

Transformations: Kentucky's Curriculum Framework

Volume II

Introduction

Transformations: Kentucky's Curriculum Framework, Volumes I and II, provide direction to teachers, counselors, media/library specialists, administrators, students, parents, and community representatives as they develop curriculum. The two volumes of the framework should be used together to design student-centered curriculum, instruction, and assessment.

In Volume I, the learning goals and academic expectations have been expanded to indicate student expectations at various levels. Volume II centers on the processes which local districts, schools, and/or school councils may use to develop curriculum, instruction, and assessment that meet their unique needs. The following text addresses each section of the second volume.

Transforming the Learning Environment

Developing curriculum, instruction, and assessment that allow all students to learn at high levels requires a philosophical change from traditional approaches to education. This section presents ways in which the learning environment might be changed to foster sustained learning for all students. It addresses standards-based education, making connections across disciplines, alternative ways of learning, curriculum and assessment connections, technology, and multicultural education.

While Transforming the Learning Environment serves as a guide to curriculum writers, it will be especially useful to teachers as they consider which instructional and assessment practices best facilitate learning for each student.

Alternative Uses of School Time

State and national educational leaders are acknowledging the need to re-examine the organization of school time. Currently, Kentucky statute sets specific requirements about the school year and day; however, if the learning environment is to be changed significantly, educators need to explore creative ways of using school time and facilities. This section of Volume II offers ideas, examples, and models of alternative uses of school time.

Local Curriculum Development Guide

Effective curriculum design is accomplished through a thoughtful process that strongly involves teachers, other district and school personnel, and school councils. The Local Curriculum Development Guide presents one approach to curriculum development.

This section includes examples of a mission statement, philosophy, and action plans; methods for establishing committees/teams, guiding principles, and curricular parameters; and a detailed process for designing an instructional unit. It also addresses professional development, networking, and the process of evaluation.

Bringing It All Together

Bringing It All Together helps to answer the teacher's question, "What do I do now?" It provides a guide which illustrates how Transformations: Kentucky's Curriculum Framework can influence instructional practices.

Jefferson Smith, a fictional character in this section, is a high school teacher who feels the same concerns and frustrations that many Kentucky teachers are encountering as their schools implement educational reform. He works through a number of changes which he believes are needed to enhance the learning experiences of his students.

Resources

The Resources section addresses areas of education that are important to the process of curriculum development. It is made up of five subsections:

- The **Teaching/Assessment Strategies** subsection explains the strategies listed on the demonstrator pages in Volume I. It includes examples and vignettes that illustrate teacher use of specific strategies.
- The **Instructional Material Resources** subsection presents lists of publications, programs, videos, professional associations, and other resources.
- The **Community Resources** subsection provides a framework that districts and schools may use for creating and organizing a database of local, state, and national resources.
- The **Model Teaching Sites** subsection features some Kentucky schools that have implemented changes which reflect one or more aspects of the Kentucky Education reform Act (KERA). Districts, schools, and teachers may choose to contact and/or visit the model sites.
- The **Key Readings** subsection categorizes lists of publications which represent current research and thinking on educational issues. The information from many of these sources was used in the development of the framework.

Just as KERA addresses multiple aspects of education, this framework is a multi-faceted document. There is much educational research which affects change in the classroom that could not be detailed in the framework. Curriculum and instruction designers are encouraged to support their curriculum efforts through continuous research and study. Educational transformation is an evolving process which requires ongoing review and evaluation to sustain change.

"Traveler, there is no path, the path is made by walking it." Antonio Machado

Transforming The Learning Environment

What Is Transformation?

Equipped with a computer and the right software, a child today can do what sculptors and poets have tried to do for thousands of years: transform one image into another. The computer catalogue promises that you soon can be "creating dazzling images and transitions, see last year's car model turning into this year's, or a futuristic cyborg villain disguising itself as a valiant heroine." With carefully chosen tools the sculptor may hope to transform raw wood or stone into works of radiant majesty and beauty. The poet tries to choose and combine letters and words in such a way that paper takes on an identity and character of its own. No matter what the process, the goal of transformation has always been the same, to markedly change the form, appearance, nature, function, or condition of an object or an institution.

The form, basic matter, and shape of education have remained the same for nearly a century. With the advent of the assembly line and the need for dependable employees, a system was designed to train students to become workers equipped with minimum skills of literacy and computation, who were able to function on an assembly line for a specified period of time with a minimum of problems. The system worked very well. As a training ground for future employment, students were given work to do, expected to finish it within the limits of the clock, and assessed on the amount and quality they produced. There was no need to insist that all students learn to develop the capacity to think, create, solve problems, or connect their learning across a wide spectrum of knowledge.

The challenges of our rapidly changing society have surpassed the capacities of our schools to adequately prepare all children for the future. Business is telling us that **all students must be able to think and solve problems at the level originally required of a few**. In the past we assumed that all students were not capable of achieving those high expectations. Today the expectations and the assumptions have changed, and we are faced with the need for the most challenging transformation in the history of the Commonwealth. Our concern for all students must be refocused; it must go to the root of the problem. We are required to rethink some of our most fundamental ideas about students, education, school, and learning. In short, what is required is a complete transformation of the learning environment.

Because of legislative mandates to restructure the entire education process, educators and students of Kentucky are uniquely poised to begin this transformation. At times we will feel like true masters of the transformation process, and some small changes will seem to produce tremendous results. At other times the transformation will seem unbelievably slow and cumbersome; we will question the "software" package we have been handed for it will seem tedious and confusing. We will feel like victims of the process rather than initiators. Above all, we must keep focused on the vision of what Kentucky students should know, do, and be like when they complete their public education. Those goals and academic expectations, defined after careful and extensive discussion with citizens around the state, represent a new vision of what we expect and what the future demands.

The Time for Change

It is not enough to adopt lofty ideals and post them in our school hallways. If we shut the door and return to the classrooms we have known, nothing will change. The doors to real change, to true success by all students, must remain open as real transformation begins. Before the process begins, there must be an acceptance of the need for a change.

The Carnegie Forum on Education and the Economy offered one rationale for change when it noted:

Much of the rhetoric of the recent education reform movement has been couched in the language of decline, suggesting that standards have slipped, that the education system has grown lax and needs to return to some earlier performance standard to succeed. Our view is very different. We do not believe the educational system needs repairing; we believe it must be rebuilt to match the drastic change needed in our economy if we are to prepare our children for productive lives in the 21st century.

Many educators realize a need for change grounded in the demands of the 21st century, demands which a system designed for the 19th and 20th centuries cannot meet. Others see a need for change as they look at the vast number of students who have been failed by the present system. They realize that society cannot bear the expense or the social pressures caused by disenfranchising large segments of a developing, restless, and demanding underclass. Another group is inspired to change by the possibilities of a future which is vastly different from the present, a future which is marked by advances in virtually every field of human endeavor. There may be different motives behind the change, but the need is overwhelming; now is the time for change.

The Vision

Transformation of the learning environment is one of the most exciting and challenging revolutions of our time. It involves a philosophical change in the traditional perception of what a school is or should be. It means identifying where we are, determining where we want to be, and devising a plan to effect the change. **The heart of transformation is accepting that all students can learn at high levels-higher than has ever been expected of most students.** This vision represents a radical departure from the way we have normally thought about students. We cannot transform schools if we continue with a view of high achievement for a select group of students, moderate achievement for the majority, and low achievement as an acceptable alternative for others. The statewide commitment to the belief that all students can learn at high levels and the commitment to a standards-based approach to education set the stage for the implementation of the tools necessary for attainment of this belief. These tools include alternative ways of enabling learning, curriculum/assessment connections, and making learning connections.

To realize the vision expressed in the Kentucky Education Reform Act (KERA), Kentucky's perception of classrooms and schools must be transformed from a concept centering on bricks and mortar to an idea of varying learning environments. Education must be seen as a time of limitless possibilities and school as a place designed and structured to meet the specific needs of the students, an environment where time is used creatively.

Transformation as a Process

Just as it takes several steps to change a mouse into a lion in a computer "morphing" program, so it will take many steps to transform our schools into something which conforms to our vision of the future. There are no "cookbook" solutions available, no magic formulae to pull from a shelf. Instead the transformation of our education system must be seen as a process, not an event. It will take a different form in every school as councils, students, teachers, and administrators assess, suggest, attempt, and reassess. Certain assumptions, goals, and commitments will help form the transformation, and these must remain clear throughout the process.

Just as students cannot depend on a textbook for everything they need to know or turn to a workbook for a set of patterned drills, so, too, teachers and administrators must begin to understand that no single format will be appropriate to every student in every situation. A transformed learning environment cannot be attained by simply obtaining a set of procedures or self-directed exercises. Teachers and administrators must assess the needs of their students, design programs, and implement strategies which will be right for their school and their students.

The What a child learns must be challenging and rigorous. To accomplish this, the How, the Where, and the When may vary from student-to-student, class-to-class, and school-to-school. The challenge of KERA is to create the proper mix for all students in Kentucky. Student needs are varied, and schools must begin to provide alternative learning opportunities while assisting students to make connections. To facilitate and direct learning, the focus will be on significant, demonstration-driven standards which replace the current emphasis on inputs, accumulated time, and isolated bits of information.

Kentucky's Goals for Education

During the development of the Kentucky Education Reform Act, citizens, educators, and other contributors identified and framed six major goals for schools. Districts and schools are not limited to the goals identified by the state; however, it is these goals which are assessed and provide the basis for school accountability.

The first goal issues the challenge:

Goal A: Schools shall expect a high level of achievement of all students.

To accomplish this goal, attitudes must change. Strategies for instruction and assessment must be expanded to include methods which will enable students to experience success at high levels. In this manner students are encouraged, self-actualized, and poised for continued success.

While the composite effect of all the goals provides for the complete reform of Kentucky's education system, it is Goal B which clearly defines the learning goals for Kentucky students.

Goal B: Schools shall develop their student's ability to

1. use basic communication and mathematics skills for purposes and situations they will encounter throughout their lives;
2. apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies, and practical living and vocational studies to situations they will encounter throughout their lives;
3. become a self-sufficient individual;

4. become responsible members of a family, work group, or community including demonstrating effectiveness in community service;
5. think and solve problems in school situations and in a variety of situations they will encounter in life, and;
- 6 . connect and integrate experiences and new knowledge from all subject matter fields with what they have previously learned and build on past learning experiences to acquire new information through various media sources.

These six learning goals are further defined by the academic expectations. While the learning goals may be broadly understood as exit standards in KERA's results-oriented education system, the academic expectations are more specific, enabling statements which facilitate the achievement of the six goals.

Non-cognitive expectations for schools are summarized in the remaining four goals:

- Goal C: Schools shall increase their students' rate of school attendance.**
- Goal D: Schools shall reduce their students' dropout and retention rates.**
- Goal E: Schools shall reduce their physical and mental health barriers to learning.**
- Goal F: Schools shall be measured on the proportion of students who make a successful transition to work, post-secondary education, and the military.**

Standards-Based Education

Standards-Based Education is a learner-centered, success-oriented philosophy which addresses the systemic restructuring of schools. It starts with a clear articulation of what we want students to 1) know, 2) be able to do after they leave school. It is critical that educators focus on

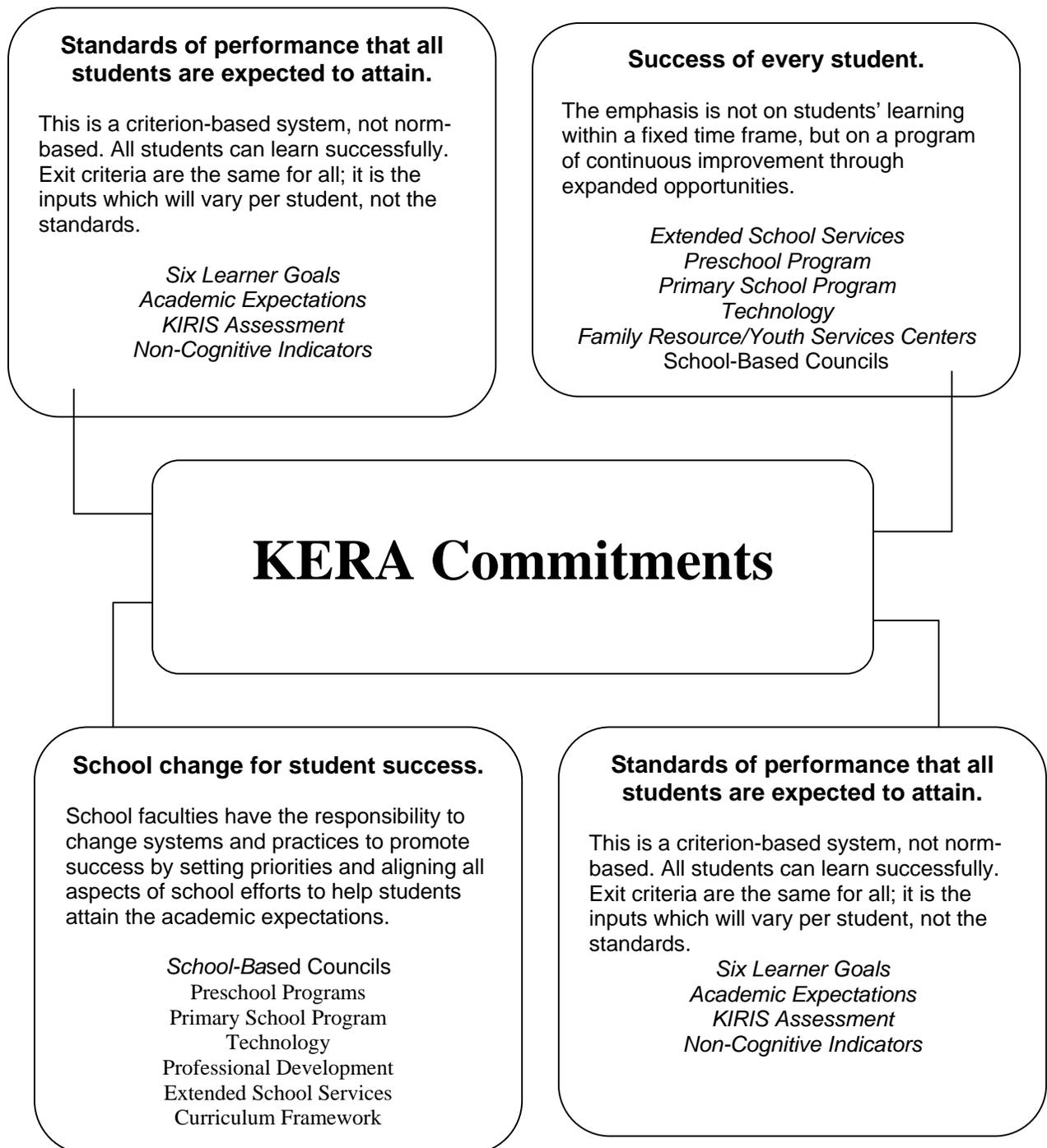
- learning that really matters - related to meaningful understanding and expressions of concepts, higher-order thinking skills, and capacities that are required in our modern information-based society;
- contexts that are authentic - related to students' present life experiences and similar to what they will encounter in their future;
- demonstrations that engage students in role performances- related to situations which are engaging, open-ended, and realistic.

KERA recognizes not only the importance of designing a program that supports learning, it also emphasizes that "public education involves shared responsibilities. State government, local communities, parents, students, and school employees must be committed to create an efficient public school system... The cooperation of all involved is necessary to assure that desired expectations are achieved."

"To achieve learning that is more meaningful, the learning environment must first be altered to one that will provide real-life learning experiences for students."

**Marty Cassady, Student
Edmonson County High School**

The support structures of KERA foster an educational program designed to meet the needs of every learner through a commitment to



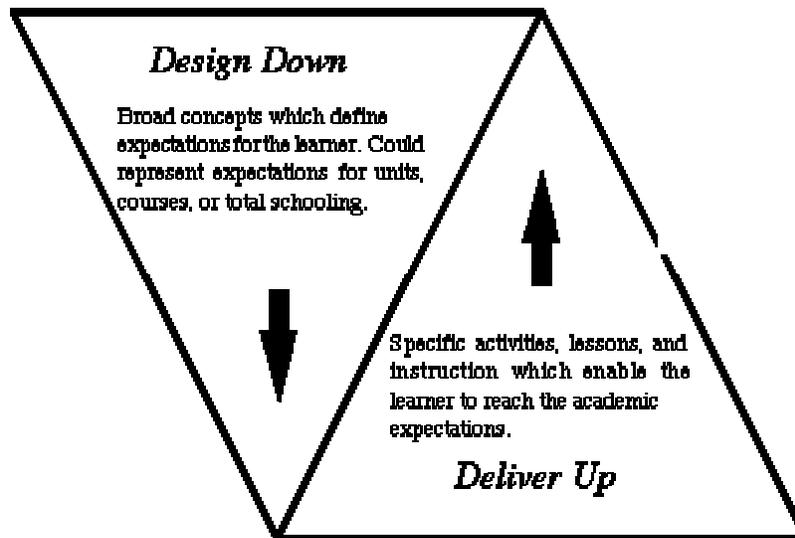
Design Down/Deliver Up

Standards-based education and its manifestations in KERA focus attention on demonstrating learning through predetermined criteria -- the academic expectations. Curriculum development begins with the six learning goals which are the vision of what a Kentucky graduate must know, do, and be like. When we focus on this vision to develop and organize all curriculum design and instructional planning, the process is called designing down. Developmentally appropriate contents, processes, and behaviors fully support the desired vision -- students who are successful after they leave school. Basing curriculum on actual student demonstrations of significance, evidence that learners have achieved the goals, will ensure alignment of curriculum and assessment.

The implementation of the process is known as delivering up. No single method of instruction, no single kind of classroom activity, no predetermined time period can ensure development of the skills, abilities, and behaviors required for each student. Therefore, it is critically important that varied, flexible, and purposeful instructional activities be used by teachers until all students successfully demonstrate the standards of significance.

As the accompanying table illustrates, there must be a shifting from present practices to a different paradigm of instructional design and delivery.

The Academic Expectations



Traditional Calendar Driven Instruction

School entrance, age grouping, student evaluation, number of instructional days and hours as well as school vacations have been based on a one hundred year old agrarian calendar.

Constrained Opportunities

The learning has been constrained by limited instructional strategies, structured physical environments, expectations, and time as it relates to schedules, unit development, length of day, etc.

Cumulative Achievement

Evaluation has been an average and re-average of learner's work on discrete skills throughout a predetermined time frame. It described a measure of interim achievement.

Competitive Learning

The competitive learning environment had become an individual effort where learners were pitted against each other. Frequently competition and challenge were confused by teachers and students.

Comparative Evaluation

Comparative evaluation had set expectations of students in terms of those who can and those who cannot achieve. This was exemplified through the bell curve where mediocre quality was acceptable.

Curriculum Coverage

"Covering the curriculum" has meant exact knowledge dissemination within a predetermined time frame with less emphasis on student understanding and needs.

Segmented Content

Disciplines, courses, units, and lessons were chopped into discrete skills and time frames that showed little if any connections.

Curriculum Design

Textbook designed scope and sequence of specific content resulted in fragmented and isolated curriculum. Teachers focused on curriculum coverage.

Standards-Based Standards Driven Instruction

The determinant of student success is no longer the calendar nor the clock but the learners' ability to demonstrate the standards.

Expanded Opportunities

The student's learning time and curriculum needs determine the teaching time. The learning environment becomes more than the isolated classroom and school. It involves the total community. Expectations no longer have a ceiling.

Culminating Achievement

Culminating achievement demonstrates what a learner can do at the end of his/her learning cycle.

Cooperative Learning

The learning environment becomes a cooperative effort as learners initiate, implement, and evaluate their own learning. Challenge becomes self-directed and intrinsic.

Criterion Evaluation

Criterion evaluation is set on standards of quality rather than on present random distributions.

Instructional Coaching

Instructional coaching involves finding and utilizing instructional tools and methodologies that enable the learner to demonstrate a standard. Appropriate time is allowed for the learning needs.

Connected Content

Integration dissolves the lines within and between the disciplines, which in turn creates connected courses, units, and lessons.

Design Down

Teachers design down from culminating performances to put in place the classroom activities, etc. on which they depend. Teachers focus on the what students should know, do, and be like.

Tools to Transform the Classroom

While a standards-based foundation forms the heart of Kentucky's education reform, a truly transformed learning environment will occur when other complementary elements are implemented. These elements work to facilitate the transformation. Each requires further study, discussion, and adaptation by local educators as they make implementation of each element more effective and each student more successful.

Alternative Ways of Learning

"The mind, stretched by a new idea, never goes back to its original dimension." **Oliver Wendell Holmes**

We have often seen students in the classroom who seemed capable of learning but who just did not seem to "fit." Sometimes we encounter a student who can fix any piece of audio-visual equipment but just cannot quite make it in a science or mathematics class. We also see students who love to talk, who know everything about everyone, who are wise enough not to tell it all; but that same student cannot seem to put ideas down on paper for a social studies or foreign language class.

Educational research in the past decade has seen an expanded view of concepts such as intelligence, learning styles, and thinking patterns. The research has challenged us to reconsider the student who does not fit the mold and to examine alternative ways of teaching and learning so that all students achieve success in school. Expanded opportunities must be extended to all students to help them succeed at the high levels we expect. This shift in commitment will take careful examination and implementation of available options for teaching and learning, and it will challenge many of our basic notions about students, school, the school day, and the school year. It will demand a shift in our decisions about what should be taught, when, and by whom. It will also require that we change many of the ways we have traditionally determined student success and how we record that success.

For years, instruction and assessment have emphasized reading, writing, and mathematics. Stated another way, linguistic and logical/mathematical approaches dominated our view of learning and made grouping children for specific programs, such as exceptional and gifted education, quite easy to promote and defend. In some schools children have been permanently "tracked" or separated into "fast" and "slow" classes, resulting in two curricula: a rigorous curriculum created for those labeled as "fast" and a less rigorous one for those labeled "slow." We even managed to divide and subdivide those categories, ending up with a multi-tiered system.

No other element in the status quo was probably more accepted than this system of ability grouping. The result has been that some students have received an excellent education in our schools while others have been involved in a less demanding learning experience. If we truly believe that all children can learn at high levels, we must also conclude that success with all children will not change unless our practices change significantly. Each person learns in a different way and at a different rate. Knowing a student's learning style and needs shifts the instructional approach and the demonstrations of learning. The roles of teachers and students move from teacher-centered to student-centered in everything from curriculum to scheduling.

Flexible Instructional Grouping is an alternative to the traditional tracking of students. It provides opportunities for teachers to group students for any intended purpose. Students can be matched with a group which has a variety of abilities, and memberships in the groups can be changed frequently for task grouping, random grouping, or any other pattern which the teacher

or the class chooses. This method avoids ability labeling, encourages collaborative learning, and stresses the benefits of diversity and multiple ways of learning.

Multiple Intelligences is a theory of intelligence which proposes that individuals from all cultures possess at least seven domains of intelligence. For many years, schools have primarily addressed linguistic and logical/mathematical intelligences, but new insights suggest that instruction and assessment would potentially reach more students if a variety of intelligences were addressed. These intelligences, as described by Howard Gardner, include:

- linguistic - the capacity for language;
- logical mathematical - the capacity for classification and abstract reasoning;
- musical - the capacity to discern pitch, rhythm, and timing;
- bodily kinesthetic - the capacity to use the body to accomplish complex activities;
- interpersonal - the capacity for comprehending aspects of character in other people;
- intrapersonal - the capacity to assess personal strengths and motivations; and
- spatial - the capacity to visualize from different perspectives.

