skies inspired people, from ancient times to the present, to express themselves through the arts?

The team designed instruction that was required of all students. In addition, students could choose from a number of alternate activities. (See "Optional" on unit plans, Figures 2 and 4.)

The final unit design was a tapestry of interwoven learning experiences, using all eight of the intelli-

Figure 3
Content Standards and Benchmarks Addressed in "Celebrating Our Cultures" Unit

Core Curriculum Areas: (from State Curriculum Framework (Michigan Dept. of Education, 1998))

Social Studies - Western Hemisphere: Canada, U.S., Mexico, Central America, South America

1. Locate information using a variety of print, non-print, and electronic resources.
2. Use atlas, almanac, bibliography, thesaurus, dictionary, and encyclopedia as reference tools.
3. Understand use of thematic maps to investigate the geographic, physical, and political characteristics of the Western Hemisphere.

Language Arts

1. Read and spell high-frequency words and a selected weekly list that supports and aligns with current units of study.
2. Be actively involved in writers' workshop, working through the writing process from pre-writing to publishing. Students' publications will include a variety of genre, such as: fiction, nonfiction, poetry, biography, persuasive, and expository writing.
3. Write daily for a variety of authentic purposes, exhibiting the appropriate style, across all areas of study.
4. Identify, then use, a variety of writers' strategies (metaphors, interrupted dialogue, slow motion, threes, etc.) in his or her poetry, narrative, and when appropriate, expository writing.
5. Maintain a journal, a note-taking notebook, and a writing portfolio.
6. Use rubrics to examine and evaluate selected pieces of his or her writing.

Genre Study

1. Understand the following literary elements: plot, characterization, setting, and theme.
2. Understand realistic fiction to help you recognize yourself and your present problems through literature characters that have been successful in solving their problems because struggles in life are universal and no different than those encountered in literature.
3. Understand historical fiction is fiction which weaves the past with the present, and looks into the future to gain knowledge about people, values, beliefs, hardships, heritage, and physical surroundings common to a period in time.
4. Understand these are types of traditional literature: folktales, fables, myths, legends, and the criteria for each type.
5. Read nonfiction to understand biography and informational text.
6. Gain knowledge about the world by reading informational books to learn about our life and world.
7. Understand biography encapsulates history, significant periods or events; study the contributions of the person and people connected with the person.
8. Explore, understand, and analyze artists' styles and use of media.

Physical Sciences: Simple Machines

1. Ask questions that help them learn about the world; design and conduct investigations using appropriate technology.
2. Analyze and explain how people of diverse cultures have contributed to and influenced developments in science.
3. Describe how things around us move and explain why things move as they do; demonstrate and explain how we control the motions of objects and relate motion to energy and energy conversions.

Arts Curriculum Areas: (from National Standards for Arts Education (Consortium of National Arts Education Associations, 1994))

Visual Arts

1. Apply media, techniques, and processes.
2. Select materials, techniques, and processes to effectively communicate ideas.
3. Choose and evaluate a range of subject matter, symbols, and ideas.
4. Prepare and present a final product or exhibit.
5. Know and compare the characteristics of artworks in various cultures.

Creative Movement

1. Understand how to choreograph a series of movements to music.
2. Understand dance as a way to create and communicate meaning.
3. Demonstrate and understand dance in various cultures and historical periods.

Music

1. Perform on instruments, alone and with others, a varied repertoire of music.
2. Compose and arrange music within specified guidelines.
3. Understand relationships between music, the other arts, and disciplines outside the arts.
4. Understand music in relation to history and culture.

Drama

1. Develop basic acting skills to portray characters that interact in both improvised and scripted scenes.
2. Research by using cultural and historical information to support improvised and scripted scenes.

gences to provide an array of situations in which students had the opportunity to learn required content. All students would participate in a culminating event that demonstrated their understanding and mastery of the concepts studied. In the case of the "Exploring the Universe" unit, the culminating event involved multiple simulations of scientific concepts related to space travel and research. For example, students engaged in a simulated docking of the Hubble space telescope without using verbal communication. After a loss of visual orientation, they charted their course with a compass. Appropriately attired and by responding to "virtual" technological prompts to solve problems of working and living in space, they experienced some of the rigors of life in space.

Assessment was project-based and authentic, individual, cooperative, or reflective, as appropriate. (See Figures 6 and 7 for sample rubrics.) A timeline was determined, and each lesson plan was "owned" and eventually implemented by a team member.

A Peek at Our First Planning Session

How did the team create these thematic units? If you had dropped in on the first unit planning meeting, you would have observed team members engaged in a brainstorming session about how to integrate the content standards across the disciplines under the theme exploring the universe.