One way to assure that every child will receive instruction in all the intelligences is not only to incorporate them into the design of the learning opportunities, but also to permit students to demonstrate achievement of the academic expectations and goals through any of the intelligences. We cannot afford to lose talented students whose abilities lie outside of accepted school patterns. We know how to open up new avenues for success begin the transformation of the learning environment, using opportunities for the expression of multiple intelligences as one of the tools.

Student-Directed Learning is characterized by students taking responsibility for setting the direction of their learning and helping determine the types of instruction which are most appropriate for the selected task. It is dependent upon the establishment of an atmosphere of trust and collaboration between teachers and students. It demands student involvement which may range in duration from a class period to an entire term, often depending upon the teacher's comfort level and the student's ability to take responsibility. There are a variety of ways to involve students in the determination of the focus, content, and approach to learning. The Foxfire approach is a well-known model incorporating this type of learning and is currently being used in some schools in Kentucky.

"This is a lot better than when we were just in plain old classes. Everybody can learn a lot more and get a better education and be smarter and everything and help other people that have fallen behind and you'll just get very, very smart."

**Tyler Fields, Student
Hannah McClure Elementary**

Learning Styles and the importance of teaching to the students' sensory strengths have been recognized for many years. The identification of preferred learning modalities auditory, visual, and kinesthetic provides teachers with additional insights into ways to design learning experiences. Using strategies which encompass different learning modalities assists teachers in personalizing instruction for all students.

Extensive study in learning styles will reveal other areas which impact student learning such as time of day, light intensity, and interaction needs. These variables should be addressed to accommodate differing learner needs.

Curriculum and Assessment Connection

"We must move assessment activities closer to the actual work of teachers and children... assessment should empower students as learners."

**Vito Perrone, Director of Teacher Education and
Chair of Teaching Curriculum and Learning Environments, Harvard**

Why assess? Historically, "assessment" of students has ranged from "blue-book" essay exams to standardized tests with "bubbles" which can be scanned and graded quickly. Appropriately or not, scores have been used for promoting or retaining students, giving end-of-course grades, evaluating teachers, tracking students, and comparing states. Test results have often been used for other purposes besides those for which they were designed. Therefore, we must ask ourselves: What is the purpose of student assessment? How do we assess students to accomplish that purpose?

Assessment has historically driven the curriculum. Particularly in the last few decades, standardized testing has been used to influence institutional goals, teacher performance, and program funding. This reliance on standardized assessment has been a major focus driving curriculum in our schools and dominating instruction in the classroom. If assessment has this kind of power, imagine what a changed form can do to influence teaching and learning in the classroom. If our purpose is to improve teaching and learning, assessment must be used to complement and measure what we really want students to learn and be able to do. We must closely align expectations for curriculum and assessment.

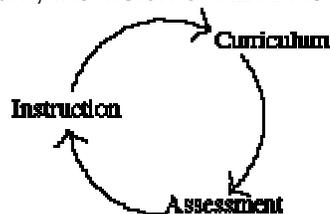
What does it mean to "align" curriculum and assessment?

Consider the following scenario:

Mrs. Peterson wants to involve her students in a real-world task which meets several KERA academic expectations under Learning Goal 2 (Core Concepts), Goal 4 (Responsible Group Membership), and Goal 5 (Problem Solving). She wants to include demonstrators under Academic Expectations 2.1: Nature of Scientific Activity and 2.4: Models and Scale such as observing properties, conducting an investigation, and formulating models. Because students had been talking about oil-spill disasters, she designs an investigation related to an oil spill in which students will simulate a spill; work in groups to determine how the oil could be measured, cleaned up, and stored; and present a report to the class. Although her focus will be on the above mentioned goals and academic expectations the task encompasses many other skills and concepts such as measuring, writing, estimating, predicting, evaluating, and visualizing.

Participation in a problem-solving experience provides a learning opportunity for students and could serve as an assessment task. It is an example of what is called an "instructionally-oriented classroom assessment" or "classroom-embedded assessment."

Rather than assessment driving curriculum, the vision of KERA is that curriculum, instruction, and assessment will be interconnected



Since meaningful learning is reflective, constructive, and self-regulated, students need to have multiple opportunities to perform and adapt their performance to new situations. They need opportunities to organize, structure, and use information in a context for solving complex problems. From this perspective, assessment becomes not just an event held at the end of the chapter, unit, or year for the sake of assigning a grade, but occurs continuously throughout the learning experience. With the advent of an authentic state assessment, educators are encouraged to develop and incorporate "instructionally-oriented assessments" into locally developed curriculum and individual classroom instruction. The lines between curriculum and assessment will be blurred. The "snapshot" view of student learning provided by traditional testing will be replaced with the dynamic process of authentic assessment which provides a valuable, continuous, and meaningful "documentary" of student learning. Through the assessment/curriculum connection, students and teachers are provided with feedback that allows an adjustment in instructional and learning strategies while students work toward attaining the academic expectations.

"Good teaching is inseparable from good assessing." **Grant Wiggins**

Making Connections

"To the young mind everything is individual, stands by itself. By and by, it finds how to join two things and see in them one nature; then three, then tree thousand...discovering roots running underground whereby contrary and remote things cohere and flower out from one stem..."

Emerson

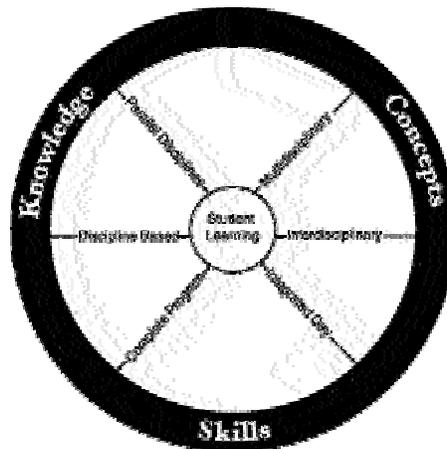
The ability to make connections across disciplines and to relate new information to prior knowledge and real situations will prepare Kentucky graduates for real-world experiences. This approach to learning is dependent on a thorough understanding of information. Strong discipline knowledge is necessary to provide the foundation for the connections students will make across disciplines. However, different models of instruction must be employed to allow the development of a rigorous, challenging curriculum that will offer all students the opportunity to make connections among disciplines and to thoroughly comprehend the concepts of the content areas.

Models which provide the basis for integrated learning may be found throughout educational literature. The following examples adapted from the work of Heidi Hayes Jacobs provide a starting point for consideration.

- The discipline-based model enables teachers to address the specific skills, concepts, and knowledge of an identified discipline. Teachers plan and present instruction independently.
- The parallel disciplines model encourages teachers to rearrange the order of topic presentation to align with corresponding information presented by other teachers. Joint planning is required only to identify the time sequence of the presentation.
- The multidisciplinary model permits teachers to work together in planning the instruction of related concepts from two or more disciplines. While the teachers jointly identify the topic or theme to be addressed, instruction can still occur in separate classrooms.
- The interdisciplinary model enables a comprehensive integration of the curriculum by bringing together multiple-discipline areas to create units or complete courses. Teachers jointly plan and implement the learning experiences of the students to reflect the interdependence and connections among the various subjects.

- The integrated day model allows for a student-centered approach to learning. This approach can be flexibly utilized by providing students with a range of choices within broadly defined areas of study. It involves a commitment by teachers and administrators to allow students to assist with determining the focus and format of the learning experience.
- The complete program allows the student to become immersed in a topic of study. Students live in the school environment and create the curriculum out of their specific interests. Teachers become true facilitators, and students are empowered by a sense of independent learning.

No single model for learning will fulfill the needs of every student, every teacher, or every school. Teachers will find it helpful to employ the freedom to move in and out of various models within the course of the school day and year. The possibilities for refinement of models is almost limitless, and student and teacher interests and needs should be leading factors in making the decision about the best model to use.



“You can learn geometry playing baseball. When the ball hits the bat, it reflects a different way.”

Leif Aaron, Student
Hannah McClure Elementary

Technology

Few changes in the classroom will be more obvious than those brought about by the advances in technology. Students have grown up in a world of technological sophistication that was virtually unimaginable only a decade or two ago. With the commitment to ensure that every Kentucky student and teacher have access to computers and other technologies, KERA has provided a powerful tool to assist with the transformation process.

One obvious benefit is the enhancement of basic communication as classroom walls and distance barriers become a thing of the past. The use of computers and modems will increase the speed and efficiency with which students can express ideas, explore areas of interest, and transmit thoughts.

The increased availability of technology will expand the resources and opportunities accessible to students, teachers, and administrators. The wise application of these new tools will assist students with the attainment of the learning goals and academic expectations.

Multicultural Education

As we talk about the world getting smaller through the use of technology, a final element in the transformation of the learning environment must be considered. This element takes into consideration the increasing diversity and variety of students found in our classrooms. Although "multicultural education" may mean different things to different people, it must be remembered that sensitivity to other cultures, knowledge of other viewpoints, and accurate assessments of similarities and differences among peoples of the world are vital to preparing students for life in a diversified society.

Multicultural education is interdisciplinary, cross-curricular education which prepares students to live, learn, and work together in a culturally diverse world. Multicultural education should provide equal opportunities for all students and positive results for members of all racial and cultural groups.

Multicultural education is a process, not a product, and must be infused throughout the entire educational structure. It will be reflected in curriculum design, in-school and extracurricular activities, school-based councils, textbook and curricular materials review and selection, and recruitment and retention of minority teachers and staff.

Conclusion

Nothing short of a complete transformation of public education in Kentucky schools will prepare the Commonwealth for the 21st century. The transformation process will not be an instant one nor will it be simple or non controversial. Above all, it cannot be superficial or transitory. To return to the words of the Carnegie Forum: "We do not believe the educational system needs repairing; we believe it must be rebuilt to match the drastic change needed in our economy if we are to prepare our children for productive lives in the 21st century." We have an overwhelming need for change. The legislature has provided the mandate and the support to see that the change occurs. Education research and collective professional experiences have provided us with new "tools" to enable the reform process. Now the most difficult part begins, the changing of fundamental beliefs about student learning and instructional practices. We must implement a new set of expectations and much higher standards of achievement for all students.

Merely focusing on standards and using a standards-based approach to learning is not enough to bring about a real transformation of the learning environment. Educators must simultaneously change instruction so that students make connections in their learning, are actively engaged, and demonstrate attainment of goals in real settings similar to what they will encounter for the rest of their lives. Classrooms and schools must be altered to prepare students for successful living both in the present and future. It is not enough to be content with adding bits and pieces of reform ideas to a program already in existence. Nothing short of a total transformation which begins with the evaluation of the present system, study of new ideas, and implementation of a transformational package designed for local needs will ensure the success of KERA and the success of every Kentucky student.

Carnegie Forum on Education and the Economy. *A Nation Prepared: Teachers for the 21st Century*. Hyattsville, MD: Carnegie Forum on Education and the Economy, 1986.

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Alternative Uses of School Time

A specific charge of the Kentucky Education Reform Act (KERA), KRS 158.6451 (4), is that "The curriculum framework shall identify ... alternative ways of using school time." With such an emphasis, a clear message to districts or schools should be the idea that permission is now given for using school time in new and exciting ways. Partnerships among schools, the community, and local businesses offer opportunities for learning to go beyond the four walls of the traditional classroom; student attendance and credentialing may take on a new appearance as well. This section of Transformations: Kentucky's Curriculum Framework presents some guidelines and possibilities for changes in the way school time is used.

Should We Change The Way Our School Day Or School Year Is Organized?

Questions about the focus of the school must be reassessed. Is the time schedule organized around the curricular needs of the students, or are courses, classes, units, and lessons organized around activity or facilities' schedules? Do instructional activities have enough flexibility to accommodate a variety of learning styles and paces, or are the learning needs of students ignored as pre-packaged instructional units are used? Do students have multiple opportunities to demonstrate their learning in a variety of ways, or are the same assessments made of all students in a class at the same time? These questions are difficult to ask and even more difficult to answer.

As schools and districts begin designing curriculum around the expectations of the reform act, changes in the way school time is used are essential. A new curriculum suffers if it is "force-fit" into an existing rigid time schedule. The following questions may help determine if change is necessary:

- How do the current student learning goals and academic expectations compare to the desired student learning goals and academic expectations?
- Which parts of KERA are consistently not being met?
- Are there successful models that may be studied?
- Is a fine tuning or a major overhaul needed?

A teacher's comments:

We knew we were facing some major changes in our school. At the last staff meeting, we really confronted some difficult decisions about where we wanted our school to be by the time the next round of assessments were published. Some of us were ready for change a long time ago, but some are still resisting. One of the first things we had to do was to get past the guilt, anger, and blaming. We acknowledged that good teaching had been around for a long time, but we needed to have the best for all students all the time, not occasionally for just a few. If we were going to really change, we had to do it for the right reasons. The following were the right reasons for us:

- * *A school must exist for its students, not for the teachers, parents, or administrators. The curriculum must be written in terms of student expectations, not teacher input or credentialing for seat time.*
- * *Scheduling should be determined after curriculum decisions are made.*
- * *A main goal of the entire process should be that the students become self-directed learners.*
- * *Society makes different demands on its citizens now than in years past. A child's education must reflect those changes.*

If we expect students to become self-directed, life-long learners, then we must do the same. It would be a lot easier to hire an outside-the-district expert with an established product, but it would not meet the specific needs and resources of our school and community. It is more difficult to do it ourselves, but it will be ours when we finish.

What Parts Of The System Should We Change?

The education of a student is comprised of many elements, such as curriculum, time schedule, instructional techniques and strategies, student's style of learning, and means of measuring and evaluating students' progress. In making determinations about organizing school time, all aspects of the student's educational experience must be considered. If one element is considered but not the others, no overall change will occur.

For each element in the following chart (1) evaluate what is done now; (2) identify what you believe for all students; and (3) determine what avenues are available to accomplish the goals. Possible responses have been listed based upon the underlying tenets of KERA.

	1. What we do now	2. What we believe for all students	3. What we need to do
• Curriculum	Time-on-task Teacher-centered Information dissemination Single resource Elitist	Performance standards Student-centered Inquiry-based, experiential Multiple resources Inclusionary	?
• Schedule	Restrictive Rigid time segments	Supportive Flexible time segments	?
• Instruction	Single strategy Authoritative (Lecture)	Varied strategies Supportive (Coaching)	?
• Learning	Passive consumption Dependent, other-directed	Active production Autonomous, self-directed	?
• Assessment	Norm-referenced	Criterion-referenced	?

Each of the elements identified above is related to time and how it can be organized to support greater learning opportunities for students. A main focus for both students and teachers is having the flexibility in a day, week, month, or year to explore options.

Who Else Is Involved In The Changes Besides The Students And Teachers?

Anyone who is affected by a change in the structure of the curriculum, schedule, or facilities should be part of the process of change. Because of the possible implications of schedule changes, it is crucial that each group be represented with a real voice in the discussions and proposals. Comments from members of the community reflect their willingness to participate in the change process. Collaborative planning among the faculty, staff, and students about the effective use of time to support learning should prove to be a valuable investment.

An administrator's view:

In the past, changes were in response to an immediate situation that needed "fixing." They represented the "Band-Aid" approach. Adjustments were made to the daily schedule by running the buses in two tiers. We had a video broadcast of a physics class, because we couldn't hire a teacher. This past year we used five days for professional development even though there were complaints that we deprived the students of five days of instruction. Several elementary teachers tried a team approach a few years ago. When construction of the new school was behind schedule, we had to initiate double sessions at the other building. Because these changes were perceived as temporary or stopgap measures, long term implications were not studied. They were put in place just long enough to alleviate a short-term problem until we could return to the regular schedule, or they were isolated attempts at using innovative instructional strategies. Now we know that, because of KERA, there is no more "regular schedule." We are forced to thoroughly examine the entire educational process and redesign our way of thinking.

An early determination of the extent of the changes is also important. Long-range plans may call for an extensive overhaul of the entire system, but short-term plans may be developed to ease the transition. For example, if the upper grades' schedule is redesigned to meet the curricular needs of the students, does the middle school have to change also? Does a change in the middle school have an impact on its feeder elementary schools?

Another aspect of changing school time to meet the students' curricular needs is identifying resources in the community which can extend the learning opportunities beyond the classroom. The following are possibilities:

Sources of Help	Might Provide
Service Organizations	Mentors
	Scholarships
	Project Assistants
Health-Related Agencies	Technical Information
	Stress Management Techniques
	Training
Environmental/Natural Resources	On-site Projects
Governmental Agencies	Network Connections
	Information Distribution
	Legal Implications
Business Personnel	Management Training
	Classroom Collaboration

Comments from the community:

"If we are going to be expected to support a new view of what our school looks like, we want to help shape that look."

Parents

"We have a lot to offer in providing real-life experiences through service learning, mentoring, and apprenticeships."

Community Leaders

As schools, businesses, and other members of communities form true partnerships, students will have many more experiences that are relevant to their lives. Extensive use of technology, field studies, and apprenticeship programs are just three examples of school-related experiences that go beyond the limitations of the building and traditional time structure. Schools implementing service learning may depend on members of the community to schedule students for projects, and schools which have opened facilities, such as the library or media center for community use during the summer, may require the assistance of community volunteers to support the additional staffing needs.

When should the change take place?

Careful consideration should be given to an implementation time line. Moving too quickly raises the level of frustration for all involved; however, moving too slowly may be ineffective. The key is to determine the urgency of the situation. Some changes need to be made quickly, others do not. Time should be allowed for all involved to study, raise awareness, convince others, identify potential barriers, and establish process protocols. Also, a balance should be maintained between studying changes and implementing them.

Models

The following pages offer ten examples of schools that altered the way time is used. The examples consider the degree to which the curriculum is affected and/or the extent of change on other elements of the system. The models are presented as a range of options reflecting reorganization of school time. Only one of the schools is specifically named; other options represent either a single school or a combination of schools where changes were made in using school time to support students' experiences.

Adjusting Other Elements To Students' Curricular Needs

The first two models are situations related to transportation schedules that affect students' academic performances. Both schools are elementary level, but the same dilemmas are faced by middle and high schools. Teachers in these schools were already doing interdisciplinary units, collaborative grouping of students, and hands-on activities; they had identified a need to "find" more instructional time. The second model provides an entire day for professional development, something that had not been previously available.

1. Staggered Instructional Schedule

Original Situation

Students are spending a considerable amount of non-instructional time in school because of a rigid transportation schedule and a limited number of buses. The student population is increasing, but monies are unavailable for purchasing additional buses.

"We were expending a lot of our resources providing care for students who came to school early or stayed late. It seemed like we were wasting valuable time that we could put to better use." -

Principal

"Coming to school so early and waiting drained students' energy. They weren't performing at the level which we felt they should." - **Teacher**

"I don't have anything to do before school starts. It's kind of hard to study in the hallway." -

Student

Changed Situation

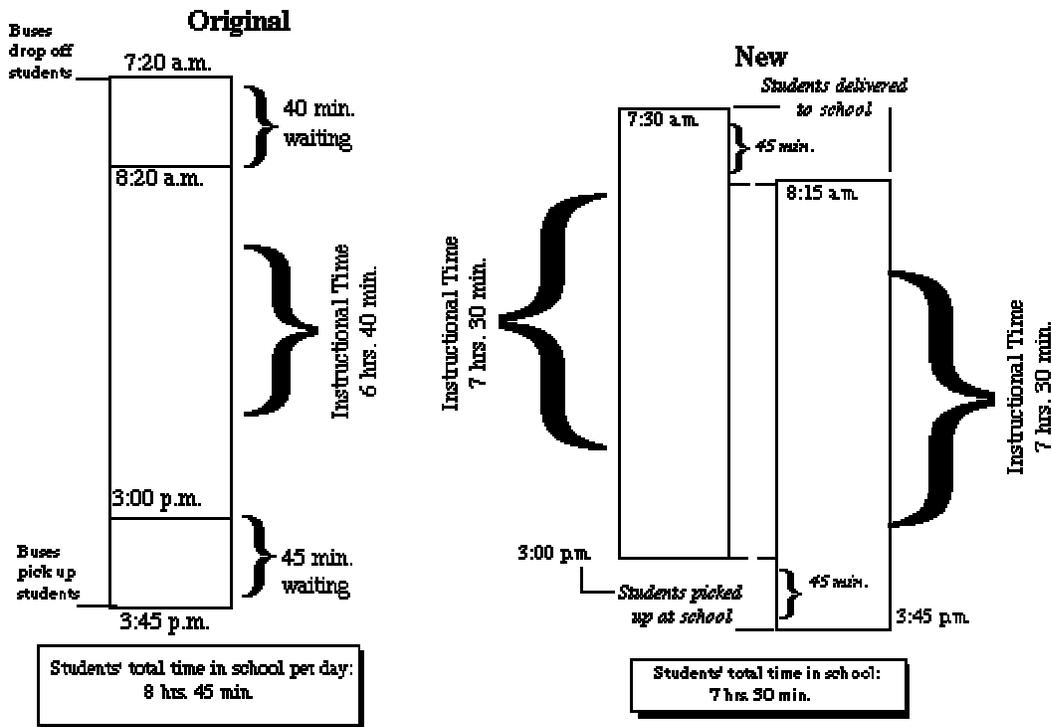
Rearrange the instructional time into two shifts with buses running in two tiers. Students arrive and depart from the school campus at two different times. Teachers helped design and implement the necessary instructional changes as a result of the staggered schedule.

Implementation

By staggering the times when classes begin, the time students are spending on campus is more effectively utilized. Rather than wait at the building for 40 minutes in the morning and 45 minutes in the afternoon, students' transportation time is closer to their class schedules. Teachers are given opportunities to choose between the two schedules.

Benefits

- Increased usable class time
- Flexible opportunities for teachers



2. Common Planning Time: 4+1

Original Situation

Instruction is limited to the hours between 8:20 a.m. and 3:00 p.m. even though the bus brings all students an hour before and picks them up an hour after the traditional school day.

"There are too many opportunities for my son to get into trouble while he's waiting for school to start." - **Parent**

"We need more time with our students and with our colleagues." - **Teacher**

"We want to be more responsive to their requests, but we can't change the bus schedule." - **Board Member**

Changed Situation

Synchronize instruction with the bus schedule for four (4) days. The accumulated time can be used for such activities as professional development, tutoring, enrichment, and parent conferences on the fifth day.

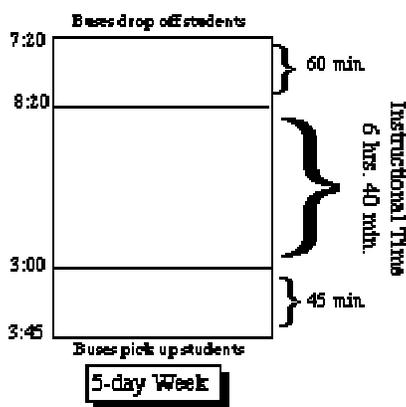
Implementation

The schedule is rearranged so that classes begin at 7:30 a.m. and end at 3:45 p.m., Monday through Thursday. The staff uses the additional 105 minutes each day for instruction, lengthening each class and developing richer learning experiences for the students. Attendance on Friday is optional for the students; however, volunteers and aides provide activities, additional academic help, and computer instruction for the students who attend. Staff attendance is mandatory, and teachers use the day for planning and professional development.

Original Schedule (7:20 a.m. - 3:45 p.m.)

Instructional Time 8:20 - 3:00 (5 days)

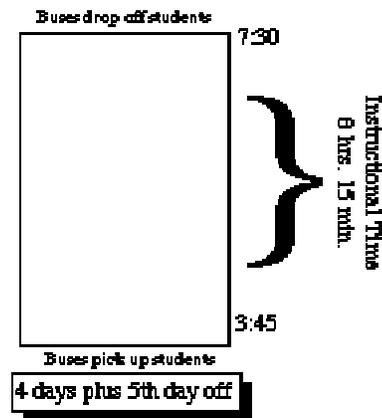
- Class time per day = 6 h 40 m
per 5-day week = 33 h 20 m
- After- and before-bus time per day = 1h 45 m
per 5-day week = 8 h 45 m
Total time per day at school = 8 h 25 m



New Schedule (7:30 a.m. - 3:45 p.m.)

Instructional Time 7:30 - 3:45 (4 days)

- Class time per day = 8 h 15 m
per 4-day week = 33 h
- After- and before-bus time per day = 0
Supplemental time for students = 8 h 15 m
- Supplemental time for teachers = 8 h 15 m



Implementation of this model in Kentucky would require an exemption from the current statute requiring "a minimum of 6 hours per day of actual school work." (KRS 158.060)

Benefits

- Longer periods of time engaged in educational activities
- Additional time for team building
- Collaborative teaching opportunities
- Enrichment opportunities for all students
- Additional support for thematic teaching through related Friday activities
- Real opportunities for staff dialogue, both internally and with the community

Block Scheduling

Time blocks have been devised to allow more flexible daily scheduling or to use a week as the basic unit of school time instead of a day. The examples include (#3) a high school which was incorporating service learning and needed more time for collaborative planning among teachers; (# 4) a schedule showing a block of time completely isolated from the rest of the school schedule but within which three courses were integrated; (# 5) and (# 6), schedules which show fewer but longer class periods in the course of a day with a midday block set aside for guidance or independent study; and (# 7) a model showing the implementation of flexible grouping within a reorganized time schedule.

3. Professional Development/Planning Time Block

Original Situation

Administrators and teachers are locked into the concept of a 5-day week, with each day composed of 6, 55-minute time blocks of instruction with no common time for professional development.

"Why don't we share our successes with each other? I would imagine some really good ideas are in use here...but who has time to listen?" - Teacher

"How can I take local businesses and the university up on their generous offers to collaborate, when we don't have the time to sit down and talk with them, much less work in any meaningful way with them?" - Principal

"If every minute of every day is managed for me, how am I supposed to be an independent learner?" - Student

Changed Situation

Lengthen each class period and transfer the accumulated time to a half-day block each week for professional development. Students participate in activities such as research and field studies, tutoring, or service learning during that time.

Implementation

Fifteen additional minutes are added to each morning class four days a week. The "collected minutes" are used on Wednesday mornings by students to fulfill community service, finish homework, attend college courses, or tutor, and their participation is recorded and evaluated as part of a program of electives. Teachers use the time on such activities as developing integrated projects, writing grants, or working collaboratively with education specialists from a nearby university.

The Wednesday morning sessions afford teachers time to develop a partnership with a local university providing them with best-practice ideas. After a half-hour general session, all faculty members attend departmental meetings to interpret assessment results, discuss best practices and research, and share videotapes of their attempts to teach new material.

The second half of the morning is spent in mixed-interest groups that discuss successes with cooperative learning, performance events, discipline, student motivation, and time management. Visitors are encouraged to visit the school on this day to listen to the discussions.

Benefits

- Increased amounts of time for teacher communication
- Higher levels of timely and relevant professional development, e.g., teachers learn how to ask better questions, research their work, write articles about their successes, and develop grants
- Increased time for help in the classroom from the university, community, and businesses

- Additional time for students to participate in field studies, service learning, and independent study

Original						New						
	M	T	W	T	F		M	T	W	T	F	
1						1						
2						2						
3						3						
L	U	N	C	H		L	U	N	C	H		
4						4						
5						5						
6						6						

Service Learning/
Professional Development

Implementation of this model in Kentucky would require an exemption from the current statute requiring "a minimum of 6 hours per day of actual school work." (KRS 158.060)

4. Three Courses Integrated in One Time-Block

Original Situation

The rigid scheduling of blocks of time for separate subjects is a hindrance to students making connections among courses such as English, Physics, and Algebra.

"When students finish high school, they should be able to make connections among their responsibilities. Being problem-solvers is crucial in today's society." - **Business owner**

"How do we organize a class to help students make connections among different subjects?" - **Teacher**

"Why is it that everything seems separate when you come to school? The real world isn't like that." - **Student**

Changed Situation

Permit three subjects to be taught within a three-hour block as one interdisciplinary course. It offers one configuration of an opportunity to make connections among these three subjects. A considerable amount of flexibility within that three-hour block is encouraged and supported by the principal.

Implementation

This model is a team-taught class of Algebra II, Physics, and English III. It consists of a group of juniors who are scheduled for a three-class period of time with three teachers. The program lends itself to flextime for each content area, integration of the content areas, and students using community resources without missing time in other classes. High expectations are set, and students are expected to be more responsible for their own learning. The teachers plan on Monday after school, and their instructional week runs from Wednesday through Tuesday. No two days of classes are exactly alike.

The teachers felt that the students needed a better understanding of their personal learning styles in order to make stronger connections, so a two-week study and analysis of students' mindstyles preceded the first projects. Periodically reviewing and updating their information

enables the students to apply their understanding of metacognition to their projects and make better use of their own personal time.

While this solution at a specific school is identified for Algebra, Physics, and English, it would be applicable to a variety of course combinations or blocks of time. Typical activities are project-based; utilize thematic instruction; are collaborative; focus on making connections among fields; and include journal writing, video taping, and field work.

Sample of one day's schedule:

	Algebra	Physics	English	
8:30- 9:35 a.m.	Group A		Group B	When teachers are not directly involved in instruction, they are working with small groups or individual students.
9:35-10:25 a.m.	Group B		Group A	
10:25-11:10 a.m.		All		

Benefits

- Increased flexibility within multi-hour block to meet curricular needs as students' projects change
- Increased time to develop outreach projects to the community
- Increased time for students to work together on group projects
- Additional opportunities for teachers to implement integrated studies

5. Block Schedule - Credits and Guidance

Original Situation

Traditional credentialing systems assign credits based on the amount of time students spend in a particular course. Daily schedules of five or six class periods repeated over a 180-day year generally reflect those requirements.

*"I felt like we were following our old schedule for no other reason than it had always been done that way. It didn't really meet our needs or our students' needs." - **Teacher***
*"Students brought so many problems to school that were not related to academics but had an impact on their work." - **Counselor***
*"I need more help with my work. It just takes me longer to get it done." - **Student***

Changed Situation

Build blocks of time into the schedule to accommodate the needs of a widely diverse student population in addition to meeting the students' instructional needs. Time is included to assist all who need help developing skills in conflict resolution, understanding and managing their emotions, and socializing postures.

Implementation

Blocks 1, 2, 3, and 4 are academic blocks of 80 minutes each. Students attend classes which meet for one semester during these blocks and schedule new classes for the second semester. This meets the requirements of assigning credits for particular courses.

Two lunch periods and a teacher-assisted guidance period are scheduled during the middle of the day. Year-long classes, such as band and newspaper, are scheduled to meet during the lunch/guidance period.

Benefits

- Fewer preparations for teachers
- Fewer interruptions of the learning process
- Longer periods of class time for deeper investigations into subject material
- More time to address affective needs of students

1 Academic		7:50 a.m. 9:10 a.m.
2 Academic		10:30 a.m.
Lunch	Guidance	11:50 a.m.
Guidance	Lunch	
3 Academic		1:10 p.m.
4 Academic		2:30 p.m.

6. Block Schedule - Topics and Membership

Original Situation

A rigid, student-grouping schedule restricts students from participating in a variety of groups for instruction and projects.

"Kids are stimulated by interaction, relevance, and membership. They are expected to learn new skills while there are other demands on their attention. Kids need specific attention and opportunities to learn, relearn, and make connections." - Teacher

"We needed a way to facilitate thematic learning that didn't get sloppy when implemented. We also needed to be able to talk to each other about kids' learning. This schedule did both." - Teacher

		<i>Changed Situation</i>	
Homeroom & TV News	15 min.	Arrange blocks of time around student needs, add flexible groupings, and allow for greater implementation of individualized instruction and curriculum. Groups are determined by student interest in topics and by teacher-assigned membership.	
Special Program / Activity Period	30 min.		
* 1 □ 2 △ 3 ○ 4	90 min.	<i>Implementation</i>	
* 2 □ 3 △ 4 ○ 1	60 min.	Students are assigned to a variety of teams and have various memberships based on the way the faculty has decided to use time and redesign the curriculum for maximum student learning. For example, in the first quarter, a student is assigned membership in a variety of teams. These teams represent different thematic, subject, and project groups that allow the student to interact with others. This provides exposure to different applications for core subjects, and offers ample opportunities to reinforce basic concepts. Teachers' planning periods are arranged so that additional time is available for collaboration as well as individual planning. The chart shows the arrangement of teams and teachers for one day. On another day of the week, the schedule is designed to allow a large-group meeting of students and a common planning time for the teachers.	
Lunch and Enrichment	90 min.		
* 3 □ 4 △ 1 ○ 2	60 min.		
* 4 □ 1 △ 2 ○ 3	60 min.		
Dismissal	15 min.		
* □ △ ○	Represents various groups of students	1, 2, 3, 4	Represents four different teachers

Benefits

- Additional time for teacher planning
- Continuous teacher dialogue; ability to edit curriculum daily
- Increased time for teachers to follow-up student work
- Increased time for collaborative planning

7. Block Schedule - Independent Student Time

Original Situation

Students move from one class to another every 45 to 55 minutes. This arrangement often limits the time for students to engage in extended discussions, interact with teachers, pursue field studies, tutor, or engage in community exchange projects.

*"Classes are boring. All we do is sit there and listen to the teachers talk for 40 minutes. The bell rings, and we move to the next room to do it all over again." - **Student***

*"I know that sometimes the way we control the student learning experience is stifling, but how do we manage new practices, allow kids to become responsible, and still maintain safety and standards to keep up our strong reputation?" - **Principal***

Changed Situation

Create fewer, but longer, class blocks devoted to teaching and self-directed learning. Flexible time scheduled in the middle of the day gives students opportunities to manage their own time and teachers the opportunity to pay serious attention to their professional development needs.

Implementation

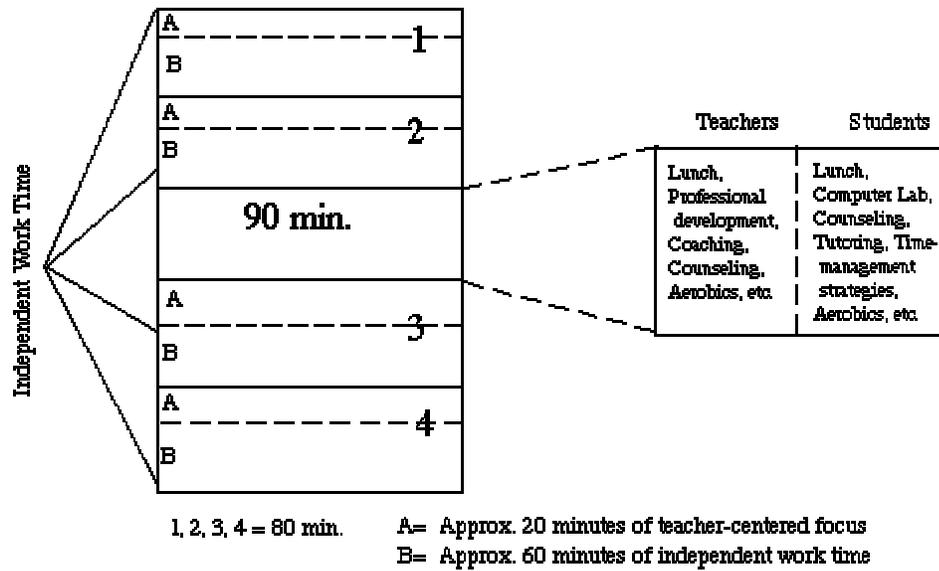
The schedule provides four blocks of 80-minutes each. The time centered on the teacher may be no more than 20 minutes, followed by time for students to do such things as independent research, group activity, or problem solving. As a result, the teacher is now able to facilitate learning, interact with students, or develop alternative lesson plans based on student reaction or interest. Interruptions are discouraged during this time.

A 90-minute block of time in the middle of the day includes lunch and the opportunity for students to learn from a variety of nontraditional offerings such as personal discipline and time management. For some students, options include additional study, tutoring, counseling, parent-approved appointments, and structured athletic activities. Other choices include access to computers, department advisors, and counselors who help with career information, scheduling, and personal guidance.

After lunch, students who need extra academic help are scheduled for appointments with teachers who not only tutor, but also assist students in becoming more independent and successful learners. Teachers rotate their flexible schedule so they have at least two, 90-minute sessions of professional development each week.

Benefits

- Entire school offers more time-related opportunities for the students' best performances
- Improved staff collaboration
- Additional hours of professional development per month (not including an 80-minute planning period every other day)
- More time for better communication among staff, parents, and community and business leaders.



Classical Curriculum and Macroclasses

The next two models have some of the appearances of schools with more traditional class periods or time blocks; however, their approaches to curriculum are quite different. One school (# 8) schedules time to include a program of service learning for students and parent involvement. The other school (# 9) has extended its day to include both an activity/sports block and a nontraditional curriculum.

8. Paideia - A Classical School

Original Situation

Community members, parents, and school officials are faced with general criticisms about curriculum and the use of time to support it. Demands are being made to restructure both the curriculum and the daily schedule in order to raise student performances.

"We're faced with such diversity. How can we offer equity?" – **Principal**

"My kids need to feel a connection to their community." – **Parent**

"it seems like we never have time to do the neat stuff." – **Student**

Changed Situation

Create a rigorous, classical curriculum based on the teachings of Mortimer Adler and focus on models of citizenship in a democratic society. Include concepts such as a strong, single-track curriculum; multiple styles of teaching; and citizenship studies. The basic unit of the schedule becomes the week rather than the day, with classes meeting on a rotating schedule each week. One hundred hours of service learning is required of older students, and time is built into the weekly schedule to accommodate their projects. Helping in the school is part of the parental participation in the curriculum.

Implementation

Besides the courses offered as the general curriculum, Socratic seminars are held for 80 minutes, one day each week and involve the entire school. All students work in groups on the same topic or lesson. Instructional styles include seminars and instructional coaching by all teachers and the principal.

Benefits

- More opportunities for academic equity for students
- Stronger connections between students and community
- Increased parental awareness and support
- Greater personal responsibility for civic issues and decisions among students
- Increased responsiveness to individual student needs

M T W T F

Classes begin at 9:00 a.m.

1 9:40	7	6	4	2
C & C	C & C	7	C & C	3
10:00		10:25		10:25
2	1	C & C	6 Forum	Forum
11:08		10:50		10:50
		Seminar		4
3	4		7	
12:15				
5	5	5	5	5
1:35				
4	2	1	3	6
2:20				
6	3	2	1	7
3:45				

C & C = Conference and Conversation. C & C leaders are advisors to students in C & C groups. Important information is disseminated and attendance is taken. C & C groups perform community service projects and plan other activities.

Forum = Extended time for C & C groups to discuss current issues and events.

Seminar = Weekly discussions of literature or art. All students participate.

Numbers represent specific classes, held in rotation.

9. Copernican Plan

Original Situation

High school students change location, subjects, and activities seven to nine times each day to provide a broad range of subjects for study. Concerns focus on "covering" a variety of subjects. The unit of time is the day; students repeat a daily schedule with little variation over the course of a year.

"In high school, credit is dispensed in Carnegie units, the product of a 70-year-old system that equates learning with time in class. The curriculum is designed to 'cover' subjects. Those who glean well receive "A's", those who don't, get lower grades, but everyone gets the same number of credits, except for those who absolutely fail." - Principal

"We never get to consider complex issues in these classes. It's a joke, sometimes. We cover topics like arms control, environmental pollution, and ethics in 55-minute blocks each, if at all." - Student

Changed Situation

Concentrate on one or two subjects in an extended macroclass. Students are able to spend longer amounts of time deepening their understanding of fewer topics at one time, but still experience the range of subjects over the same span of time. The unit of time is the year rather than the day. By the end of the credentialing period, an equal amount of time has been devoted to each subject. In an alternative credentialing system, more time is available for performance evaluations.

Implementation

The Copernican Plan proposes two possible schedules. In the first schedule, students enroll in only one, four-hour class each day for a period of 30 days. Each student enrolls in six classes each year which fulfills the present requirement of attendance. In the second alternative, the students enroll in two, two-hour classes for 60 days.

Teachers prepare for and teach only one or two classes at a time, three or six times a year. This enables a greater degree of individualized instruction. The average class size is reduced, as a result, by about 20%. Responsive grouping and innovative teaching are used, and lecture time is kept to a minimum. A teacher's daily student load drops more than 60% with more time left for research, class preparation, collaboration, and opportunity to address complex issues.

Flexibility in this plan allows students who wish more prestigious and demanding academic diplomas to earn additional credits. The plan includes five descriptive diplomas - Academic Honors, Academic, Occupational Honors, Standard, and Completion.

Schedule A	Schedule B
7:46 a.m.	Macroclass I (110 min.) for 60 days
Macroclass (226 min.) for 30 days	Passing (6 min.)
	Macroclass II (110 min.) for 60 days
Passing (6 min.)	
First lunch (35 min.)	Seminar II/Music/Physical Ed (70 min.)
Seminar II/Music/Physical Ed (70 min.)	Second lunch (35 min.)
Passing (6 min.)	
Planning/Conferencing/Physical Ed/Music (70 min.)	
2:45 p.m.	Departure (6 min.)
Activities/ Sports (135 min.)	
5:00 p.m.	

Benefits

- Small-group instruction supported
- Smaller class size
- More time for complex issues
- More time for extended activities
- Less preparation time needed by teachers
- 20% more sections offered with the same number of teachers
- 20% increase in school time devoted to subject material

Year-Round Schooling

The final model compares a traditional calendar of a school year to one which can be implemented year-round. Variations of year-round schooling are becoming more common across the country as more people are influenced by industry and technology rather than agriculture.

10. Year-Round

Original Situation

The agrarian model of three consecutive months of vacation and nine consecutive months of school persists as the single standard for most of public education. Much time is spent in recovery and remediation following a three-month break from school.

"We'd like to deepen our students' experiences with their subjects, but we're limited to 9-week quarters." - **Teacher**

"By the eighth week of summer vacation my son is ready to climb the walls. He's gotten away from using the skills he's learned and will have to relearn them, and tutors are expensive" -

Parent

"After 21 weeks of school my teachers are crispy they're so burned out." - **Principal**

Changed Situation

Punctuate year-round schooling by three vacation breaks. This schedule would mean less time between instructional periods, more opportunities for students to benefit from consistent contact with teachers, and better use of the school facilities.

Implementation

Chart A shows a traditional school year beginning in September with 36 weeks of instruction followed by 12 consecutive weeks of vacation. Scattered among the instructional time are four additional weeks of vacation centered around holidays. This arrangement was devised to accommodate a large rural population that spent considerable time planting, tending, and harvesting crops.

- 52 weeks
- 12 summer
- 2 winter
- 1 spring
- 1 misc.

36 weeks of instruction

Chart A

SEPT ☐	JAN ☐	MAY ☐
OCT	FEB ☐	JUNE
NOV ☐	MAR	JUL
DEC	APR	AUG

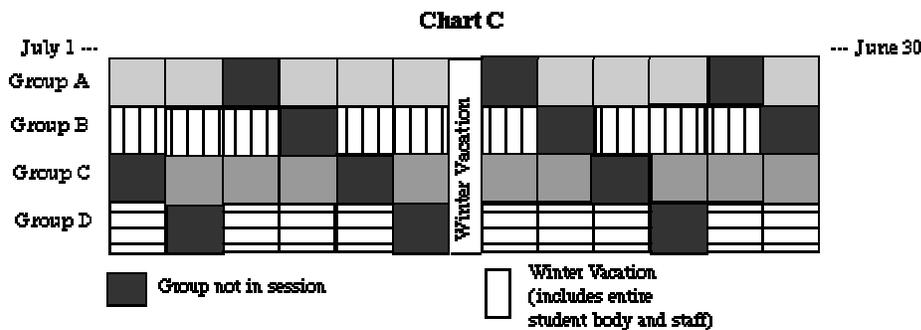
Chart B shows the organization of time for a school year that might begin in January. Each instructional period is 12 weeks long and can be arranged internally to suit the curriculum needs of the specific student population.

1	5	9
2	6	10
3	7	11
4	8	12

52 weeks
 -12 vacation weeks
 40
 -4 weeks flexible
 36 weeks of instruction
 Each box represents one month.

The total instructional time is 36 weeks with 12 weeks of vacation. The first of three, four-week vacations begins in April, followed by subsequent vacations in August and December. The four remaining weeks of the year can provide additional instructional time or can be flexible vacation time scattered throughout the instructional periods.

Chart C represents a school year that could begin in any month and has several groups of students whose curricula are similar. This organization differs from "tracking" in that it more closely resembles the concept of "schools within schools." It is especially appropriate for high schools with a large student population. With four groups within a school, at any one time 25% of the students are not attending school because of the rotating vacation schedule. The basic design resembles that of Chart B. For each group, there are 12 weeks of instruction followed by four weeks of vacation in each of three cycles. The remaining four weeks of vacation may be used for additional instruction or scattered throughout for the observance of holidays.



Adapted from "Rethinking the School Calendar" by Charles Ballinger, *Educational Leadership* February 1988: 59.

Benefits

- Less time spent on remediation for students
- Less need to tutor students during summer vacation
- Less burn-out for both student and teacher
- More extensive use of school facilities for both academic and community purposes
- More opportunities for teachers to attend non-summer conferences and workshops

Summary and Resources

The main reason for considering or implementing changes in daily schedules or yearly calendars is to expand the opportunities for student learning. The curriculum, what the student experiences, is the design for that learning. It should be the focus of the entire education system, and other components should be arranged to support it.

Rearranging instructional time to meet students' needs may involve limited or extensive changes; however, innovative programs have been implemented without any changes in the schedule, and altering the schedule does not guarantee successful learning. Other opportunities, such as distance learning, telecommunications networks, and field studies can extend learning beyond the four walls of the classroom and the daily routine of the class schedule.

There are many options for the organization of time, and each school has unique features that will influence the eventual design. Schools have access to different resources and will encounter different obstacles when implementing adjusted schedules. As schools examine their curricular needs for students to achieve the academic expectations, resources to implement the changes are critical.

The following schools have reorganized time to some degree to be more responsive to student needs. The list is not comprehensive but is intended as a starting point when seeking ideas. The schools are presented as elementary, middle, high school, or those which have a combination of grade levels.

Elementary Schools

Piner Elementary School (Kenton County) Rt. 1 Morning View, KY 41063	James Spaw, Principal (606) 356-2155
Mannsville Elementary (Taylor County) P O Box 178 Mannsville, KY 42758	Norman Feese, Principal (502) 465-8410

Middle Schools

Calloway County M S (Calloway County) 2108A College Farm Road Murray, KY 42071	Marilyn Willis, Principal (502) 753-4182
Murray Middle School (Murray Ind. District) 801 Main Street Murray, KY 42071	Pat Seiber, Principal (502) 753-5125

High Schools

Scott High School (Kenton County) Old Taylor Mill Road Covington, KY 41015	Robert Konerman, Principal (606) 356-3146
Western High School (Jefferson County) 2501 Rockford Lane Louisville, KY 40216	Lucian Yates, III, Principal (502) 473-8344
Greenwood High School (Warren County) 5056 Scottsville Road Bowling Green, KY 42104	Peggy Cowles, Principal (502) 842-3627

Fulton County High School (Fulton County) Rt 4 Hickman, KY 42050 Larry Gardner, Principal
(502) 236-3904
Fairdale High School (Jefferson County) 1001 Fairdale Road Fairdale, KY 40118 Marilyn Hohmann, Principal
(502) 473-8248

Combinations Across Grade Levels

Laboratory School University of Colorado 2314 Sue Swain, Principal
45th Avenue (303) 351-2321
Greeley, CO 80634
Chattanooga School for the Arts and Sciences William Kennedy, Principal
(Paideia) (615) 757-5495
865 East Third Street Chattanooga, TN 37403

Local Curriculum Development Guide

Introduction

The real curriculum is the one the student experiences. It is the result of the activities, processes, and arrangements designed to provide learning opportunities to educate the student.