The art teacher led off, "I know, I will teach a lesson on Van Gogh's work. We'll read the book, *Starry Night*, then create a crayon resist. That will address three content standards from the National Standards for Arts Education (Consortium of National Arts Education Associations, 1994) while integrating the universe theme with visual arts."

The science teacher piped up, "That's great! We could build a small model of the space shuttle, using NASA's plans. Then the students can participate in a process drama of the docking of the Hubble, cooperatively and non-verbally."

A parent enthusiastically joined in, "My brother teaches music composition at a university. I'm sure he'd volunteer to come and help the students compose music related to space."

The music teacher exclaimed, "Wonderful! I'll e-mail him and perhaps we could work together. I will teach the students about music used in the movie industry related to space. Also, I will have them make their own instruments to use with their original compositions when your brother visits."

Referencing National Standards for Arts Education in creative movement, the physical education teacher chimed in, "The students could choreograph and perform a routine that interprets the movement of the planets around the sun."

Figure 4
Integration Plan for Thematic Unit Using Multiple Intelligences

Integration Plan for Thematic Unit Using Multiple Intelligences	Theme: ***Exploring and Influencing the Environment***	Grade: ***6***

Thematic Statement: (Student Outcomes) Through the exploration of our physical and natural world, we learn how we interact with our environment and each other to cause world change and improve the quality of life.

Areas of Integration: Language Arts, Social Studies, Science, Math, Visual Arts, Music, Creative Movement, and Drama.

KEY: **R** – Required **O** – Optional activity **S** – Supporting program **C** – Culminating event **A** - Assessment

Focus Questions:
1. How do people use maps to locate where they are on earth?
2. How does the natural and physical world affect human lives?
3. What must happen to light in order to see objects?
4. How and why do people from around the world exchange scientific knowledge to solve problems?

Key Concepts:
- Care of the environment
- Mapping regions of the earth
- Impact of technology
- Writing in a variety of genres
- Reading for a variety of purposes
- Data collection, organization, and manipulation.
- Extensive use of the arts to support learning

Sample concepts for lesson development:

Verbal/Linguistic	**Logical/Math**	**Visual/Spatial**	**Bodily/Kinesthetic**	**Musical/Rhythmic**	**Interpersonal**	**Intrapersonal**	**Naturalist**
Using technology, research volcanoes in different regions of the world. Create a poster or bulletin board to reflect your research. R A	Locate places by latitude and longitude on the large world map; form teams to discuss environmental issues affecting the area. R	Create a topographical map of an imaginary country; include a map key. Write a one-page description of your country to accompany your map. O	Build a paper mache model of the volcano you researched. Make it erupt with a vinegar/baking soda solution. Videotape and narrate your eruption telling how the environment and human life was affected. R C A	Discuss in a group how a region's music reflects its physical environment. R	In a group, discuss and list ways to improve the school playground. Present a proposal to the student council. R	Write a diary as a scientist working to develop alternate energy sources to replace fossil fuels. Describe your excitement and frustrations. Tell how you plan to share your ideas with the world. R C A	Discover how color and light play a role in animal behavior. R A
Using technology, research how scientists around the world address the problem of global warming. Share your findings with the class. R	Plan a world tour; include points of interest, an itinerary, and a travel budget. O	Make a flip-up chart that defines and illustrates the five themes of geography. R A	In a group, perform a non-verbal mime of a volcano eruption scenario. O	Create a rhythmic performance using a variety of objects to represent traveling on a region's terrain. O	Over the PA and with a partner report on the progress of your class community service project. O	Find an article in a National Geographic on an environmental issue. Share the article with your group taking different perspectives. R	Visit a nature center with your class; observe two ecosystems; compare and contrast them in your Naturalist's Log. S R
Read a fictional or realistic book on travel that tells how the lives of the characters were affected by the environment. O	Use different kinds of graphs to illustrate heights of volcanoes. R A	Take a trip to a local art gallery to view Picasso prints. Make Picasso-like self-portraits using concave/convex mirrors. S R	In a group, create and perform a skit that demonstrates how the human eye uses light to see. R	Compare and contrast the music from two different regions. Theorize the reason for its distinct sound. R A	Create a non-verbal means of communication to use in traveling to a different country and test your new form of communication on your group. R A	Reflect on ways to improve the environment of the region you are visiting as a tourist and write your ideas in a letter home to your parents. O	Discuss with your group how technology helps protect the environment around the world. O

Figure 5
Content Standards and Benchmarks Addressed in "Exploring and Influencing the Environment" Unit

Core Curriculum Areas: (from State Curriculum Framework (Michigan Dept. of Education, 1998))

Language Arts

Meaning and Communication

1. Read with developing fluency a variety of texts, such as short stories, novels, poetry, plays, textbooks, manuals, and periodicals.
2. Employ multiple strategies to construct meaning, such as generating questions, studying vocabulary, analyzing mood and tone, recognizing how authors use information, generalizing ideas, matching form to content, and developing reference skills.
3. Write fluently for multiple purposes to produce compositions, such as personal narratives, persuasive essays, lab reports, and poetry.
4. Focus on meaning and communication as you listen, speak, view, read, and write in personal, social, occupational, and civic contexts.