The ultimate goal of the Kentucky Education Reform Act (KERA) is to prepare students to be successful in tomorrow's world. Policies, priorities, and practices must be redirected, redefined, and restructured to create conditions which allow for the success of all students. The learning environment must be transformed through a standards-based design that focuses on student competence. The curriculum must stretch the students' thinking; expand experiences beyond the classroom walls; reflect the use of appropriate instructional materials and strategies; and prepare students to live, learn, and work together to achieve common goals in a culturally diverse world. This transformation can only be achieved through a continual, well-designed curriculum development process that is collegial in nature; reflects the interrelationship of curriculum, instruction, and assessment; and continually realigns curriculum to the academic expectations. The most effective curriculum is developed by local teachers who have a strong knowledge base; an understanding of the developmental stages of student learning; and the ability to combine both into a relevant, stimulating instructional program. And, the most effective curriculum policies are developed by school councils or committees composed of parents, teachers, and administrators who are closest to the curriculum issues of each school.

The designing of curriculum should involve a thoughtful process which encourages questioning, rethinking, and revisiting. This section of the framework offers one approach to curriculum development. The guide suggests procedures which local school districts, schools, and school councils can use in designing their curricula, but the process is not intended to be prescriptive nor exclusive.

Commitment

While teachers are central to the curriculum development process, they are not solely responsible. If the instructional program is to be comprehensive and effectively implemented, local district and school personnel, and community members need to fully commit to the curriculum design process.

- **School board members** identify curriculum improvement as a major emphasis for the district. As community representatives, they must be strong advocates of curriculum transformation and publicly support strong, standards-based, instructional programs.
- **Superintendents** provide vision and establish a support system that promotes risk taking. They must believe and communicate to the entire community that the instructional program is the top priority. Additionally, financial and human resources necessary to facilitate the development of quality curriculum must be provided.

- **Curriculum coordinators** at the district or school level provide leadership in planning and coordinating the curriculum effort. Curriculum, instruction, and assessment need to be viewed as the focal point of their responsibilities.
- **Principals** must play a key role in the development process as the instructional leaders in their schools. As advocates for change, they study research-based instructional issues, remain current on educational thought, and encourage active research in their schools. As enablers, they nurture the creative spirit of the teachers and support risk taking. As facilitators, they provide effective professional development opportunities, encourage teachers to be innovators, and allocate time and resources for curriculum development activities.
- **School councils** play the critical role in establishing policy which addresses the development of quality, standards-based curricula and the selection of appropriate resources, including instructional materials and textbooks, used at the school.
- **Teachers** who are progressive thinkers, collaborative workers, and risk takers must be active in redesigning the curriculum around significant academic expectations. Because they can be effective change agents, as well as curriculum writers, they are central to the development process.
- **Parents/community representatives** are invaluable resources as advisors and should be viewed as cooperative partners in the curriculum design process. Their insight into student and community needs complements district personnel as a balanced, focused curriculum is developed.
- **Students** are central in identifying the focal point (major questions and issues) of instruction, assisting with the design of culminating performances, and becoming critically involved in their own learning.

Procedural Overview

The procedural overview presents a basic checklist for the development process which is the combined responsibility of both the school district and school personnel. The procedure for curriculum design as detailed in this section addresses four assumptions: collaboration through committees/teams, change driven by a shared vision, comprehensive planning, and capacity building as a component of success.

I. Collaborative structure creates the conditions under which the process is legitimized and the product is validated.

- A. Establish district curriculum/assessment committee.
- B. Establish parameter development teams.
- C. Establish instructional unit development teams.
- D. Provide group process training to district/school personnel.

II. Fundamental change is driven by a shared vision.

- A. Analyze Kentucky's learning goals and academic expectations and internalize the basic premises.
- B. Develop a mission and philosophy for both the district and school which reflect the basic tenets of KERA.

III. Comprehensive plans lead to success.

- A. Determine basic issues of development responsibilities.
- B. Develop action plan for curriculum development.
- C. Establish guiding principles for instructional program.
- D. Determine curricular parameters of learning.
- E. Design instructional units.

IV. Successful implementation requires capacity building.

- A. Provide comprehensive professional development opportunities for all district/school personnel.
- B. Establish effective networking systems.
- C. Develop and implement an on-going, systematic process for evaluating progress in a results-oriented manner.

This procedural overview can serve as a reference for curriculum designers as they work through the Local Curriculum Development Guide section. Each component will be treated separately on the following pages.

I. Collaborative structure creates the conditions under which the process is legitimized and the product is validated.

- A. Establish district curriculum/assessment committee.
- B. Establish parameter developed teams.
- C. Establish instructional unit development teams.

Creating Conditions for Collaboration Committee/Team Structure

The structure of **this model is a collaborative design between the district and school** and indicates the support necessary for school improvement through curriculum planning. However, the school is and must remain the central focus for curriculum development. In some districts, the decision may be made for the schools to address the responsibilities designated as both "district" and "school." Where school-based councils exist, the councils may independently develop curriculum policies and curriculum, or they may choose to work cooperatively with central office. Regardless of where the teams are based, success depends upon the degree of understanding and ownership in the process experienced by each member.

Key Attributes

There are certain attributes each district/school will expect the committee/team members to possess which enable them to function effectively and with vision.

- Believe all students to be successful.
- Seek consensus rather than compromise.
- View curriculum development as a continuous process.
- Are knowledgeable of research-based educational issues.
- Possess working knowledge of Kentucky's Learning Goals and Academic Expectations.
- Apply group processing skills.

District Curriculum/Assessment Committee

The **District Curriculum/Assessment Committee** is a standing committee with a broad representation of teachers as well as administrators and support personnel. The DCAC establishes general guidelines for all aspects of the instructional program.

Guiding Questions

- What do we believe?
- What do we know?
- What do we want?
- What will we do?

Suggested Membership

While each district/school may want to expand the membership of the committees and teams, generally the composition would reflect the following:

- District Curriculum Coordinator
- Teachers
- Parents/Community Representatives
- Principal(s)
- Library/Media Specialists
- Student(s)

Key Responsibility

- Establishes Guidelines

Key Attributes

- Perceive curriculum, supervision, and staff development as interconnected entities necessary to implement the vision.
- Emphasize teacher ownership of curriculum planning.
- Recognize the importance of future needs, challenges, and trends as a dimension of curriculum development.

Parameter Development Teams

Parameter Development Teams function primarily through the development process. Their major responsibility is to determine district or school parameters which focus the design and delivery of curriculum and instruction.

<p>Guiding Questions</p> <ul style="list-style-type: none"> ▪ What do we want students to know and be able to do at appropriate levels? ▪ How do we reflect national standards? ▪ How do students demonstrate broad areas of learning? ▪ What are the available district support systems? 	<p>Suggested Membership</p> <p>While each district/school may want to expand the membership of the committees and teams, generally the composition would reflect the following:</p> <ul style="list-style-type: none"> ▪ District Curriculum Coordinator ▪ Teachers ▪ School Council Representatives ▪ Library/Media Specialist
<p>Key Responsibility</p> <ul style="list-style-type: none"> ▪ Determines Parameters 	
<p>Key Attributes</p> <ul style="list-style-type: none"> ▪ Perceive curriculum, supervision, and staff development as interconnected entities necessary to implement the vision. ▪ Emphasize teacher ownership of curriculum planning. ▪ Recognize the importance of future needs, challenges, and trends as a dimension of curriculum development. 	

Instructional Unit Development Teams

Instructional Unit Development Teams may or may not be considered standing teams at the school level. The role of the IUdT is to design instructional units within the district or school parameters.

<p>Guiding Questions</p> <ul style="list-style-type: none"> ▪ What is the curriculum structure? ▪ How do we determine the focus of an instructional unit? ▪ What content, themes, curricular approaches are to be used? ▪ How does a unit reflect multiple academic expectations? ▪ How can we involve students in the design? ▪ How do we align instruction with assessment? ▪ How do students demonstrate learning? ▪ How do we organize to complete this task? ▪ What are the available resources? 	<p>Suggested Membership</p> <p>While each district/school may want to expand the membership of the committees and teams, generally the composition would reflect the following:</p> <ul style="list-style-type: none"> ▪ School Council Representatives ▪ Teachers ▪ Library/Media Specialists ▪ Student(s)
	<p>Key Responsibility</p> <ul style="list-style-type: none"> ▪ Develops Instructional/Assessment units
<p>Key Attributes</p> <ul style="list-style-type: none"> ▪ Are knowledgeable of state and national education movements. ▪ Recognize and value the interrelationship and importance of all disciplines, but specialize in an identified content area. ▪ Identify essential learning and discriminate between critical and noncritical knowledge. ▪ Are knowledgeable of developmental needs of students. ▪ Demonstrate a positive knowledge of various instructional strategies. ▪ Possess the ability to create and synthesize. 	

	District Curriculum/ Assessment Committee	Parameter Development Teams	Instructional Unit Development Teams
Committee Responsibilities (These correspond with Procedural Overview)			
Establish and coordinate parameter and instructional unit development teams. (IB) (1.C)	x		
Provide group process training to district/school personnel. (ID)	x		
Analyze Kentucky's learning goals and academic expectations and internalize the basic premises. (IIA)	x	x	x
Develop a mission and philosophy which reflect the tenets of KERA. (II.B)	x		
Determine basic issues of development responsibilities. (IIIA)	x		
Develop action plan for curriculum development. (IIIB)	x		
Establish guiding principles for instructional programs. (IIIC)	x		
Establish and communicate the steps, stages, and/or functions of curriculum process (curriculum model).	x		
Address ongoing issues of curriculum development and instruction.		x	
Determine curricular parameters of learning. (IIID)		x	
-Establish the essential results (demonstrators) for students at each level or course.		x	
-Establish skill expectations to be demonstrated at various levels.		x	
-Develop critical knowledge for various levels.		x	
-Determine culminating performance expectations and develop performance assessments at various levels.			x
Design instructional units. (IIIE)			x
-Determine the curriculum structure for organizing content.			x
-Establish major focus of unit.			x
-Establish culminating performance and scoring rubric.			x
-Identify critical knowledge and skills students must possess to successfully demonstrate the culminating performance.			x
-Justify all content taught as aligned with district and/or school expectations and parameters.			x
-Develop instructional/assessment activities.			x
-Choose instructional strategies.			x
-Choose curricular materials based upon alignment with student expectations.			x
-Determine reporting and grading practices.			x
-Reevaluate instructional units as part of ongoing reflection and program assessment tool.	x		
Provide professional development opportunities for all district/ school personnel. (IV.A)	x	x	x
Establish effective networking systems. (IV.B)	x	x	x
Develop and implement an ongoing, systematic process for evaluating progress in a results-oriented manner. (IV.C)	x	x	x

Group Process Training

I. Collaborative structure creates the conditions under which the process is legitimized and the product is validated.

- D. Provide group process training to district/school personnel.

The ability to work efficiently and effectively in groups with diverse members, to delegate and perform assigned tasks, and to resolve potential conflicts is essential to district/school committees and teams if they are to purposefully influence change in the district, school, and classroom.

The expectations in Goal 4 enumerate those skills necessary for becoming a responsible and productive group member; they apply to staff as surely as they apply to students.

- Manifest interpersonal skills.
- Contribute productive team member skills.
- Display consistent, responsive, and caring behavior.
- Recognize the rights and responsibilities of self and others.
- Encourage a multicultural/world view.
- Maintain an open mind to alternative perspectives.

The process for developing effective teams includes the following:

- Determine your vision for the group; and
- Provide training in
 - building and maintaining trust,
 - sharing information,
 - shared risk taking,
 - accepting and utilizing individual talents,
 - setting team goals,
 - maintaining a balance between task and needs,
 - problem-solving techniques, and
 - shared leadership.

There are a variety of resources available to assist districts and schools as they begin the team building process. Local colleges and universities often have faculty members who provide training in group process skills. Further, many business or management firms have individuals specifically assigned to team development. An investigation of such community resources might reveal others which are available.

Initiating a group process (e.g., high performance, facilitator training, leadership) insures that members of the group come to meetings with good spirits and high energy; feel meetings are productive; and face problems/questions directly, frankly, and openly without harming the group's cohesiveness. Also, the members leave the meetings with the same level of high energy and good spirits. The group process further creates a sense of productivity, time efficiency, group management, and group mission and purpose.

Establishing a Shared Vision 

II. Fundamental change is driven by a shared vision.

- A. Analyze Kentucky's learning goals and academic expectations and internalize the basic premises.
- B. Develop a mission and philosophy for both the district and school which reflect the basic tenets of KERA.

Establishing a Shared Vision

Once the collaborative structure is in place, the district and school should begin to focus on the shared vision which directs all instructional and learning experiences.

Analyzing Goals and Academic Expectations

The six learning goals and academic expectations are the basis for curriculum and assessment; for this reason, it is crucial that all persons involved in curriculum and assessment design study the implications of the goals and academic expectations on curricular change. They must internalize the basic premises of KERA and establish them as the foundation for instructional design and delivery.

Forming study groups is an excellent method for personnel to examine and develop ownership of the goals and academic expectations. This serves as a vehicle for fostering a collaborative spirit as well as a learning opportunity for all participants.

The next steps in establishing a shared vision are the development of mission statements and philosophies at both the district and school levels. Because it is central to the design of learning experiences, it is important that all district and school personnel believe in and commit to the mission statement and philosophy of beliefs.

Mission Statement

Mission: *The mission statement is a clear and concise expression of the district's/school's purpose and function.*

The mission statement reflects the shared vision of a district or school, and it directs all decision-making and resulting actions. According to William E. Deming, an American management theorist, successful organizations identify a purpose and are constant in an effort to achieve that purpose.

This especially holds true for educational institutions which are engaged in preparing students for the future. Because of the multiple actions and interactions existent in the daily operation of a district or school, it is critical to maintain a single focus. This is accomplished through the development of and commitment to a mission statement that reflects the core beliefs of the group.

The mission is developed with input from the district's or school's formal and informal leaders. The members of this group are selected because of their ability to analyze concepts and to interact with and get input from their colleagues. Because it is critical that belief in and commitment to the mission extend beyond the leaders, affording everyone an opportunity for input is essential. The mission provides direction for all employees within the district.

Developing A Mission Statement

STEP 1

Brainstorm	→ →	<ul style="list-style-type: none"> • Solicit ideas from all members.
Gather and Analyze Information	→ →	<ul style="list-style-type: none"> • Record, discuss, and analyze ideas.
Develop Draft	→ →	<ul style="list-style-type: none"> • Develop drafts from the collective thoughts of the group.



STEP 2

Share	→ →	<ul style="list-style-type: none"> • Share with all stakeholders
Encourage Input	→ →	<ul style="list-style-type: none"> • Collect comments from all stakeholders.
Revise	→ →	<ul style="list-style-type: none"> • Revise first draft.



STEP 3

Finalize	→ →	<ul style="list-style-type: none"> • Finalize document.
Submit	→ →	<ul style="list-style-type: none"> • Submit to the board of education/school council for adoption.
Disseminate	→ →	<ul style="list-style-type: none"> • Disseminate to stakeholders.

○ **The Kentucky Department of Education's mission statement may serve as an example.**

The mission of the Kentucky Department of Education, as the national catalyst for educational transformation, is to ensure for each child an internationally superior education and a love of learning through visionary leadership, vigorous stewardship, and exemplary services in alliance with schools, school districts, and other partners.

○

Developing A Philosophy 

Philosophy

Philosophy: *The philosophy is a set of principles or beliefs used to guide decision-making.*

Before writing curriculum or addressing instructional issues, it is imperative to identify commonly held beliefs. These serve as the guideposts and qualifiers for all work; thus, they must be internalized. The philosophy logically flows from the mission statement and should be developed by the same group of formal and informal leaders to insure continuity of thought.

Developing a Philosophy

STEP 1

- Brainstorm statements reflecting what each group member believes about education (e.g., "I believe that all students can learn."; "All instruction should relate directly to the academic expectations.")
- Record and post the responses.

STEP 2

- Combine thoughts, qualify statements, and improve wording. The group must agree on the final statements.
- Group the beliefs according to logical organizers (e.g., students, schools, instruction, and teachers).

STEP 3

- Circulate the philosophy among all stakeholders. Just like the mission statement, the philosophy provides the basis for all curricular and instructional decisions within the school or district so it must TRULY represent the beliefs of all involved. Obtain input and make necessary revisions.

STEP 4

- Distribute the philosophy.

Philosophy which directed the development of Kentucky's Curriculum Framework

WE BELIEVE

- All children can learn at high levels, and they
 - ...possess a curiosity and desire to learn.
 - ...respond positively to success and enthusiasm.
 - ...develop and learn at different rates.
 - ...demonstrate learning in different ways.
- ...learn by being actively involved, by taking risks, and by making connections.
- Successful schools are for students, and they
 - ...expect a high level of achievement.
 - ...provide the time and instruction to achieve student success.
 - ...provide connections with home and community experiences.
 - ...insure a safe, positive environment.
 - ...create opportunities to explore and grow.
- Effective instruction facilitates learning, and it
 - ...addresses identified academic expectations.
 - ...assures success and risk taking.
- ...employs a variety of effective techniques to address learning diversity.
- ...aligns curriculum, instruction, and assessment.
- ...connects curricular offerings to the life experiences of students.
- ...encourages self-direction and life-long learning.

III. Comprehensive plans lead to success.

- A. Determine basic issues of development responsibilities.
- B. Develop action plan for curriculum development.

Planning for Success

Responsibilities Chart

Before initiating the development process, it would be helpful to discuss the various aspects of the process. Directions, roles, and responsibilities of all stakeholders in the process must be identified and clarified. This chart facilitates the identification of the specific responsibilities for relevant personnel.

	Curriculum Development	Instruction	Assessment
Superintendent			
Curriculum Coordinator			
Principal			
School-Based Council			
Teacher			

Curriculum Development Action Plan

Action Plan: *The action plan is a comprehensive, thoughtful proposal that establishes the procedures and assigns the responsibilities for curriculum development. It must be based on the district's or school's mission statement and philosophy of beliefs.*

Purpose

The action plan will provide guidance to the curriculum coordinator and committees as they develop the district's or school's curriculum. The objectives, strategies, time lines, responsible individuals, and budget must be thoughtfully established to provide reliable direction. Action plans are developed annually and reviewed periodically to ensure continued relevance, effectiveness, and progress toward attainment of objectives.

Preparation

Before starting work on the action plan, answers to these pertinent questions regarding curriculum development should be addressed:

- To what extent will the district be responsible for curriculum development?
- To what extent will the school be responsible for curriculum development?
- Who will coordinate the development efforts?
- How will the development teams be selected?
- Will the curriculum be discipline-based? Interdisciplinary? A combination?

Decisions do not have to be made at this time regarding alignment to academic expectations, themes or organizing questions, instructional/assessment activities, or material resources. Those are all areas which will be addressed during the curriculum development process. However, it is essential to establish a map for accomplishing those tasks. The "when," "why," and "how" must be identified before the "what" can be designed.

Definitions

Budget: The budget is the identification of financial requirements for the completion of the task. It should reflect both personnel and operating expenses on a yearly basis.

Evaluation: The evaluation addresses the determination of successful completion of the objectives.

Individual Responsible: The individual responsible is the person who has ultimate responsibility for assuring that the strategy is completed; however, this individual does not actually complete all the work.

Objectives: Objectives are specific, measurable ends that must be achieved to accomplish a goal.

Strategy: A strategy is a coherent set of activities that assist with effective achievement of the objectives.

Time line: The time line is an identification of the specific time (month, year) when the activity will be initiated and completed.

Developing the Action Plan

The major components of most action plans are objectives, strategies, evaluation, and budget. Objectives and strategies are two of the most critical components, but their similarities of focus require additional clarification. The objective indicates the major, measurable goal and provides a completion date while strategies identify specific means of accomplishing those objectives.

Development of the action plan will be more manageable if it is broken down into two (2) phases.

Phase I

The district or school committee must first determine which curriculum development issues to address in the action plan. Issues such as professional development and curriculum design that directly or indirectly affect curriculum and instruction should be included.

The establishment of valid, workable objectives is the next step in Phase I and is essential to the successful completion of the plan. Answering the following questions will provide assistance with formulating objectives:

- Does it reflect the completion of a specific goal?
- Is it measurable and verifiable?
- Does it include a specific completion date?
- Does it contain a specific action verb?
- Is it straight-forward and clearly understandable by all parties?
- Is it consistent with available or anticipated resources?
- Is it realistic and attainable within the time specified?
- Is it consistent with the mission statement and philosophy?

<p style="text-align: center;">SAMPLE CURRICULUM DEVELOPMENT ACTION PLAN* Phase I Newly School or District 1993-1994</p> <p>Issues: Professional Development Curriculum Design Evaluation Process</p> <p>Objectives:</p> <ol style="list-style-type: none">1. By April 1994, all district and school personnel will have engaged in professional development activities which affect student performance.2. By May 1995, the curriculum will have been completed.3. By May 1995, a systematic, evaluation process will have been designed. <p><i>*The action plan is intended for local use and does not have to be approved by the Kentucky Department of Education</i></p>

Phase II

Phase II of the Action Plan must detail the strategies, evaluation, and budget components which lead to the achievement of each objective written for the issues identified in Phase I.

Identifying Strategies

It is critical that the strategies are realistic and directly related to a specific objective. Answering the following questions will assist in developing strategies which are the heart of the plan:

- Are all the products and activities necessary to achieve the objective listed?
- Are they easily understood?
- Will the sum of the activities achieve the objective?
- Can the performance of the activities be monitored?
- Have specific products been identified?
- Is there a clear understanding of the nature and scope of the product?
- Is the responsible individual clearly indicated?
- Are there sufficient resources to do each activity or produce each product within the specified time?
- Is a due date stated?

EXAMPLE			
CURRICULUM DEVELOPMENT ACTION PLAN *			
PHASE II			
Newly School District			
1993-94			
Curriculum Coordinator: John A. Bond			
Objectives: By April 1994, district school personnel will investigate in process development activities which affect student performance.			
Strategies:			
Specific Activity	Individual Responsible	Completion Date	
1. Collect/compile professional library on current instructional issues.	Michael Speckhard	January 1993	
2. Provide in-service workshops	Jefferson Smith	July 1993	
3. Send teachers and principals to conferences	John A. Bond	September 1993	
4. Formed local study groups	Principals	Continues	
Evaluation: (Evaluation is completed as each strategy is completed.)			
Budget			
A. Salaries and Benefits		C. Consultant Services	
Salaries	\$ 500	Fee	\$ 500
Benefits	\$ 500		\$ 500
B. Travel		D. Operational Costs	
Conferences	\$2,000	Materials	\$ 500
Consultant Fee	500	Dues	50
	\$2,500	Duplication of Materials	100
			\$ 650
<small>*The action plan is intended for local use and does not have to be approved by Kentucky Department of Education.</small>			

Evaluating Completion of Strategies

Taking time to reflect upon and examine closely what has been accomplished is vital for successful implementation of the action plan. As each strategy is completed, evaluation of that strategy should occur. The following questions are an example of the type that should be asked:

- -Is the product/activity as useful as was anticipated?
- Were the activities finished on projected completion date?
- Did the objective make a substantial difference?