Depth of Understanding

1. Develop a thesis using key concepts, supporting evidence, and logical argument.

Inquiry and Research

1. Define and investigate important issues and problems using a variety of resources, including technology, to explore and create texts.

Social Studies Geographic Perspective

1. Describe and compare characteristics of major world cultures including language, religion, belief systems, gender roles, and traditions.
2. Explain why people live and work as they do in different regions.
3. Explain how humans modify the environment and describe some of the possible consequences of those modifications.
4. Describe the consequences of human/environment interactions in several different types of environment.
5. Describe the geographic aspects of events taking place in different world regions.
6. Explain how elements of the physical geography, culture, and history of the region may be influencing current events.
7. Pose a social science question about a culture, world, region, or international problem.

Science

Construct New Scientific and Personal Knowledge

1. Generate scientific questions about the world based on observation.
2. Design and conduct simple investigations.

Reflecting on the Nature, Adequacy, and Connections Across Scientific Knowledge

1. Describe the advantages and risks of new technologies.
2. Recognize the contributions made in science by cultures and individuals of diverse backgrounds.

Using Scientific Knowledge from the Physical Sciences in Real-World Contexts

1. Explain how light helps us see.
2. Explain how objects or media reflect, refract, transmit, or absorb light.

Mathematics

Geometry and Measurement

1. Distinguish among shapes and differentiate between examples and non-examples of shapes based on their properties; generalize about shapes of graphs and graph distributions.

Data Analysis and Statistics

1. Organize data using tables, charts, graphs, spreadsheets, and databases.
2. Critically read data from tables, charts, or graphs and explain the source of the data and what the data represent.
3. Formulate questions and problems and gather and interpret data to answer those questions

Arts Curriculum Areas: (from National Standards for Arts Education (Consortium of National Arts Education Associations, 1994))

Creative Movement

1. Understand dance as a way to create and communicate meaning.
2. Make connections between dance and other disciplines.

Visual Arts

1. Understand and apply media techniques and processes.
2. Understand the visual arts in relation to history and cultures.
3. Choose and evaluate a range of subject matter, symbols, and ideas.
4. Reflect upon and assess the characteristics and merits of their work and the work of others.
5. Make connections between visual arts and other disciplines.

Music

1. Evaluate music and music performances.
2. Understand music in relation to history and culture.
3. Listen to, analyze, and describe music.

Drama

1. Do script writing by the creation of improvisations and scripted scenes based on personal experience, heritage, imagination, literature, and history.
2. Act by developing basic acting skills to portray characters who interact in improvised and scripted scenes.

A classroom teacher, with the state language arts benchmarks open before her, added, "We'll read *The Little Prince* and study the symbolism of the central character living on his own planet."

As the session heated up even more, another classroom teacher referred to math content standards and suggested students calculate weight on different planets. The heat outside was forgotten as a brainstorming synergy flared like wildfire, generating myriad exciting learning experiences to complete the unit design.

Flushed with the initial success of designing the first thematic unit, the team turned to other issues important to program start-up: parental involvement, special student needs, and the role of the larger community. A parent participation model based on skills, expertise, talent, and availability was constructed to coordinate parent volunteer efforts.

Teams worked on designing units throughout the year (using the planning model illustrated in Figures 2 through 5). The principal facilitated the process. She chaired meetings, kept the vision focused, allowed for release time, and handled communication between all participants, parents, and central administration. She scheduled co-teaching time and found space for the many program activities. The principal also provided professional development opportunities and nurtured both team spirit and a school culture receptive to the arts-integrated program. As the pilot year progressed, leadership responsibilities were shared by all team members.