Establishing a Budget

Generally the budget can be broken down into four categories - salaries and benefits, travel, consultant services, and operational costs, such as printing, materials, supplies, and equipment. Guiding questions for developing a budget might include the following:

- What personnel expenses are needed? Substitutes? Consultants? Additional clerical services?
- Are there relevant conferences, workshops, or seminars that would provide valuable information? If so, what fees and travel costs are required for participation?
- What meeting expenses are needed to support development work?
- Are there resources which would provide valuable information?
- What are the costs of materials, printing, supplies, and equipment needed to accomplish the activities?

CURRICULUM DEVELOPMENT ACTION PLAN *

Phase II

School or School District

Year

Curriculum Coordinator:

Objectives:

Strategies:

Specific Activity

Individual Responsible

Completion Date

Evaluation:

Budget:

A. Salaries and Benefits

B. Travel

C. Consultant Services

D. Operational Costs

*The action plan is intended for local use and does not have to be approved by the Kentucky Department of Education.

III. Comprehensive plans lead to success.

C. Establishing guiding principles for instructional programs.

Guiding Principles

Guiding principles must be established for making decisions on curriculum, instruction, and assessment. These principles serve as the district's guide for implementation of the instructional program and the major factors that influence curriculum and instruction. These will provide the foundation for establishing the school or district parameters. Prior to developing the guiding principles, it is wise to formulate a series of questions. Such as,

- What will provide guidance to the development teams, teachers, and school administrators in the design and implementation of curriculum?
- What does the district believe about critical areas (e.g., content, instruction, methods)? The district's/school's philosophy might be a point of reference here.
- How do we assure that the curriculum our students experience prepares them to be successful?

Sample

**Guiding Principles
Newly School or District**

Guiding Principle 1: Parameters will be organized by grade level.

Guiding Principle 2: The curriculum focus must be linked to specific real world issues, problems, and questions and must focus on academic expectations.

Guiding Principle 3: The curriculum will be designed to include both discipline-based and interdisciplinary instruction.

Guiding Principle 4: Instructional methods will include numerous opportunities for experiential learning and various forms of demonstrations of learning.

Guiding Principle 5: Curriculum and assessment will be in alignment

Guiding Principle 6: Ongoing student assessment will include authentic open-ended, performance event, and portfolio demonstrations of learning.

III. Comprehensive plans lead to success.

D. Determine curricular parameters of learning.

Parameters

The determination of district or school parameters is recommended to assure a comprehensive, cohesive curriculum. Parameters establish the broad areas of learning, expected student demonstrations, and generic quality indicators that reflect standards of excellence. They do not address instructional units, specific strategies, resources, or other curricular structure. Parameters only establish the expectations for the students; they do not prescribe instruction.

Purpose

The parameters should articulate the vision held for the instructional and assessment programs. They will

- identify student expectations,
- serve as an outline for curriculum development,
- provide teachers with a guide for establishing an instructional plan for the year, and
- offer a concise way of communicating the educational expectations to parents.

It is essential that these parameters be developed by a representative group of the district's or school's teachers with input from the faculty at large. The parameters can be organized according to grade level, academic expectations, or content area; however, the organization should be based upon the format which will be of most assistance to teachers and curriculum developers.

Source

The parameters would actually establish course or grade level expectations, and they would be derived from

- the academic expectations and demonstrators provided by the state,
- essential knowledge/skills identified by local teachers, and
- knowledge contained within national standards.

Structure

The identified expectations should be clear and concise, and provide for student demonstration of achievement. Every indicator included must directly support the state's academic expectations. There is no set presentation format (e.g., separate grade level booklets, wall charts), but the selected structure should address the district's or school's needs.

Establishing Parameters

Step 1

Review and analyze the seven capacities, six goals for Kentucky's schools (refer to the Transforming the Learning Environment Section of this document), Kentucky's Learning Goals and Academic Expectations, KIRIS assessment, and the district's and school's mission statements and philosophies. Examine the implications each of them have for curriculum.

Seven Capacities

It is the intent of the General Assembly to create a system of public education which shall allow and assist all students to acquire the following capacities:

1. Communication skills necessary to function in a complex and changing civilization;
2. Knowledge to make economic, social, and political choices;
3. Understanding of governmental process as the effect the community, the state, and the nation;
4. Sufficient self-knowledge and knowledge of his mental and physical wellness;
5. Sufficient grounding in the arts to enable each student to appreciate his or her cultural and historical heritage;
6. Sufficient preparation to choose and pursue his life's work intelligently; and
7. Skills to enable him to compete favorably with students in other states.

Step 2

Review and analyze external reports (e.g., national standards) and local issues to determine how they will impact the curriculum.

Step 3

Develop 12th grade exit standards. The district's exit standards may exceed the Academic Expectations but must not be less.

Step 4

Identify essential knowledge in each content area, based on existing national standards. Scrutinize for omission and duplication; then, "selectively abandon" nonessential content.

Step 5

Determine appropriate skill applications which show progress toward the Academic Expectations. The demonstrators in Transformations: Kentucky's Curriculum Framework, Volume I should be particularly helpful at this point.

Step 6

Create ongoing exit performance assessments.

III. Comprehensive plans lead to success.

E. Design instructional units.

Instructional Planning

Curriculum must be considered a process that continually defines and redefines the experiences students have in learning situations. It should not be viewed as a static, finite collection of content specifications or classroom prescriptions because it is not simply a document or defined product. **Curriculum development is an ongoing activity which is an integral part of every teacher's responsibilities.**

There is not an ideal design, preferred level, or best method for curriculum development; neither is there a single structure that addresses all needs or situations. What is critical, however, is that curriculum be developed locally by those closest to the students. In keeping with the movement toward student-centered instruction, student input should be sought throughout the instructional design process. Design, implementation, and evaluation unfold to provide the variety necessary for a relevant, world-class, learning experience.

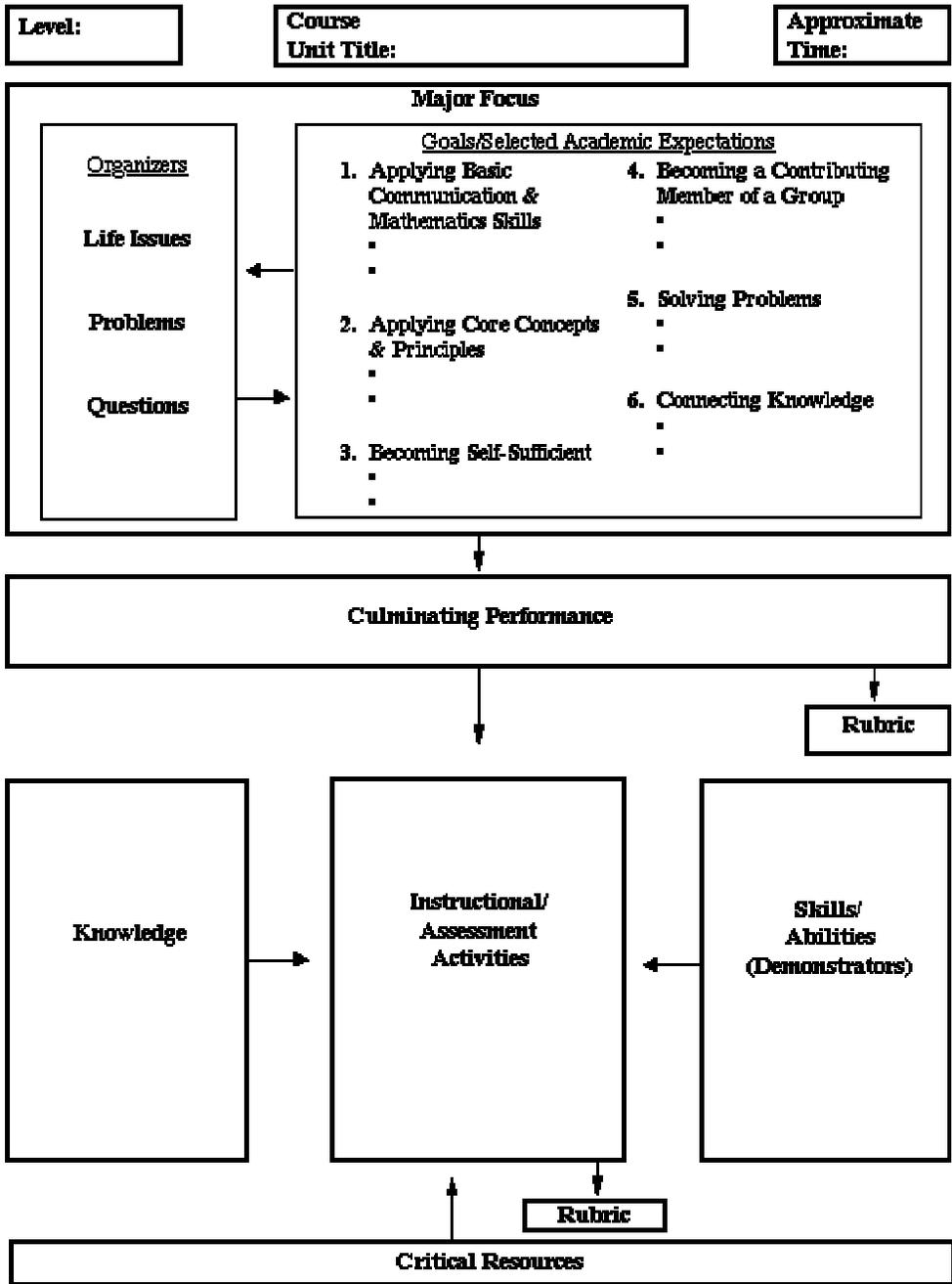
The approach to curriculum design in a standards-based educational system is different from approaches used in the past. The "Design Down" principle means that one first identifies what students are to know and be able to do upon graduation. These standards and culminating performances become the guiding principles for interim standards which, in turn, determine expectations and interim performances. These guide the daily activities and assessment. Life issues, problems, and questions, as well as the academic expectations, should be used in identifying the focus for these performances. This can be accomplished from either a disciplinary or interdisciplinary approach, and that approach may vary from unit to unit.

Within a school year, the number and length of instructional units will vary. But, the compilation of these units should address all the academic expectations. If review of all instructional units reveals less attention is being given to some academic expectations, it is imperative that the major focus and culminating performances be redesigned to incorporate those academic expectations.

In all design work, it is essential that attention first be given to what students are to accomplish and demonstrate at the end of the instructional/learning process. Once this is determined, the teacher or curriculum designer creates a map that will guide instructional activities that lead students to successful, culminating performances. This is similar to knowing the destination for a trip and identifying the most appropriate route before starting the engine.

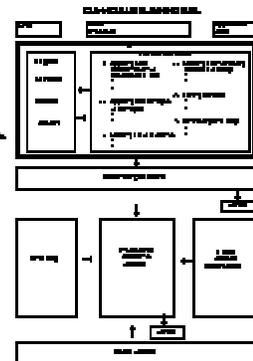
The general planning map and explanation of each component on the following pages provides guidance in designing instructional units. The Curriculum Planning Map is just that -- a map. It is not intended that the final curriculum resemble the form, but use of the map will lead the developer through the design process.

Curriculum Planning Map



Explanation of Planning Map Components

Identifying Major Focus



Traditionally, the focus of a unit has been determined through a content-centered approach; but, an authentic, meaningful curriculum addresses relevant issues of self and society with the content serving as a unifying thread. Student-centered instruction addresses the personal, social, cultural, and global concerns of the students and focuses on results rather than input. In a transformed learning environment that supports KERA initiatives, identifying the major focus will involve two areas of concentration the central organizers and the academic expectations.

As the major focus of the instructional unit is being identified, the curriculum structure should also be determined. Will the unit be discipline-based? Will it be a multidisciplinary or interdisciplinary unit? Or, will instruction be designed to move "in and out" from discipline-based instruction into one or more levels of integration? Regardless of the structure, it will be necessary to move back and forth between the organizers and the academic expectations as the major focus is identified. It is analogous to the proverbial question "which came first, the chicken or the egg?" This process ensures that

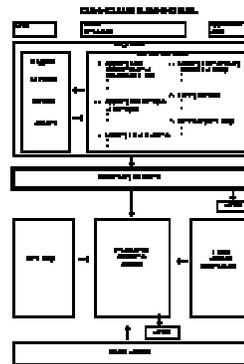
- instruction is organized around meaningful and real-life issues, problems, or questions;
- the major focus of the unit is aligned with the learning goals and academic expectations;
- content is used as a vehicle for teaching the learning goals and academic expectations; and
- curriculum is aligned with assessment.

Issues, problems, or questions that connect to real-life experiences motivate learning and should serve as the organizers of instruction. At the same time, it is critical to review the academic expectations in each learning goal and determine which might naturally be addressed in the unit. The organizers and academic expectations will guide the writers as the activities, knowledge, and skills/abilities components are developed.

A variety of approaches exists for identifying a rich, relevant unit focus. One end of the spectrum is the traditional teacher-directed approach; the other extreme is the totally student-directed approach. In between the two are varying degrees of student involvement. Because learner interest is an important motivating factor, a high level of student involvement is desirable. This becomes even more critical with each succeeding school year.

The importance of the teacher's role as facilitator and instructional guide must not be underestimated at this point. It is the skilled teacher who weaves the interests and concerns of students with academic expectations and related concepts to create an important, viable instructional focus.

Formulating Culminating Performance



Culminating performances should result in powerful demonstrations requiring students to use knowledge and skills/abilities to extend and reflect previous learning. They provide learning experiences for all students which are appropriate, authentic, challenging, and help demystify expectations. Culminating performances allow students to

- demonstrate learning through engaging, comprehensive presentations which incorporate multiple academic expectations;
- investigate a topic in depth through the filter of one or multiple disciplines;
- organize and present a large amount of information in a coherent form; and
- develop process skills (e.g., writing, research, computer application, problem solving), discipline-specific skills (e.g., mathematical structure, application of democratic principles, analysis of form, nature of scientific activity), and personal/social skills (e.g., learning on one's own, using productive team skills).

Culminating performances can be structured as (1) a prescribed mode of presentation offering students freedom of design and topic selection, or (2) a prescribed topic or area of concentration providing for student selection of presentation format.

The resulting demonstration can reflect differing degrees of complexity in both focus and design while incorporating individual and group experiences. The length of time allocated to the completion of the task can vary from a few days to several weeks. The demonstration should be as much a learning experience as it is assessment. The process of application and demonstration becomes an integral part of the culminating experience and encompasses learning on multiple levels.

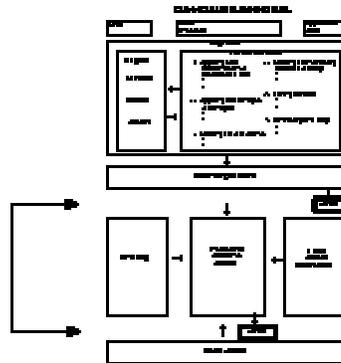
The intent and description of the culminating performance should address the multiple intelligences and different learning styles. The task should be authentic, address the life issue/problem/question of the unit, and be compelling to the student. The structure and design of the unit should be chosen to provide each student the greatest "stretch" encouraging achievement at the highest level.

The culminating performance serves a design function for curriculum development. Once the basic focus and design for demonstration of the selected academic expectations have been established, the supporting activities can be developed. Identification of necessary knowledge, skills, and activities forms the basis of the instructional unit and provides the design for learning experiences.

High quality culminating performances will include the following:

- products or performances
- all or most of the KERA learning goals
- multiple steps or components
- audiences beyond the teacher
- contexts (issues) of significance
- application of process and personal/social skills
- identified purpose.

Developing a Scoring Rubric



When introducing a performance task, the scoring rubric explicitly tells the students what is expected; it allows them to react to the assignment in a desired way.

The scoring rubric

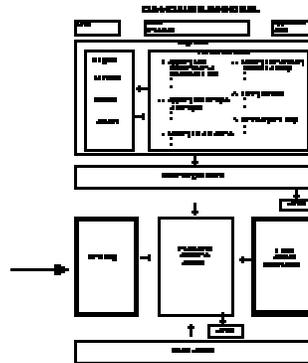
- provides indications of students' growth toward the academic expectations;
- ensures high expectations for all students;
- establishes criteria for judging the quality of student performance;
- predefines qualities for evaluating performance; and
- describes degrees of success.

The process of student evaluation no longer focuses on vague descriptions and degrees of right or wrong but on student progress. It should be viewed as a barometer for student intervention rather than as an end in itself.

The scoring rubric should be developed along with the culminating performance and should allow for different levels of response. If the task does not allow for varying response levels, the event is not a culminating performance but rather an activity. In developing the rubric, keep in mind the question, "What is the minimal response for the highest level?" Teachers often involve students in the development of the rubric. They, then, give students the completed rubric along with a model of excellent performance that assists in providing focus and identification of standards.

Learning to critique and judge the quality of one's work is embedded in KERA and standards-based instruction. Evaluation of student progress might include a continuum of self and peer assessment prior to teacher-assessment. The development of rubrics and implementation of assessment procedures for standards-based instruction is perfected over time with much practice.

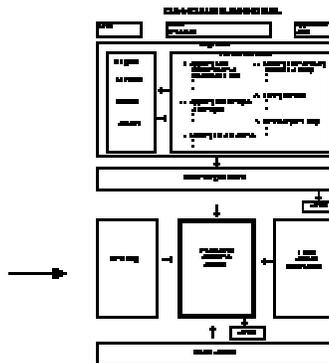
Determining Knowledge and Skills/ Demonstrators



Curriculum planners identify the essential knowledge and skills/abilities the student must possess to successfully demonstrate the culminating performance. These knowledge and skills/abilities are the focal point from which the instructional/assessment activities are developed. The knowledge and skills/abilities may be reflected in a single discipline or expanded to address multiple disciplines as teams of teachers work toward preparing students for an interdisciplinary culminating performance. This map may be modified by curriculum planners when an integrated or interdisciplinary instructional approach is chosen.

The related concepts and demonstrators found in Volume I Transformations: Kentucky's Curriculum Framework are samples and may be expanded to meet the specific district/school instructional needs. The related concepts are points of reference for determining the knowledge component while demonstrators are equal to essential skills/abilities.

Developing Instructional/ Assessment Activities



The instructional/assessment activities are the heart of the teaching-learning process. These activities must reflect the academic expectations, knowledge, and skills/abilities identified for the unit. Ongoing assessment is an integral part of good instruction. It will assist the teacher in ascertaining individual student intervention needs, identifying instructional needs, prescribing appropriate instruction, determining the effectiveness of particular instructional approaches, and determining student achievement of the academic expectations.

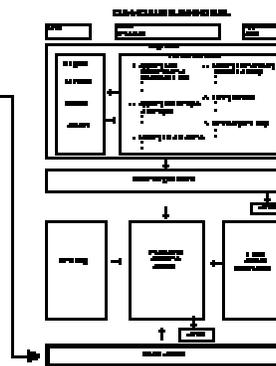
Learning activities may be developed from three major emphases: knowledge, process, and product. They must be "real" for the students if sustained learning is to occur. They must encourage divergent thinking, engage students in problem-solving, relate to and build upon personal experiences, allow for various modes of expression, encourage self-evaluation through revising and rethinking opportunities, provide for heterogeneous group work, and be free of cultural bias.

Guiding Questions

- ▪ What activities will allow the student to acquire and apply the knowledge that focuses on the real-life issue, problem, or question posed and on the academic expectations identified?
- How can appropriate process skills be incorporated into the activities? What are the appropriate process skills?
- ▪ In what ways can various learning skills, multiple intelligences, and multicultural instruction be accommodated in the activities?
- What are the teaching and learning strategies that best support the activities?
- ▪ What products will most adequately reveal the student has met the expectations of the unit?
- Are the assessment activities designed to measure process as well as product?

A scoring rubric extends from the instructional/assessment activities on the planning map to emphasize that assessment is an ongoing piece of the instructional process. The rubrics should be developed at the same time as the assessment activities that measure the students' progress toward the culminating performance are developed. Rubrics for scoring instructional assessment activities should meet the same criteria discussed earlier for developing scoring rubrics.

Identifying Critical Resources



Identifying resources that support learning is vital. In a genuine effort to get students to learn, teachers are often tempted to do too much for them. The paradigm of imparting knowledge must change to one of allowing and encouraging discovery. To facilitate this shift, every available resource should be tapped.

To make learning real for students, teachers must go beyond the traditional resource of the textbook and involve students in the identification and creation of resources. Involve parents, other community members and agencies, colleges/universities, and cross-cultural representatives in the search for resources that help to enrich the learning experiences. This provides opportunities to build a shared vision for successful student learning and capitalizes on contributions that can help make an important difference.

Active learners must have access to materials such as kits, models, packets, and manipulatives that allow for hands-on experiences. In addition, games present challenging, fun ways to learn. Using computers allows students to work at their own pace, simulate processes that are difficult to demonstrate in other ways, be creative in design, improve thinking skills, and engage in discovery learning. The video camcorder is often referred to as a learning catalyst in that it inspires creativity. Videotapes may be used in portfolio development, as feedback to students, to record "teachable moments," and to provide information on what students are learning to parents and other teachers. High quality, commercially produced videos, films, filmstrips, and slide presentations can continue to supplement instruction. However, caution should be taken regarding frequency of their use as they often place the student in a passive-learner mode.

For students, time is another critical resource. If all students are to learn at high levels, expanded learning time must be made available. Extended School Services programs which are parallel to instruction and student expectations in the regular classroom offer one method by which the expanded opportunities for learning can be provided.

IV. Successful implementation requires capacity building.

- A. Provide comprehensive professional development opportunities for all district/school personnel.
- B. Establish effective networking systems.
- C. Develop and implement an ongoing, systematic process for evaluating progress in a results-oriented manner.

Building Capacity

Professional Development*

A key to ensuring an internationally superior education for each child in the Commonwealth of Kentucky is the professional development of its teachers and administrators. Student performance is the bottom line for the success of a school district and school. Therefore, professional development activities that do not impact student performance are considered unsuccessful.

Schools as units are accountable for student performance. Professional development at this level must focus on teachers' abilities to enhance student performance. School plans should address specific, adaptable techniques that are directed toward the KERA initiatives and learning goals. The School Transformation Plan may be used as a guide for the professional development plan.

The Kentucky Department of Education promotes the following attributes identified by research as crucial to effective professional development:

Programs having these attributes**

- focus upon instruction and academic expectations;
- • promote peer review, collegiality, and collaboration;
- encourage flexibility, experimentation, and risk taking, rather than prescribing lock-step behaviors or punishing failures;
- involve participants in making decisions about content, format, timing, implementation specifics, evaluation, and other dimensions of the professional development sessions/experiences;
- include realistic time estimates for changes in practice; participants have sufficient time to be able to learn, plan for, and try out new skills approaches, reflect on their success with helpful coaches, revise and retry, learn more, and get support for their efforts;
- • increase the integration and linkages among schools, districts, and consortia;
- have the support of official leaders (e.g., superintendents, principals) who know what to expect and how to be of assistance;
- provide participants with time to work on professional development and to assimilate new learning;
- encourage participants to share and build upon their own experiences and perspectives, and acknowledge the personal concerns involved in making significant changes;
- include incentives and rewards for participation that are geared to individual participation needs, motivations, and realities; and
- • address individual, school, district, and state goals, and do so in a way that uses staff development to build capabilities to implement all components of KERA.

*Source: The Kentucky Department of Education Professional Development Process Document

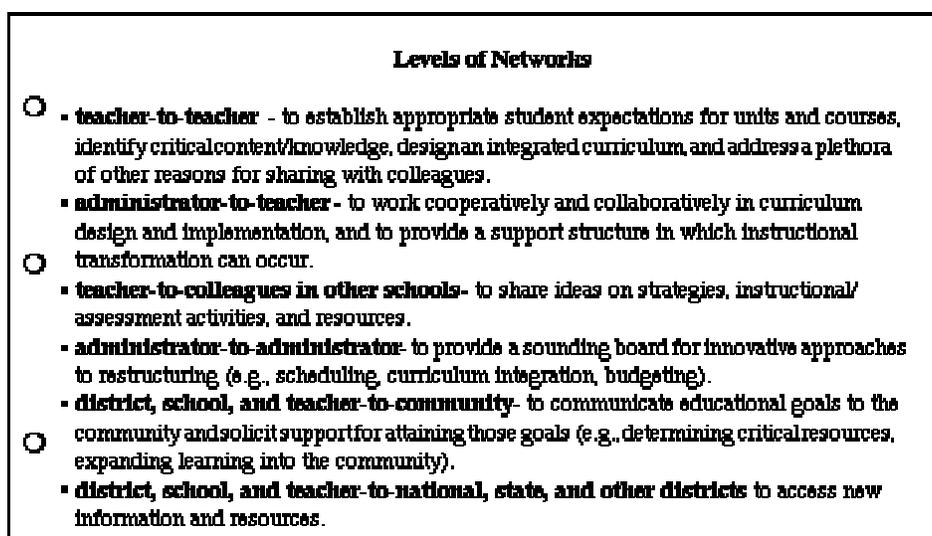
**Source: Dr. Susan Houcks-Horsley, the Northeast Regional Laboratory

Establishing Networks 

Networking Systems

The changes required for school restructuring are so significant that no single individual or group working alone can do everything needed or expected. As local curriculum is developed, it is necessary to form networks which allow for sharing of information, ideas, and knowledge in order to arrive at a shared vision. Once this vision is established, additional networks will facilitate the implementation of those ideas. The rationale behind networking can be as simple as providing a resource for answers to basic professional questions or as complex as joint research projects.

The networks may take a variety of forms, but they should include open forums which expect and encourage conversation. Two-way communication builds an environment where a shared vision can be established and maintained. School-based networks are the first step in forming more expansive professional networks which make it possible for teachers and administrators to cope with the increased levels of expectations.



The idea of two-way communication is imperative. Schools which establish viable networks within the school, with other schools, and with the larger community will discover that the changed attitude toward both knowledge and power has a synergistic effect for all parties involved.

Evaluating Progress 

Evaluation Process

To sustain change and continuous improvement in curriculum design and implementation, an ongoing, systematic process for evaluating all aspects of the instructional program and its support systems must be developed and implemented.

Evaluation of district/school policies, procedures, and plans which affect the curriculum development and teaching-learning processes is as important as evaluating instruction.

Staff at all levels should be involved in developing the evaluation process. Having a role in establishing the evaluative criteria; and understanding the "what, why, and how" of the process, will help to eliminate the negative connotations of accountability. This is crucial to the district/school in reaching the level of expectations and standards required for effective curriculum reform.

Sample Curriculum/Assessment Evaluation Model

Collaborative Structure

- Staff capacity has been improved through group process training.
- • Committees/teams with broad representation (e.g., administrators, teachers, parents, community) have been and are continuing to be used throughout curriculum redesign process.

Shared Vision

- Evidence indicates the learning goals and academic expectations have been analyzed and internalized by the curriculum development committees/teams.
- Mission statement and philosophy were developed with input from all stakeholders.
- Mission statement served as the foundation from which curriculum decisions were made.

Comprehensive Plans

- • Plans have been developed to reflect the objectives, roles, and responsibilities and to redefine and reassign as needed.
- Action plan was implemented, assessed, and redesigned.
- Evidence indicates the curriculum has been designed and implemented within the established parameters.
- Curriculum has been sufficiently validated to enhance students' achievement of the academic expectations.
- Instructional units adhere to the following:
 - reflect the academic expectations,
 - focus on real-life issues that address concerns of the students,
 - enable students to make connections across disciplines,
 - infuse cultural heritage and diversity, and
 - address all academic expectations.

Capacity Building

- • Professional development activities that affect student performance have been and are continuing to be provided.
- Effective communication networks exist throughout the district.
- Curriculum/assessment management model aimed at improving rather than proving has been established and implemented.

NOTES

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Bringing It All Together

Bringing It All Together is a guide for teachers which shows how the information found in Transformations: Kentucky's Curriculum Framework will influence practices in the classroom. The explanations provided answer many of the questions being posed by educators throughout the state.

Jefferson Smith, a high school American Government teacher, is used as an example of how the philosophy behind the Kentucky Education Reform Act (KERA) might be implemented in schools. Mr. Smith is fictional, but his character is based on a compilation of the experiences of many real Kentucky teachers. His story is for every teacher who has questions about how to help all students learn at high levels.

Throughout the sections that follow, Mr. Smith's words appear in italics. Additionally, examples of plans, student directions, and other work done by Mr. Smith are frequently shown. Introductory paragraphs provide readers with information which explains the philosophy and purposes of Mr. Smith's actions.

JEFFERSON SMITH

Like many of my colleagues, when the Kentucky Education Reform Act was passed by the General Assembly in 1990 I had mixed feelings about it. I realized education needed to change. I knew that any chance Kentucky had to improve itself and to become an important force in the growth of American society had to begin with the transformation of our schools.

At the same time, KERA was going to mean a lot of changes for me and the teachers at my school. Change is not always easy or welcome, especially when it affects a person's beliefs. I was skeptical about the reasons for and purposes of some changes being discussed.

After much reflection and discussion, I decided that KERA gave me the excuse to take some risks in the classroom. I owed to my students the best teaching I could provide and that was going to require some changes on my part. I also knew that the risks I took could not be based on whims. I was going to need to read about standards-based education, multiple intelligences, and other ideas that were the basis of KERA. I needed to talk to innovative teachers I knew and find new ideas. All of this was going to mean hard work and time, but teaching had always required hard work. KERA was an opportunity that could not be missed.

Getting Started

The final stage in the development of curriculum begins when teachers start planning an instructional unit. It is at this point that strategies and blueprints for student learning are organized to give life to the work of curriculum writing committees.

Determining the focus of an instructional unit is a critical first step. Selection of a focus should be guided by two considerations:

- the academic expectations and
- the central organizer.

Unit Standards

The transformation of schools envisioned by KERA is founded on a standards-based approach to education. This requires teachers to decide before they design the instructional unit what they want their students to know and do at its conclusion. Unit standards should include:

- Kentucky's learning goals and academic expectations,
 - critical content,
 - parameters, and
 - national standards.
-

JEFFERSON SMITH

(Jefferson Smith had always planned by focusing on the content and the textbook. Changing to a standards-based approach was the first step to be made in transforming his classroom.)

Trying to decide what I want my students to learn has been a challenge. Parameters had been established which outline courses and academic expectations, but I was in the position to decide what my students needed. Everyone of them is an individual with different needs and with different learning styles. It was my job to plan a unit which could address these needs.

I began by looking at the academic expectations I wanted my students to attain by the end of the unit. Because of the Kentucky assessment and the guidelines in our local parameters, I decided to target at least one academic expectation from each of the six learning goals. As I began planning, I decided that could not always be done because of individual student needs. Still, I always have a core set of unit academic expectations on which the whole class is focusing.

Guidance in determining unit expectations can be obtained from

- **Kentucky's six learning goals and academic expectations.** Schools and districts will be held accountable based on how well students perform on the Kentucky assessment. Questions and tasks on this assessment are based on the academic expectations. For additional insights of the intent of each academic expectation, refer to the "Reflections" section of the Demonstrator pages.
 - **Local district and/or school parameters.** Many districts and schools will develop parameters as a result of KERA and the development of *Transformations: Kentucky's Curriculum Framework*. These will also prove valuable sources for deciding what academic expectation to target.
 - **Individual student needs and abilities.** Accounting for these differences in students may require targeting a variety of academic expectations at any given time.
 - National standards and goals. Increasingly, teachers are getting guidance in deciding what to teach as professional organizations are providing information about appropriate goals and standards in the content areas.
-

JEFFERSON SMITH

(The following example from Jefferson Smith's planning shows his targeted academic expectations. The parameters established by his district have recommended that American Government address Kentucky's academic expectations 2.14, Democratic Principles; 2.15, Political Systems; Mr. Smith decided to combine these four into one unit because of their connections.)

○ Targeted Expectations for Unit 1:

Goal 2:

- 2.14 Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.
- 2.15 Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.

(Mr. Smith identified several other academic expectations on which he anticipated students would need special assistance. These included the communication skills from Goal 1 and all of the academic expectations in Goals 5 and 6. He selected these because it is vital that all students communicate well, think critically, problem solve, and see connections in their learning.)

Central Organizers

Many teachers are familiar with using a central organizer as a major focus in their learning units. The organizer can take any of the following forms:

- themes,
- problems,
- concepts,
- content, or
- skills.

While determining the form is an important consideration in selecting an organizer, the substance is most important. The central organizer is the vehicle by which students are able to reach the targeted academic expectations, so teachers need to carefully evaluate what they use as central organizers. An especially important point is that an organizer is not appropriate simply because it allows students to participate in fun activities. Neither should they concentrate on trivial knowledge that is irrelevant and useless to students. Organizers should provide some organization for student learning. Anticipating what skills or knowledge students will need next year in school should not be used to justify what is taught. Education is not about preparing students to be successful in school; it is about preparing students to be successful in life.

JEFFERSON SMITH

(Jefferson Smith decided to take some time reading and researching the process of developing a major focus. As a result of his research, Mr. Smith created the rubric shown below to guide him in the process.)

Organizer Rubric		
Yes	No	Question
—	—	<p>Is the organizer developmentally appropriate?</p> <ul style="list-style-type: none"> • Does the organizer ask students to work at the upper levels of Bloom's Taxonomy? • Does the organizer require students to participate in activities in which they must apply learning in real situations?
—	—	<p>Is the organizer broad and deep enough to allow students to have some flexibility in what they study?</p> <ul style="list-style-type: none"> • Does the organizer encourage students to make connections between ideas? • Does the organizer prompt students to build on prior knowledge? • Does the organizer encourage students to demonstrate learning in a variety of ways?
—	—	<p>Is the organizer intriguing to the students?</p> <ul style="list-style-type: none"> • Does the organizer provoke student interest enough that they will invest time and effort to learn? • Does the organizer demand that students use their imagination?
—	—	<p>Is the organizer focused on learning which can be transferred to issues which are current or will be essential in the future?</p> <ul style="list-style-type: none"> • Does the learning attained by using this organizer make a difference in the student's life? • Does the learning achieved through the use of the organizer apply to real-life situations?
—	—	<p>Is the organizer going to require students to be involved in a rigorous study of content knowledge and practice of life skills?</p> <ul style="list-style-type: none"> • Does the organizer ask students to learn essential information instead of memorization of trivial facts? • Does the organizer allow the practice of valuable skills?
—	—	<p>Is the organizer designed to be broken into a set of essential questions?</p> <ul style="list-style-type: none"> • Does the organizer allow for asking questions like "how," "why," and "what?"

JEFFERSON SMITH

(While listening to the radio one afternoon, Mr. Smith heard a young man state that the political system in the United States had lost touch with the people. After some reflection he decided that he would begin the school year with an instructional unit entitled "Does American Government Really Serve Its Citizens?" His vision of what this unit would be convinced him that he could check "yes" for each column on the rubric.)

I had to begin my initial planning based on my experience as to what would work and what wouldn't work in the classroom, what I knew about students, and what I had experienced as a participant in numerous classes and workshops. To some extent, I had to guess about what would work the first time I tried to use an organizer. Later, I began putting my unit expectations on a board about three weeks before we began a new unit. Then, the students and I would take a day of class to determine the central organizer for the next unit.

ESSENTIAL QUESTIONS

Teachers have been organizing instruction around themes, problems, and issues for decades. Too frequently these organizers have been designed so that the learning drifts in unpredictable ways toward unwanted results. One concern when using organizers instead of a scope and sequence approach is that content is removed from the curriculum. The way to avoid this problem when developing an organizer is to create a set of guiding or essential questions.

Essential questions become the scope and sequence of the organizer. They should

- be developed with stu 4 or 5, and
- be posted in the classroom.

The following criteria should be used in developing essential questions:

1. The questions should be written so every person in the class can understand them.
2. The questions should have no obvious "right" answer.
3. The questions should reflect higher-order thinking. They should require synthesis, analysis, and evaluative judgment.
4. The questions should be arranged in a logical sequence.
5. The questions should emphasize concepts while requiring students to use knowledge in developing answers.
6. The questions should cause the students' learning to uncover and recover important ideas.
7. The questions should be posed in a realistic time frame.

JEFFERSON SMITH

(The most difficult step in the process of unit development for Jefferson Smith was the creation of the essential questions. It was during this stage of development that he had to go to some of his colleagues for help.)

The first time I tried to develop a set of essential questions I ran into a lot of trouble. The initial set of questions concentrated on covering information and did not encourage higher-order thinking. Fortunately, I had a couple of friends in the building who were struggling with making some of the same changes. We decided to meet at school one day in late August and talk about our essential questions. I think we turned out to be a pretty good editing group. The essential questions we developed for our classes seemed to work really well.

After the first time, we developed a process of asking students in our classes to suggest essential questions. We brought those to an “editing party” after school where three of us would go over those suggestions and develop three to five good questions. These would then be submitted to the class for their approval.

Essential Questions: “Does American Government Really Serve Its Citizens

1. What does government do for me?
2. What rights do I have, where do they end, and what are the rights of all citizens under the government?
3. What responsibilities do I (and all citizens) have to government? Why do I/we have them?
4. Who makes decisions in government; who gave them the authority (or power to make decisions; and, do I have influence over the decision.
5. How do we keep government from getting too powerful?

Designing the Culminating Performance

Once the unit academic expectations and the organizer have been determined and have given structure to the instructional unit, the culminating performance, or final exhibition, can be designed. The culminating performance is most effective in preparing students for Kentucky's assessment if it takes the form of an authentic assessment. This type of assessment emphasizes a student's ability to problem solve, think critically, apply knowledge, and demonstrate other important skills.

Drawing from TheodoreSizer's work in his book, *Horace's School*, the guidelines which follow are offered for the development of a quality culminating performance.

Guidelines in Developing a Culminating Performance

- The culminating performance should reflect genuinely useful skills and knowledge.
- The culminating performance should raise issues that are both personal and universal. The ability of a student to perform the activity should rest on the student's ability to show he/she has a thoughtful mind.
- The culminating performance should allow flexibility in student preparation and presentation.
- The culminating performance should give students a reasonable choice of topics allowing them to investigate areas of individual interest.
- The culminating performance must require students to show a base of knowledge. While a mere recitation of facts is not desirable, students must have knowledge which can be used to organize thought.
- The culminating performance should demand intense work and preparation on the part of students. It should require persistence, organization, and inquiry skills associated with Kentucky's learning goals.
- The culminating performance must allow time for students to accomplish serious, comprehensive work.
- The culminating performance should prompt students to stretch their minds and make connections. It should put knowledge in a sensible context which supports the value of the content learned. It should assess several academic expectations targeted in the unit.

JEFFERSON SMITH

Writing the culminating performance reminded me of the writing process used by the language arts teachers in my school. I wrote a draft, revised it, and finally published it for the students. I always try to publish the culminating performance on the first day we are beginning an instructional unit. I want to make sure that the students know exactly what is going to be expected of them.

(Mr. Smith eventually created a culminating performance with two components. The first component was a required writing activity and the second involved a set of options from which the students were allowed to choose. In this way, he was able to meet the criteria for a quality culminating performance.)

Does American Government Really Serve Its Citizens?" Final Demonstration

During the next few weeks we will be focusing on the question, "Does American government really serve its citizens?"

The guiding questions we will use to keep us on task during this investigation are

1. What does government do for me?
2. What rights do I have, where do they end, and what are the rights of all citizens under our government?
3. What responsibilities do I (and all citizens) have to government? Why do I/we have them?
4. Who makes decisions in government; who gave them the authority (or power) to make decisions; and, do I have influence over the decisions?
5. How do we keep government from getting too powerful?

At the conclusion of our unit, you will be required to participate in the following final demonstration.

Part 1:

Write a piece which addresses the question "Does American government really serve its citizens?" The piece may take the form of any writing genre and may address any audience.

Part 2:

A. Prepare and present a formal debate on one of the essential questions. You should attempt to convince an audience (e.g., a panel of local government officials, the class) that your position is correct. Allow time at the conclusion of the debate for replies to audience questions.

B. Create a video documentary which shows investigation into one of the essential questions. Present the documentary to an audience. For example, you could arrange to have the video shown over the television cable public access channel. Your job is to use pictures, interviews, case studies, history, music, and/or words to persuade or inform.

C. Investigate a local, state, national, or global problem connected to one of the essential questions. Design and implement a program which focuses on solving the problem.

Designing a Rubric

Perhaps the most critical element of developing culminating tasks, or any type of authentic assessment, is the establishment of criteria by which to judge the tasks. This set of criteria, often referred to as a rubric or scoring guide, must

- explain to students (and parents) what is expected of them on the task and be given to them at the time of the assignment.
- define what different levels of performances will look like.
- enable scorers to be fair, consistent, unbiased, and accurate in evaluating the task.
- place a value on different performance levels.

Because most culminating performances are used to assess several academic expectations, it is important that teachers remember that a rubric needs a set of criteria for each targeted academic expectation.

Creating rubrics can be just as time-consuming and difficult as developing the task itself. Fortunately, there are several guides that teachers can use. These include

- the essential questions. Using these guiding questions will help ensure that students are focusing on the learning that was intended.
- the demonstrators in *Transformations: Kentucky's Curriculum Framework*. These often can be used exactly as they appear as components of the assessment criteria.
- the Kentucky Holistic Writing Guide. Because much of Kentucky's assessment requires student writing, elements of this rubric can be used repeatedly.
- other rubrics or assessment criteria. Rubrics can frequently be adapted or used as models in developing new assessment criteria.

It is essential that rubrics reflect fairness and reliability. In order to achieve these goals a rubric must be established which enables scorers to be consistent in their ratings and students to be consistent in their performances.

JEFFERSON SMITH

(Mr. Smith found several examples of rubrics in educational articles and books. He reviewed these and the resources listed above to develop his own rubrics.)

*At first, I thought the creation of rubrics was going to be an impossible chore. I chose one of the culminating activities to address and I pulled from every example I could. Once I got in mind exactly what I wanted my students to be able to do and looked at *Transformations: Kentucky's Curriculum Framework* developing the rubric did not seem to be so hard. I had talked to several professors at the local university and read some material on rubric design. I have to confess that in creating this set of criteria for my classroom use, I did not follow every requirement suggested. For instance, it was explained that to develop a truly reliable rubric, it had to be field tested. Obviously, that was impossible if I intended to use it in the upcoming year.*

I decided to do the best I could with what I had. I determined the criteria by using the essential questions and other resources. I got feedback on the rubric from my colleagues at our "editing parties," and I got student input both before and after they did the culminating performance to make sure they knew exactly what was expected of them.

Toward the end of the year, I began to ask students to give input on designing rubrics. This was important because it allowed students to be involved in the process of self-evaluation and standard setting. I came to see this as a vital part of rubric design.

(The rubric Mr. Smith developed for the writing component of the culminating performance follows.)

"Does American Government Really Serve Its Citizens?"

Assessment Criteria for the Writing Component of the Culminating Performance

The following criteria will be used in evaluating the writing component of the culminating performance. You should use the criteria listed below in writing your piece.

The piece will receive a 3 if it

- Considers at least one of the essential questions being posed in this unit and clearly makes a connection with the unit focus, "Does American government really serve its citizens?"
- Exhibits thoughtful analysis of democratic behavior and civic responsibility. Demonstrates the author's understanding of the rights and responsibilities of citizens in a democracy.
- Draws conclusions about the relationship between authority and power in a democratic political system and clearly supports these conclusions with multiple examples or quality research.
- Establishes and maintains a clear focus and a distinctive voice. Demonstrates the author's ability to write for a purpose.
- Exhibits fluency, organization, and correctness in writing.

The piece will receive a 2 if it

- Considers at least one of the essential questions being posed in this unit but fails to clearly make a connection with the unit focus, "Does American government really serve its citizens?"
- Exhibits a superficial analysis of democratic behavior and civic responsibility. Demonstrates an incomplete understanding of the rights and responsibilities of citizens in a democracy by the author.
- Insufficiently demonstrates a relationship between authority and power in a democratic political system or fails to support opinions with examples or adequate research.
- Establishes an inconsistent focus or voice. May not demonstrate a clear purpose in the writing.
- Demonstrates a careless attempt or inadequate ability in writing fluency, organization, and correctness.

The piece will receive a 1 if it

- Does not clearly consider an essential question posed in this unit.
- Exhibits no analysis of democratic behavior and civic responsibility, or demonstrates a misconception of the rights and responsibilities of citizens in a democracy.
- Makes no attempt to demonstrate a relationship between authority and power in a democratic political system.
- Exhibits no awareness of audience.
- Demonstrates an inability to communicate through writing due to inadequate organization or errors in surface features.

The Transformed Role of the Teacher

Using organizers, essential questions, and authentic assessment strategies will require teachers to make adjustments in the way classrooms are organized and managed. Teachers may find replacements for the lesson plan format and textbooks. Indeed, the transformation of the school envisioned by KERA will require that the roles of teachers and students change. Teachers will become coaches, facilitators, enablers, and co-learners. Students will become workers, group members, and true learners. This will necessitate that teachers review the way they

- design daily instructional activities,
- assess students in daily work,
- arrange furniture in their classrooms, and
- schedule their own time and work both in and out of the classroom.

JEFFERSON SMITH

(While working through the planning map, Jefferson Smith realized that much about his classroom and his teaching would have to change.)

Once I began planning, I realized two things. I had to be the one who took the responsibility for assuring that my students were prepared to successfully complete all aspects of the culminating performance. Also, everything I did in class now should be aimed at that preparation. Using an organizer, essential questions, and a culminating performance had given my teaching a consistent focus.

(The first observable change that Mr. Smith made was in his classroom arrangement. With the consent of his principal, he was able to trade half of his student desks for tables and chairs.)

I talked to one of my friends about room arrangement. He is a primary program teacher at one of our district's elementary schools. I had a lot of questions for him. I began asking about the use of learning centers in the classroom - things like how he set them up, how he scheduled students in them, how he assessed students at the centers. His help was invaluable. I decided that the only way I could get my students to do the things I wanted them to do was to use the learning center concept.

I began each week by arranging the chairs and desks in a semi-circle in the middle of the room. I held a business meeting where I handed out schedules and addressed technical issues. The rest of the time, desks, chairs, and tables were moved around as was needed; no seating chart, no rows. At times I was concerned that my classroom was chaotic, but after I had gone through a few of the instructional units like this, I stopped worrying. The students responded very well with only a few exceptions. In fact, most reacted better than they had in the more constrained environment.

(A more significant transformation quickly took place in Mr. Smith's classroom. Instead of concentrating on content coverage, he now believed that he was responsible for teaching the whole student.)

Transforming my approach to teaching was a sobering experience. I realized that there was much that I didn't know before I started using this approach, but now it became almost overwhelming. I felt comfortable with my content area. I was worried about trying to teach reading, writing, mathematics, and all the other things with which I was not familiar.

Basically, there were two options open to me in trying to deal with this. I began to read and pose questions to the experts in my building whenever I had a concern. Obviously, my time for

reading was severely restricted while I was teaching, but I never stopped asking questions. I honestly believed that my colleagues on the faculty appreciated the opportunity to talk with me about their own subject areas. From time to time, I asked teachers to trade classes during a planning period and help my students when they were having a particular problem.