Figure 6
Rubric—Space Patch for NASA Uniform

Rubric Space Patch for NASA Uniform					
Criteria	4	**3**	**2**	**1**	**Score**
Space patch design reflects the concepts of working and living in space	Reflects both concepts with good detail	Reflects both concepts with some detail	Omits one concept or uses very little detail	Omits one concept and uses very little detail	_____ X 3 = _____
Design uses geometric shapes	More than two geometric shapes in design	Two geometric shapes in design	One geometric shape in design		_____ X 2 = _____
Original draft of design on paper	Original draft includes: • All detail of final product • All color of final product • Neatness		One element missing	Two elements missing	_____ X 2 = _____
Transfer of design to cloth	Used an appropriate media technique successfully on final product: • Stitchery • Acrylics • Applique • Fabric markers		Used an appropriate media technique, but not adequately		_____ X 2 = _____
Written description of patch that includes rationale for design and directions for others to follow in creating the design.	Writing has: • Good paragraph structure • Detailed description • Clear directions • No spelling or grammar errors • Neatness • Used Word Processor	Missing one element	Missing two or three elements	Missing three or four elements	_____ X 3 = _____
Appearance of final product (Space Patch)	• More than three colors • Neat		Missing one element		_____ X 2 = _____
Comments: **Total:**					

Figure 7
Rubric for Volcano Project

Rubric for Volcano Project					
Criteria	**4**	**3**	**2**	**1**	**Score**
Report	• Contains new information • Includes introduction, body, conclusion • Includes reflection • Written with good paragraph construction • No spelling or grammar errors • Typed	One element missing	Two or three elements missing	Four elements missing	_____ X 3 = _____
Model	• Neatly made • Authentic • Well-detailed • Colorful	Missing one element	Missing two elements	Missing three elements	_____ X 3 = _____
Oral Presentation	• Involves other students • Smooth, organized delivery reflecting rehearsal • Informative	Missing one element		Missing two elements	_____ X 2 = _____
Attractive Cover	• Neat • Four or more colors • Includes title • Includes author	Missing one element	Missing two elements	Missing three elements	_____ X 1 = _____
Bibliography	• Neat • Three or more sources			Missing one element	_____ X 1 = _____
Timeliness	All four pieces submitted by due date: • outline • draft • final • model	Three on time	Two on time	One on time	_____ X 1 = _____
Comments:				**Total:**	

Gratifying Results

As our pilot year unfolded, both students and staff sustained enthusiasm, parents reported increased student interest in attending school. Even growth in student socialization skills was evident. These outcomes resulted from:

- capable leadership
- applying educational research to creative planning
- committed collegial relationships and teaming
- wholehearted parent and community participation.

In addition to a capable building principal, supportive central administrators, and a receptive school board, the teaching staff assumed leadership roles in a variety of ways as needed. For example, teachers and parents networked to bring in guest "instructors." One of the teachers invited a local poet to present a workshop which resulted in students compiling a book of their poems for the unit "Exploring and Influencing the Environment." In another instance, the district's fine arts coordinator managed to locate and convince a community band to provide music at the parent and student program orientation before the school year began. This type of leadership from the entire staff laid the groundwork for individual educators to envision new ways of contributing to the pool of resources needed to fulfill our vision and to implement the arts-integrated thematic units, resulting in increased student engagement and achievement.

Such leadership, shouldered by all team members, led to a wider expression of effective collegial planning. As word leaked out about the initial successes of this program, we found people approaching our doors. Seventh and eighth grade teachers from other district schools heard about the program and asked to be invited to culminating events and then asked to attend the bi-monthly planning sessions. During the summer, as we continued to receive requests by parents to place their children on our waiting list, seventh and eighth grade teachers took the initiative to plan their own units for the next year with the help of the sixth grade teachers.

Unit culminating events drew overwhelming parent support and attendance. At our culminating event for the unit "Exploring and Influencing Our Environment," 100% of our students attended with one or more parents as well as additional family members and friends. We also had close to 100% participation at the other culminating events.

At the end of the year, standardized test results showed encouraging improvement, especially from students with the poorest test records. On the Stanford Achievement Test, a national norm-referenced test, students' achievement scores rose by 15% in reading and 18% in math, compared to the previous school year. Our assessment results were consistent with the research on the benefits of integrating multiple intelligences into curriculum design. The Project on Schools Using Multiple Intelligences Theory (SUMIT) was a three-year investigation of schools using multiple intelligences. For this investigation, educators at 41 schools were asked about how multiple intelligences were implemented in their schools and also about their schools' general make-up with regard to organization, curriculum, and assessment practices. Twenty of the 41 schools had improved standardized test scores, 22 had improvements in discipline, and 25 had improvement with parent participation (Harvard Project Zero, 2000).

The arts-integrated program pilot was a success, and plans were made to expand the program into the newly restructured middle school. Our experience in designing and implementing a program that integrates the arts with the core academic curriculum demonstrates that it is possible to energize teachers to provide instruction that engages students, keeps them excited, and keeps them learning. We had come together to dream of a better way to educate our middle level students and discovered that dreams really can come true.

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