My other strategy for dealing with this problem was to send students to other teachers to have their questions answered. I explained my dilemma to my students and stressed to them the importance of being courteous about getting information from other teachers for my class. In fact, we spent a brief time in class discussing this issue.

In transforming the classrooms of Kentucky, it is important that teachers realize three very important concepts:

- Teachers must become life-long learners themselves. This trait, which is a goal for all of Kentucky's students, must be modeled by teachers.
- Teachers must work collaboratively. The best lesson designs, the best teaching efforts, and the best support are discovered when teachers are talking to other teachers.
- Teachers must spend time addressing the needs of their students. The frequently cited quote, "less is more," truly does have to become a guiding principle in instructional unit planning.

JEFFERSON SMITH

(Mr. Smith began planning his learning unit trying to anticipate what the students would need but realizing that not everything could be planned in advance. He was guessing with some accuracy what students would need to know about government and politics - his content specialty. He was less sure about what would be needed in other areas.)

As I began developing plans for activities, I realized how important it was for me to spend time only on what was going to contribute to student learning. It was also evident that not all students were in need of the same information and skills. Using learning centers about once a week, collaborative learning groups, individual and group assignments, planned activities, a focused field study, and mini-lessons, I was able to make my plans flexible enough to meet the needs of most students.

(Examples of Jefferson Smith's activities appear below. For each of these activities, Mr. Smith decided to devise a rubric to help in the assessment of his students. Often, these plans had to be adapted to meet unanticipated conditions. At the end, however, many of Mr. Smith's concerns and worries had been resolved.)

Directions for Learning Center 3: Week of September 12th

You should complete steps 1-4 in one class period.

Step 1

In your group choose a discussion leader. The other three or four members should participate in the discussion as directed.

Step 2

Briefly discuss the following questions.

- 1. What responsibility does the government have to guarantee a fair trial for every individual who is accused of a crime?
- 2. If the rights of the individual appear to be in conflict with the rights of a group, whose rights should be protected?

Step 3

Read the two articles from *Time Magazine* appearing at your table. The first article deals with the Rodney King beating in Los Angeles in 1992. The second focuses on the events surrounding the verdict in the trial of the police officers accused of the beating.

Step 4

For the remainder of the class time, discuss our second essential question, "What rights do I have; where do they end; and, what are the rights of all citizens under our government?" Remember to discuss this question in the context of the articles you just read.

Additionally, consider the following:

- A. Other recent news events that consider individual rights which may be in conflict.
- B. Personal experiences you have had with this issue.
- C. Historical examples which might shed light on the issue.

Remember, you are responsible for submitting a set of notes on the discussion or a reflection about the discussion which specifically mentions points made by individuals in your group.

Step 5

Write a first draft position paper which answers the following question:

"In a democratic government, where do the rights of the individual end and the rights of society end?" The paper is due two days after you have completed the other activities at this center.

You will have completed this activity satisfactorily when you have

1. completed the reading and discussion at the center.
2. submitted an acceptable set of notes or a reflection on the activity.
3. submitted a first draft copy of the position paper which
 - a. attempts to be persuasive.
 - b. uses multiple sources of support.
 - c. shows understanding of the question posed.
 - d. connects the writing to the discussion and reading focused on in the center.

JEFFERSON SMITH

(In order for the students to accomplish their goal on this activity, Mr. Smith had to prepare them for the task. He had already conducted a mini-lesson on what was expected of discussion leaders. In the mini-lesson, the discussion leaders learned that each member in their group should give a response every 3 or 4 minutes. They discussed how to pose questions and politely end long-winded responses. Also, the class discussed the responsibilities of group membership.

Additionally, a mini-lesson addressed the techniques of taking notes in discussion groups and writing reflections of a discussion. Some time was devoted to making sure students understood the constitutionally guaranteed rights of the accused and the historical evolution of these rights in the United States. This information was provided through reading material and small group discussions which ended with tutoring sessions sometimes conducted by other students for those having difficulty understanding the concepts in the lesson.

Finally, on a student by student basis, Mr. Smith had to make sure that they understood enough about the writing process to know what a first draft effort was and how to make sure the required information was in it. This first attempt to use learning centers was a learning experience for both the students and Jefferson Smith.)

Mini-lesson: Participating in a Group Discussion
Intended Number in Audience: 10 to 15
5 Special Strategy: Fish Bowl
Handout: "Guidelines for Participation in a Group Discussion"

Step 1

Read the accompanying handout ("Guidelines...").

Step 2

Participate in the discussion. Be sure that you understand the purpose for each point on the guidelines.

Step 3

Watch the provided 10 minute news clip. Afterwards, you will be divided into one small group of 3 to 5 and one large group made of the rest of the students. Seats will be arranged for the small group in an inner circle and the larger group in an outer circle.

Step 4

You will be given a set of questions. If you are a member of the inner circle, follow the guidelines for participating in a group discussion. If you are a member of the outer circle, evaluate the group discussion using the "Guidelines..." as criteria.

Step 5

Exchange places with members of the other group and practice group participation repeating the above steps.

JEFFERSON SMITH

Early in August I decided that I needed to have a mini-lesson on group discussions. I began planning by trying to write a traditional lesson plan with objectives and activities. I even started making out a worksheet for students to use. Doing all of this just did not seem to make any sense.

*I ran across a book, *The Paideia Program* by Mortimer J. Alder, which included a chapter on conducting seminars in classrooms. Much of what I wanted the students to be able to do I got from that chapter and my own common sense. I wanted to make sure that all students participated, knew how to ask good questions, felt secure about their own ability to contribute, and could be good listeners.*

What I finally decided to do was to clarify in my own mind what the students should know about group discussion procedures. I wrote that down in my plans. Since this was just the beginning of the process of learning how to function in a group discussion, my initial objective was to develop a set of agreed-upon guidelines for the students to have when they worked in groups. These were to be posted so everybody would know them.

The day of the mini-lesson, I asked the students to write down two rules that they believed should guide people when they were involved in a group discussion. I placed them in groups of five, asked them to share their rules, discuss the need for the rules as a group, and be prepared to report their findings to the whole class.

Seven minutes later, I had them report to the whole class while a student kept a master list of rules on the board. After each group reported, we eliminated duplications. I made a couple of suggestions, only one of which was accepted by the class. Some wording was changed on a few, and a student volunteer who could print neatly wrote out guidelines on a piece of chart paper. These were posted on a wall in the room.

The process was a tremendous success. So much so that I have used it successfully for many tasks. The guidelines were accepted by all of the students most of the time. Discussion leaders were responsible for their enforcement, and seldom was there a problem. As the year progressed, we made adaptations where necessary.

Planning for Daily Activities

The Kentucky Education Reform Act (KERA) is requiring teachers and administrators to alter their views of lesson planning. No longer can a single lesson plan format serve as the basis for all lesson development. Instead, daily planning will have to

- fit in the context of the organizer,
- be flexible to meet the needs of individual students as well as classes, and
- have a clear focus with a rationale for the plans.

Often these plans will take a variety of forms as teachers begin to use different types of strategies and activities. The traditional daily lesson plan format may no longer be adequate for plans that emphasize teacher and student flexibility or require a design which allows students to individualize their work schedules.

Other strategies which can be used to keep a record of what the teacher is doing include

- logs,
- journals,
- checklists, and
- reflections.

No one method is correct, and the best method of recording what happens in the classroom is a combination of approaches. All teachers should have an idea about what will happen in their classrooms every day. But teachers have to be flexible enough to meet unexpected challenges, seize the "teachable moment," and change when the plans are not working.

JEFFERSON SMITH

(Though Mr. Smith's principal no longer used the daily lesson plan book for accountability purposes, teachers were required to keep a record of their plans. Mr. Smith decided that he needed an accurate record of what he intended to do in class. For these reasons an organized method of planning was important to him. The page below is a sample of the entries which Mr. Smith kept in his "plan binder.")

Plans for Developing Guidelines for Group Discussions

Anticipated Goal:

A chart which is developed by the students to serve as guidelines for group discussions.

Rationale:

The students need to know what is expected in group discussions before they can participate fully. Student developed guidelines will hopefully give them a sense of ownership and create an atmosphere which encourages individual responsibility. Additionally, this activity is directly related to student attainment of Kentucky's Learning Goals 1, 3-6. Specifically, this activity will help students with Goal 4 which promotes responsible group membership.

Procedure:

Step 1

2 minutes: Have students write two rules that they believe should guide people when they are in group discussions.

Step 2

7 minutes: Have the students divide into groups of 5. They should share their rules with the group. The group should determine which rules they wish to submit to the class. Other suggestions can be made if the group desires.

Step 3

15 minutes: Appoint a student recorder at the board and have each group report their list of rules to the class. Allow one question for each rule, if needed.

Step 4

10 minutes: Have students suggest duplications that exist. Make sure these are eliminated. Make suggestions of guidelines which might be needed. Allow a brief discussion about the guidelines. Ask if there are problems with any of the suggestions. If so, address them. Reach consensus as a class.

Step 5

After class: Ask a student volunteer to record completed list on a sheet of chart paper and post in the room. Amend the list as needed.

JEFFERSON SMITH

(Eventually, Mr. Smith began making it a practice to jot down a few comments about his daily plans. He noted what did and did not work and what adjustments were needed. He began to keep a binder with his plans and comments. Finally, he decided he needed to keep a log of daily activities. This was especially important on days when students were working at centers or individually. During these days, Mr. Smith was usually working one-on-one with students or with groups. On these days, Mr. Smith wrote down what he intended to do much like a doctor's appointment sheet (e.g., Second Period, 10:05 a.m., talk to Ann about double jeopardy). Keeping the log gave him the security he needed if questioned about class activities.

Jefferson Smith's classroom had taken on a new look. On any given day students would be doing a variety of activities. Some students would be at centers, some would be involved in group discussions, and some would be talking with the teacher. The classroom was a bustle of activity and learning.)

My classroom gradually became my students' classroom. They knew when they came in that they had some control over their learning. Along with that came responsibility. Not only were they going to be held rigorously accountable on the culminating performance, on intermediate assignments, and for their behavior; but they also were responsible for knowing what they were going to be doing over a period of time.

After a while, I decided that the students needed to be filing a weekly calendar explaining what they were going to be doing, why they were doing it, and where (if not in the classroom) it would be done.

They would file these on Friday, and I would review them for approval and return them on Monday. Seldom did the students file anything that I could not approve. I was able to keep up with my students, and they knew what was expected of them.

Weekly Plan for Peggy O'Neal			
Day	Activity	Purpose	Place
Monday:	Learning Center #1	Required	
Tuesday:	Meet with group	Discuss Culminating Performance	
Wednesday:	Research	Culminating Performance	Library
Thursday:	Meet with group	Culminating Performance	
	Learning Center #2	Required	
Friday:	Meet with Mr. Smith	Discuss Writing	
	Individual work	Culminating Performance	

Field Studies and Interviews

An important component of a KERA classroom is the use of community resources by teachers and students. Inviting experts and community leaders into the classroom has always been done. Field studies, while meeting with many barriers, also have had their place in Kentucky's classrooms. It is the intention of KERA to give these and other uses of community resources renewed importance.

The use of community resources

- encourages students to make connections between their learning and the real world,
- allows the community to develop a vested interest in the success of the school, and
- provides opportunities for students to be active learners.

Effective use of community resources in education does not occur by accident. Using these strategies is most successful when they

- are planned with a purpose which is clear to the students,
- require some thinking and learning on the part of the students prior to the activity,
- require some thinking and reflection on the part of the students after the activity, and
- ask the students to do searching, questioning, and analyzing during the experience.

Field studies (i.e., field trips) are opportunities to provide a complete educational experience for students. While field trips were often believed to be a "nice day away from school" in the past, field studies offer students opportunities to make connections between learning in the classroom and real-world situations. By applying the strategies for effective use of community resources listed above to plans for field studies, teachers can greatly enhance these experiences.

JEFFERSON SMITH

(Jefferson Smith decided that a visit to the Circuit Court in his county would be an invaluable experience for his students.)

I had always arranged to take my students to watch a trial. We had never really done much with the trip, though. It was just kind of a neat experience and the students really enjoyed it - especially if the trial we observed involved some interesting issue.

I decided this year that what I had done in the past was not good enough. I called the Circuit Judge and discussed with her the possibility of staging a mock trial for my class. The students would sit as jurors. With much help from the judge and attorneys, I was able to make all of the arrangements.

I constructed a set of learning centers for the students and had them research some information about courts and juries. After grouping the students into jury panels, I conducted small group discussions about the functioning of courts and the expectations for jurors. Each student was asked to identify questions which might be answered during the trip. The questions could be answered through observation or by asking one of the panelists. We revisited our organizer and essential questions to make sure that we all understood the context of our field study.

Agenda For Court Day

8:30 a.m.	Depart from school
9:00 a.m.	"Court Procedures and the Role of the Judge" Speaker: The Honorable Rebekah Thomas, Circuit Court Judge
10:00 a.m.	"Attorneys and the American Legal System" Speakers: Benjamin Andrews, Commonwealth Attorney and Abigail Warren of Jones, Warren, and Associates
10:30 a.m.	Carl Mason v. The Commonwealth of Kentucky
12:00 p.m.	Lunch (provided by a local restaurant)
1:00 p.m.	Resumption of the case
2:00 p.m.	Question and answer period
3:00 p.m.	Return to school

JEFFERSON SMITH

The day after our visit to court, the students were to arrive in the classroom with answers to their questions. Using a student as a volunteer recorder, we discussed the pre-observation questions, their answers, and the verdicts reached by the juries. The students then wrote a first draft reflective essay about the field study. On the essay, students were asked to respond to the question, "Does the trial system used in America serve its citizens?"

The student essays showed that those who went on this trip learned much more than students who participated in previous trips to court. In fact, they understood the legal system better than if we had spent weeks on it in a traditional classroom. The whole experience showed me exactly what a "Classroom Without Walls" could be.

Continuous Classroom Assessment

Perhaps the most obvious change which has been brought about by KERA is in assessment. The implementation of the KIRIS assessment has prompted school districts, schools, and teachers to drastically alter assessment instruments and instruction, methods of reporting student progress, and the terminology of evaluation. The most important change in assessment, however, should be in the attitude teachers have regarding its purpose. Assessment should be

- **continuous or ongoing.** Students need to be assessed daily and weekly on their progress toward improving identified weaknesses or reaching goals.
- **flexible enough to meet the unique needs of each student.** The continuous assessment needs to concentrate on identified areas of weaknesses or goals for each student.
- **non-cumulative.** The assessment is not an averaging of grades but is, instead, a constant observation of progress.
- **progressive.** Once a student demonstrates improvement toward a goal, the assessment does not stop. Progress should be monitored and checked over and over. Student progress should also be continuous.

When using various forms of authentic assessment, it is important that teachers plan instructional units which will help students perform well. Teachers should have a reasonable degree of certainty that students can demonstrate any knowledge, skill, or process which is being required on an assessment. In this way, assessment and instruction are intertwined.

JEFFERSON SMITH

(Mr. Smith had to adjust his daily routine in the classroom. No longer was he the focus of attention for 50 minutes. Instead, the learning became the focus. His time was now filled by helping students find information, discovering ways of enabling them to accomplish tasks, and continuously observing students at work and learning. This assessment became vital as the basis for discovering strategies and methods to help students.)

I began to realize how critical it was that I keep daily records about what was happening with each of my students. Sometimes, I was trying to do so much that I really was having trouble remembering everything that had happened. Eventually, I decided that I had to develop a recordkeeping system.

Once again, I called my friend who taught a primary program class for advice and help. He explained that he carried a stack of 3x5 index cards as he circulated around the room. As he was talking to students, he would take notes on the cards and place the student's name at the top. At the end of the day, he placed the cards in a set of folders. He had one folder for each child.

In the folders were a few pages on which he recorded student goals, student progress, and student movement to a higher level or additional goals. This information was transcribed from the cards.

I adapted this strategy for my classes. Of course, I had more folders to keep but each student was focusing on fewer goals in my class. This is a time consuming process, but it had some major advantages. I was so familiar with the students' work that I really did not have to spend additional time assessing final products. Also, I had supporting evidence for my evaluations. I never had any problem explaining how a student was assessed. Actually, the more I used this system, the easier it became. At a conference I heard that there will soon be bar coding technology available for classroom recordkeeping. When our school can purchase that, it will be a tremendous time-saver.

(Mr. Smith also kept in the students' folders copies of work they had done and the assessment sheets which had been used to evaluate the work. This "working portfolio" was available to students on request and was extremely helpful when students had to assemble their portfolios for the state assessment program.)

Daily Evaluation Log for Nathaniel Jones

10/15	Recognizes issues of justice, equality, responsibility, choice, and freedom and makes applications to real-life situations. (2.14)
10/17	Nate seems to comprehend the concept of majority rights but is having difficulty understanding the importance of minority rights. Suggested he read section on "Rights" in textbook and a couple of articles on the topic. We are to conference before school on 10/21.
10/21	Beginning to show an understanding of minority rights. Still needs to apply it. Suggested he call our state representative (the Minority Leader in the Senate) and two minority members of our staff. We need a more complete understanding of equality. Nate is still conceptualizing equality in terms of property. Considering trying to get him to join Martha, Raymond, and Joan in a reading group to read <i>Animal Farm</i> .
10/28	Early this week, observed Nate explaining to a friend why Tony should be allowed to wear a shirt with a political message on it. GOOD JOB! Will begin reading <i>Animal Farm</i> in class today.

Finding Time for It All

Throughout the implementation of the Kentucky Education Reform Act (KERA), one of the major concerns of teachers has been finding time to do everything. The transformations required by KERA do demand much of teachers. Educators across the state are already discovering ways to save time.

- Continuous classroom assessment actually is a time-saving strategy. It allows teachers to spend less time on traditional grading activities. Much of the time spent in assessing students is done in school. Also, because teachers are continuously reviewing student work and are more familiar with what they are doing, relatively little time is needed in the final assessment of student products.
- The principle of "less is more," used as a guide, can also help teachers save time. Spending less time attempting to cover vast amounts of information and organize minute facts will allow teachers to spend more time helping students learn.
- Students can also become time savers for teachers. Much of the research and outlining that have been required to develop good lessons can now become the domain of the student. This can free teachers to spend time reading about and discussing professional concerns which seldom get the attention they need.
- Teachers need to be involved in restructuring the school day. Finding creative ways to organize the school day around time blocks, teaching teams, or central organizers can not only enhance student learning but also enable teachers to share duties, collaborate on plans, and work cooperatively.

- The changes demanded by KERA should be viewed as evolutionary not revolutionary. Few will feel comfortable, at first, with all of the changes taking place. Experience and experimentation will reveal new ways in which to use time more efficiently.
-

JEFFERSON SMITH

(Jefferson Smith had trouble at the beginning trying to do everything. The extra-curricular activities, a constant need to study new ideas, and a family at home created an almost intolerable amount of pressure.)

To be honest, by the middle of October, I felt like there was no way I was going to be able to keep up the pace. The excitement of the beginning of the school year wore off too quickly. After the strain became obvious to my principal, she came to my room one afternoon and talked to me about the changes I was trying to make in my teaching.

The principal explained that she supported everything I was doing. She said the methods I was using were supported by all of the reading she had been doing. But, she also reminded me that there was life beyond school, and I was not expected to create the perfect classroom overnight.

After that talk, I became much more relaxed. I really began enjoying teaching again. I cannot tell you that all of this did not take more time. I used every strategy I could find to ease the pressure. What worked best, though, was that I established "no-work times" after school and on weekends. No matter what, I would not do work for school during those times.

Even though I was working harder than I had ever worked before, I found it more challenging, more consequential, and more fun. I got to know my students better; in fact, we even had a few social activities. For instance, we had an election night party in the cafeteria at school. I think I learned as much as the students did.

Jefferson Smith did find time to make some significant alterations in his teaching. To get started it had been necessary to make several changes at once. After school had begun, however, it was easier to make adaptations if he went slowly and tried one new strategy at a time.

He continued to study ideas which he thought could help him improve his classroom. One member of his "editing party" suggested that they might become a study group. They began reading books about topics like multiple intelligences and interdisciplinary teaching.

Jefferson Smith's experience in transforming the learning environment is important to understand. It shows how KERA has enabled teachers in Kentucky to fulfill the commitment they made when they began teaching—the commitment to improve the lives of all students in the Commonwealth by helping them achieve a meaningful education. The Reform Act places responsibility for that education squarely on the shoulders of the students and teachers who are most involved in the process. It also enables them to successfully make an educational transformation by providing the needed tools. In the end, KERA will succeed because it is founded on the philosophy that all students can learn at high levels.

NOTES

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Teaching/Assessment Strategies

Mrs. McDowell's class will focus on physical wellness issues for the next several weeks. One of the tasks is to create a physical fitness program for 6th grade teachers. To accomplish the task, students can choose the most appropriate strategy from those Mrs. McDowell has modeled, such as writing questions for interviewing fitness professionals, working on a group investigation, or developing a flowchart for the program.

Introduction

The Kentucky Education Reform Act (KERA) charges schools with the task of providing students with the necessary tools for lifelong learning. Students who possess a variety of methods to approach learning will have a greater chance of becoming independent, "strategic" learners.

As students learn differently and their needs vary, using only one instructional strategy is not sufficient. Teachers can use strategies to help students learn, assess the degree of learning, and determine how well a learner has transferred the strategy into a personal learning tool. The learning environment must take students beyond rote learning into a level of discovery and exploration.

After districts and schools restructure their curricula, they should incorporate into their instructional program the strategies which will assist students in reaching the academic expectations. Instruction on using a strategy should begin with teacher modeling, proceed to student implementation with corrective feedback, and be followed by the student completing the task independently. Through this process, students have an opportunity to internalize the strategies presented to them .

Active Involvement

To provide teachers and curriculum developers with a variety of tools to meet individual differences and needs of students, a compilation of strategy components and their descriptions are detailed in this section. The strategies presented encourage active learning, discovery, and exploration.

Lecture, the most common strategy currently used in classrooms, is not included because it does not encourage active learning. As an adaptation, a 7-10 minute lecturette strategically placed within a lesson can be valuable in teaching a concept. Teachers should also create "attention-getters" during the lecturette by using techniques such as rhetorical questioning or telling students to "Turn to your partner and see what he/she thinks."

On the next page is a list of Key Teaching/Assessment Strategy Components. As these are being reviewed, remember the following:

- The strategies listed are organized in categories strictly to be helpful to teachers; they are not "theoretically" categorized.
- The strategies are both processes and products; they are not in parallel structures.
- The strategies overlap into other categories; they are not mutually exclusive.

The only man who is educated is the man who has learned how to learn...how to adapt and change.

Carl Rogers, Freedom to Learn, 1969

Key Teaching/Assessment Strategy Components

I. Foundation Strategies p. 91

Activating Prior Knowledge
Metacognition
Modeling

II. Collaborative Process p. 93

Cooperative Learning
Peer of Cross-Age Tutoring
Reciprocal Teaching

III. Community-Based Instruction p. 97

Field Studies
Mentoring/Apprenticeship/Co-op
Networking
Service Learning
Shadowing

IV. Continuous Progress Assessment p. 99

Anecdotal Records
Checklist
Conferencing
Interviewing
Observation
Performance Events/Exhibitions
Portfolio Development
Self-assessment/Reflection

V. Graphic Organizers p. 109

Advance Organizers
Compare/Contrast Structures, Venn
Diagrams, Matrices
Flowcharts, Sequence Chains, Time Lines
Graphic Representations
KWL
Mapping/Webbing
Notetaking
Storyboard
Story Map

VI. Problem Solving

A. Process

Brainstorming
Discussion
Heuristics
Inquiry/Investigation/Experimentation
Questioning

B. Product

Case Studies
Creative Problem Solving/Future
Problem Solving
Debate
Formulating Models
Interviews/Surveys/Polls
Oral History
Research
Role-play
Simulations

VII. Technology/Tools P. 128

Adaptive Devices (digitized audio, video)
Calculators
Computer Utility (databases, spreadsheets,
Graphics, word-processing)
Data Collection Tools (lab probes, zap shot
cameras)
Design (e.g., CAD-CAM)
Distance Learning Teleconferencing
Games
Interactive Video
Manipulatives
Multimedia (Videodisk, CD ROM)
Puppets
Telecommunications
Video/Audio Production/Videotaping

VIII. Whole Language Approach p. 133

IX. Writing Process p. 136

I. Foundation Strategies

Activating Prior Knowledge| Metacognition Modeling

Three strategies are being called "foundation strategies" because they are the basis for many others. They are used continually in the classroom, often simultaneously with other appropriate strategy components.

Activating Prior Knowledge

Associating new information with what is already known, activating prior knowledge, is an academic expectation of KERA Goal 6. Activating prior knowledge enables the learner to relate the knowledge previously learned to the current information being processed and to make predictions. The influence of prior knowledge on comprehension is very powerful and should be continuously activated by teachers and students to promote learning. This can help students see central and recurrent patterns in and across content areas and realize that what they know can be applied to what they are learning.

Many of the strategy components included in this subsection combine to activate prior knowledge. For example, brainstorming, mapping, and KWL help students recognize knowledge they already have which relates to new readings or processes.

Metacognition

Metacognition refers to the awareness and control learners have on their cognitive processes. Proficient learners demonstrate the following metacognitive skills:

- recognizing when they have a problem learning;
- spotting inconsistencies and incompatible assumptions in their own thinking;
- knowing when to consciously apply a variety of problem-solving strategies to explain why they made a particular decision; and
- applying self-monitoring techniques (e.g., frequent checking, goal setting, reassessing, and evaluation).

*"Unless the curriculum embodies good models of thinking (within materials and within the teacher) and students have plenty of opportunity to practice thinking, there is no chance that students will learn to think better." **Howard Gardner**, ASCD Curriculum Update, June 1992*

What can teachers do to develop metacognition in students?

- Share and model self-monitoring processes.
- Explain strategies that students can use.
- Clarify why particular strategies are helpful and useful.
- Clarify and model when particular strategies are appropriate.

What can students do to develop metacognition?

- Learn to "track" their thinking processes in a lesson by asking "What did I do?"
- Learn to change their thinking patterns to work more effectively for them by asking, "How could I improve?"
- Learn to use other resources for increasing skillful thinking by asking, "What help do I need?"

Modeling

Teachers should purposefully model their use of strategies so that students can emulate them. "Think Alouds" allow teachers to verbalize all their thoughts for students as they demonstrate skills or processes. Some points to be included in Think Alouds follow:

- Make predictions or show students how to develop hypotheses.
- Describe visual images.
- Share an analogy which links prior knowledge with new information.
- Verbalize confusing points.
- Demonstrate fix-up strategies.

These should be identified by teachers so that students will realize how and when to use them. After several modeling experiences, students should practice using the strategy in pairs. Ultimately, students should work independently with the strategy, using a checklist to monitor usage of the critical points for Think Alouds.

Think Aloud

Make Predictions:

"From the title I predict that this section will tell how airplane pilots adjust for winds."

"In this next part I think we'll find out what caused these plane crashes."

Describe Images:

"I have a picture of this man in my mind. He looks like a nice, well-dressed business man."

"I can see the horse kicking down the stable door as the flames come closer."

Share Analogies:

"This is like a time when I was late for school and it began to thunderstorm."

Verbalize Confusing Points:

"I am not sure how this fits in."

"This is not what I expected."

Demonstrate Fix-up Strategies:

"Maybe I'll reread this."

"Perhaps I better change my picture of what is happening."

II. Collaborative Process

Collaboration means working with at least one other person to attain a goal or objective. The collaborative process applies the concept "two heads are better than one" to the learning environment. Two or more students are given an objective or goal to work toward. Objectives and goals of collaboration are achieved because students learn to depend upon and use each others' strengths to solve problems. Collaborative experiences engage students in an interactive approach of processing information which supports

- greater retention of subject matter,
- improved attitudes toward learning, and
- enhanced interpersonal relationships among group members.

Team work, group dynamics, and self discovery are often results for individuals involved in a collaborative process.

Cooperative Learning

Cooperative learning is an extensively researched instructional method in which students are divided into small groups (2 - 6 members) to achieve a common goal or task. The groups are chosen heterogeneously and attention is given to different social backgrounds, skill levels, physical capabilities, gender, and learning styles. The students work collaboratively with all participating, but each is held individually accountable for academic performance and social behavior. To enhance the productivity of the group and to develop social skills of individuals, students are taught appropriate collaborative skills. The teacher observes both academic and social behavior and intervenes as necessary to guide, redirect, and clarify.

Cooperative learning helps to eliminate competition between students and facilitates the achievement of group goals that could not be achieved individually. There are many cooperative learning techniques and structures. The chart on the next page includes examples and descriptions of a few techniques.

Structure	Brief Description	Functions: Academic, Social (Italics)
Teambuilding		
Roundrobin	Each student in turn shares something with his or her teammates.	Expressing ideas and opinions, creation of stories. Equal participation, getting acquainted with teammates
Classbuilding		
Corners	Each student moves to a corner of the room representing a teacher-determined alternative. Students discuss within corners, then listen to and paraphrase ideas from other corners.	Seeing alternative hypotheses, values, problem-solving approaches. Knowing and respecting different points of view, meeting classmates
Communication Building		
Match Mine	Students attempt to match the arrangement of objects on a grid of another student using oral communication only.	Vocabulary development. Communication skills, role-taking ability
Mastery		
Numbered Heads Together	The teacher asks a question, students consult to make sure everyone knows the answer, then one student is called upon to answer.	Review, checking for knowledge, comprehension. Tutoring
Color-Coded	Students memorize facts using a flash card game. The game is structured so that there is a maximum probability of success at each step, moving from short-term to long-term memory. Scoring is based on improvement.	Memorizing facts. Helping, praising
Co-op Cards		
Pairs Check	Students work in pairs within groups of four. Within pairs students alternate-one solves a problem while the other coaches. After every two problems the pair checks to see if they have the same answers as the other pair.	Practicing skills. Helping, praising
Concept Development		
Three-step Interview	Students interview each other in pairs, first one way, then the other. Students each share with the group information they learned in the interview.	Sharing personal information such as hypotheses, reactions to a poem, conclusions from units. Participation, listening
Think-Pair-Share	Students think to themselves on a topic provided by the teacher; they pair up with another student to discuss it; they then share their thoughts with the class.	Generating and revising hypotheses, inductive and deductive reasoning, application. Participation, listening
Team Word-Webbing	Students write simultaneously on a piece of chart paper, drawing main concepts, supporting elements, and bridges representing the relation of ideas in a concept.	Analysis of concepts into components, understanding multiple relations among ideas, differentiating concepts. Roletaking
Multifunctional		
Roundtable	Each student in turn writes one answer as a paper and a pencil are passed around the group. With Simultaneous Roundtable more than one pencil and paper are used at once.	Assessing prior knowledge, practicing skills, recalling information, creating cooperative art. Teambuilding, participation of all
Inside-Outside Circle	Students stand in pairs in two concentric circles. The inside circle faces out, the outside circle faces in. Students use flash cards or respond to teacher questions as they rotate to each new partner.	Checking for understanding, review, processing, helping. Tutoring, sharing, meeting classmates
Partners	Students work in pairs to create or master content. They consult with partners from other teams. They then share their products or understanding with the other partner pair in their team.	Mastery and presentation of new material, concept development. Presentation and communication skills
Jigsaw	Each student on the team becomes an "expert" on one topic by working with members from other teams assigned the corresponding expert topic. Upon returning to their teams, each one in turn teaches the group; and students are all assessed on all aspects of the topic.	Acquisition and presentation of new material, review, informed debate. Interdependence, status equalization
Co-op	Students work in groups to produce a particular group product to share with the whole class; each student makes a particular contribution to the group.	Learning and sharing complex material, often with multiple sources; evaluation; application; analysis; synthesis. Conflict resolution presentation skills
Reprinted with permission from Educational Leadership. Copyright by ASCD, 1989/90. Kagan, Spencer. "The Structural Approach to Cooperative Learning." Educational Leadership. December 1989/January 1990, (14).		

Peer or Cross-Age Tutoring

Peer or Cross-Age Tutoring is a technique where students provide academic assistance to peers or younger students. It casts one student in the role of teaching another student and provides an alternative for direct teacher-to-student interaction. This process helps students think through procedures and concepts thoroughly enough to teach others and reinforces their own present knowledge.

Since the students work together and are responsible for each other's learning the difference in their ability should not be so great as to intimidate a partner nor so similar they are unable to aid each other's progress. However, strong evidence exists that students at every level of achievement can be effective tutors. Low achievers can demonstrate they are capable of learning and helping others learn. High achievers develop a sense of responsibility for those less advanced.

Demonstrating the concept "You learn what you teach," tutors encounter opportunities to review basic skills without embarrassment, gain experience in applying academic abilities, and develop insight into the process of teaching and learning. Tutees receive individualized instruction while working with positive role models.

Tutorial grouping is most effective when it is not used excessively so that the chosen students do not feel isolated from their classmates. Below is an example of a management device which may be useful. The form is filled out initially by the teacher and then later taken over by the tutor and tutee as more responsibility is allotted to them.

Peer or Cross-Age Tutoring		
Names: Bryan/Doug		
Subject: Science		
<u>Date</u>	What I Plan To Do Today	What I Did Today
10/05	Monitor, observe, and record the progress of my 5 types of growing crystals. Write down at least 2 observations/measurements of each type of crystal.	I carefully studied the crystal growth and completed today's chart for each type of crystal.
10/08	Study display case on insects in the classroom with partner. Choose 3 insects. Write 3 facts about each from the resource center.	I chose spiders, roaches, and flies. I found 6 resources from which to write similarities of each.

Reciprocal Teaching

Reciprocal teaching, an interactive dialogue between the teacher and students about content/material, helps students learn how effective readers process information.

The teacher first models the technique, providing practice time for students to take turns being "the teacher," while the teacher monitors progress and provides feedback. When students are proficient at using the technique, it can be incorporated into cooperative learning activities. There are four steps involved in implementing the reciprocal teaching strategy.

Step 1 - Summarizing- Students restate what they have read in their own words. They work to find the most important information in the text. Initially, their summaries may be of sentences or paragraphs but later should focus on larger units of text.

Step 2 - Generating Questions- Students ask questions about the material. In order to do this, they must identify significant information, pose questions related to this information, and check to make sure they can answer their own questions.

Step 3 - Clarifying- Students focus on the reasons why the text is difficult to understand, (e.g., new vocabulary, unclear reference words, and unfamiliar concepts). Students may clarify or ask for clarification in order to make sense of the text.

Step 4 - Predicting - Students speculate on what will be discussed next in the text. To be successful, students must recall relevant background knowledge so they can connect what they are reading with what they already know.

Reciprocal teaching can be used across the curriculum and at all developmental levels. See the example below:

Reciprocal Teaching in a 1st Grade Classroom -- Excerpts

Teacher, *introducing the story*: Today we will be reading a story called "The Snowshoe Rabbit." Does anyone have a prediction about what this story will be about?

Traver, *predicting*: It might tell...he lives in the snow probably...and it might tell you...if he's got shoes or something.

Teacher: It did say snowshoe, didn't it?

Manny, *predicting*: It might just be that his feet really look like shoes.

Teacher: Those are all good predictions. Let's see if this is what the author wrote. *Reads the first sentence of the story*: How

far can you jump? *Asks the children*: What do you think the author is going to tell us?

Meara: How far the rabbit can jump.

Teacher, *reading from the story*: "A snowshoe rabbit can jump 15 feet." *Asks the children*: Did **Meara** make a good guess?

Teacher continues to read the first paragraph describing the speed and strength of the snowshoe rabbit. She then calls on the child who is to lead this portion of the discussion.

Teacher: Troy is our teacher.

Troy, *questioning*: How fast does the rabbit run?

The group talks about how fast and far a snowshoe rabbit runs and the reasons why.

Troy, *summarizing*: This part told us about why he can go far and he can jump fast. *Predicting*: It might tell us where he lives, what state he's in.

The teacher continues to read the next part of the story which describes where the snowshoe rabbit lives and what it looks like, including its hind feet and coloring. The reading is interrupted once by a child asking the teacher to clarify hind. Meara is the next discussion leader and begins questioning about how the snowshoe rabbit gets its name. Then she summarizes. And so the story goes.

Adapted from "Collaborative Research and Development of Reciprocal Teaching" by Annemarie Sullivan Palincsar, Kathryn Ransom, and Sue Derber, Educational Leadership, December '88/January '89.

III. Community-Based Instruction

Community-Based Instruction (CBI), sometimes called Community-Based Learning, provides students with learning experiences in real life situations and settings. It enables them to relate school work to knowledge and skills needed for work in community agencies. The approach offers an alternative to the student who enjoys working with people to achieve a goal and uses the community in a partnership with the school. The experiences may be short- or long-term and must be coordinated through the school with instructional expectations clearly defined.

The 10th grade students at David School have dropped out of regular school and are trying to get their diplomas in an alternative setting. Under the leadership of their teacher, the students chose to meet their science objectives by engaging in a project to clean up the local fishpond. Using scientific procedures and the process skills, the boys have been bringing the pond and its surroundings back to life.

Field Studies

A Field Study is a planned learning experience which involves an educational trip to places where students can observe first-hand and study directly in a real-life setting. Students prepare before they go, and plan discussions for the time they are there. They make notations of their observations and record actual experiences. Teachers may use this to clarify comprehension and stimulate discussion and critical thinking.

Before going to see a nuclear reactor, Mrs. Rosenberg asks her students to form cooperative groups to list what they already know and what they want to learn while on the field study. Each group researches data about nuclear reactors. When they return from the outing, each group will report to the class:

- *Facts they thought they knew about nuclear reactors but then found were incorrect.*
- *New things they learned that went beyond what they thought they knew.*
- *Questions they had that were answered as a result of the field study.*
- *Questions that were not answered that they would be willing to investigate.*

Mentoring/Apprenticeship/Co-op

Mentoring matches students with a person in the community. Their relationship can be from a variety of different perspectives (e.g., cultural, social, shared interest in computers).

Apprenticeship matches students with community people who can transmit professional skill and knowledge to the students through collaborative work projects. This approach is helpful to students who learn best by visualizing and imitating. The trade industry often uses the concept of apprenticeship through on-the-job-training.

Richard Targett, a manager in Salomon Brothers' investment banking firm in Brooklyn, was a 1991-92 mentor to Malcolm Lane IV, a student at Paul Robeson High School for Business and Technology. He advised Malcolm about college, found physics tutors for him, and played math games with him. In the spring of 1992, Malcolm was voted the king of his prom and became the first high school graduate in his family. In the fall, he began City College of New York to study engineering. When friends ask him where he's going, he responded, "I'm going to success."

Excerpted from "Why Kids Should Learn About Work," by Alan Deutschman, Fortune, August 10, 1992.

Cooperative Education (Co-op) is a method of instruction that uses parallel or alternating patterns of paid work experiences with periods of school attendance. A training agreement and a training plan are drawn up between the school, the student, parent of a minor, and the employer so the work and school experiences are planned and correlated to meet the student's specific occupational goals. Student experiences include professional or technical learning, or personal service, such as at a day-care center.

Networking

Networks are formed to facilitate researching information. Involving students in a network is motivational, meets the needs of many students, and facilitates interdisciplinary learning. Networking, via telecommunications, allows students to collect data not only in their school or community but also around the state, country, and world.

Service Learning

Service learning engages young people in significant, genuine service to their school, community, and environment and gives them the opportunity to learn through reflecting on the experience. Youth service learning contributes to the development of the student in such areas as personal growth, career exploration, understanding of community and citizenship, social science skills, and communication skills. It seeks to instill compassion for others as a pervasive social value. Reflecting about the learning from the experience is critically important to the success of the program and is the factor which differentiates service learning from community service.

Service learning exposes its participants to a variety of views and encourages them to reflect on their experiences and think critically. It requires that young people be viewed as competent, capable contributors to their community instead of passive recipients of education. Teachers become mentors and guides rather than presenters of information. The entire community is enhanced by service learning as participants become infused with creativity and enthusiasm for having been involved with positive actions.

Shadowing

Shadowing is a short-term experience that provides the student an opportunity to observe the events that occur within a work context. For example, a student studying government might shadow the mayor at a town meeting or one studying health might shadow a healthcare professional.

IV. Continuous Progress Assessment

This section describes a variety of assessment strategies. These strategies can provide students with opportunities to participate in learning experiences and receive evaluative feedback. Teachers can use the strategies to make adjustments in curriculum and instruction.

Anecdotal Records

Anecdotal records are carefully documented accounts of a child's progress, including milestones particular to the child's social, emotional, physical, aesthetic, and cognitive development. Recording is informal, positive, unforced, and done while actual activities are occurring. They are objective, factual observations of a child and his/her work. As Wendy Hood says in *The Whole Language Evaluation Book*, "...using the documented data, adding further explanation that draws on the mental notes made on each child that come to mind when the samples are reviewed, we show how much that child grew, how far that child came, all the things that child knows about school and about doing."

Anecdotal records may be helpful for the following:

- noting student's changes and growth over time,
- evaluating the student's progress in a non-threatening environment,
- utilizing information for conferences without needing extra interpretation,
- maintaining a readily accessible tool for evaluation,
- reviewing more aspects of development (e.g., preferences, social environment, attitudes) than standardized tests can evaluate, and
- guiding changes in instruction and curriculum.

Notepads, sticky notes, or checklists with space for notes can be used for recording. The following is a teacher's suggestion about anecdotal records.

ANECDOTAL RECORDS

With the current emphasis on alternative-assessment and student-observation methods, the following technique aids in the record-keeping process:

1. Keep a clipboard with sheets of computer labels attached.
2. Set up a three-ringed notebook with individual pages containing each student's name and any other information you may deem necessary.
3. As you observe the students, jot down pertinent information on the label; include the student's name and the date.
4. At the end of the week, simply peel the labels and affix them to the individual student's pages in the three-ringed notebook.
5. Read the observations at the end of each day so that you know what skills students need reinforced over the next several days. These pages are also great references for parent-teacher conferences.

*2/1: Donald
Tried to get group working together. Encouraged the group to try another solution path. Talked about the strategy of working backwards.*

From the file of Felicia A. Coletti, Oviedo, FL 32765

"From the File Treasury" Arithmetic Teacher, Edited by Jean M. Shaw, NCTM, 1991.

Checklist

Checklists are simple and efficient ways to collect and organize information about students. Sometimes checklists are viewed as a statement of class goals as well as a record of what is already occurring in the classroom. Some suggestions for checklists follow:

- Focus on four or five students each day or each period.
- Use the checklist periodically to get a broad picture of students' attitudes, level of participation, and improvement.
- Give students a copy of the checklist and ask them to evaluate themselves; select one area of the checklist and ask them to write a detailed self-evaluation of their performance in that area.

The technology exists for teachers to use a bar code technique, such as the British Columbia's computerized management assessment, to record information so that it can be more quickly collected, organized, and interpreted.

Two examples of checklists follow this page.

CHECKLIST: EVALUATING STUDENT BEHAVIORS

Measuring Thought Processes in Behavior
 Demonstrating Skill and Participation Levels

Name _____

Numerical Value
 0 = Dependent
 1 = Needs Support
 2 = Independent

SPECIFIC SKILLS	DATE	COMMENTS
Understands Problem - paraphrases - recalls problem		
Formulates a Plan - selects strategy		
Implements Plan - carries out strategies		
Explains Plan - orally and in writing		
Evaluates/Interprets Metacognition Results - orally and in writing - demonstrates solution		
Extends - creates own problem - recalls related problem		

ATTITUDES (Interaction and Participation)

Cooperates		
Shares/Collaborates - tries, contributes ideas		
Questions Peers - encourages others to participate		
Takes Risks - confidence in own ability		
Stays on Task - perseveres		

Interviewing and Conferencing

Interviewing and conferencing allow teachers opportunities for obtaining information regarding a student's thoughts, understandings, and feelings about a given subject area. An interview includes a planned sequence of questions; whereas, a conference implies discussion with students and teachers sharing ideas. This process is beneficial to both students and teachers. A student receives encouragement and feedback from the teacher and is given unique opportunities to develop learning potentials. Although time-consuming, teachers find conferences and interviews help diagnose the needs of individual students and can provide valuable information about the direction of instruction for a class.

Sample Questions for Interviewing/Conferencing

1. **Task Comprehension**
(Can students understand, define, formulate, or explain the task?)
 - * What is the task about? What can you tell me about it?
 - * What do you know about this part?
 - * Would you explain that in your own words?
 2. **Approaches and Strategies**
(Do students have an organized approach to the task? How do they record? Do they use tools appropriately?)
 - * Where could you find the needed information?
 - * What have you tried? What steps did you take?
 - * How did you organize the information? Do you have a system, a strategy, a design?
 3. **Relationships**
(Do students see relationships and recognize the central idea?)
 - * What is the relationship of this to that?
 - * What is the same? What is different?
 4. **Flexibility**
(Can students vary the approach if one approach is not working? Do they persist? Do they try something different?)
 - * Is there another way to draw, explain, or say that?
 - * Would another recording method work as well or better?
 - * What else have you tried?
 5. **Communication**
(Can students describe the strategies they are using? Do they articulate their thought processes?)
 - * How would you explain this process to a younger child?
 - * Would you reword that in simpler terms?
 - * How would you explain what you know right now?
 6. **Curiosity and Hypotheses**
(Do students show evidence of conjecturing, thinking ahead, checking back?)
 - * What do you predict will happen?
 - * How do you feel about your answer or response?
 - * What else would you like to know? What do you think comes next?
 7. **Self-Assessment**
(Do students evaluate their own processing, actions, and progress?)
 - * What are your strengths and weaknesses?
 - * What have you accomplished?
 - * Was your own group participation appropriate and helpful?
-

Observations

Students may be observed in either an individual or a group setting. The purpose of the observation may be to determine a student's competence in a given subject area or to determine affective characteristics such as behavior or attitude. Victoria, British Columbia uses a computerized observational assessment program, "Learner Profile," which allows teachers to use a light pen to record these observations as denoted by bar codes.

The following is an example of more general attributes to be assessed through observations:

Students' disposition toward learning

- Planning before acting and revising plans, when necessary;
- Sticking to the task without being easily distracted;
- Becoming actively involved in the problem;
- Using technology or other needed tools effectively;
- Explaining organizational and content specific ideas;
- Supporting arguments with evidence;
- Asking probing questions;
- Completing the task; and
- Reviewing the process and the results.

Group work

- Dividing the task among the members;
- Agreeing on a plan or structure for tackling the task;
- Taking time to ensure that all members understand the task;
- Using the time in a productive way;
- Remembering to record results; and
- Considering seriously and using the suggestions and ideas of others.

Communication

- Discussing for clarification of the student's own ideas and to communicate to others;
- Communicating a process so that it is replicable;
- Having the confidence to make a report to the whole class;
- Representing capably and fairly a group consensus; and
- Synthesizing and summarizing the student's own or a group's thinking.

Subject-specific attributes may also be assessed through observations. An example from mathematics follows:

- Selecting and using appropriate measurement instruments;
- Extending and describing numeric or geometric patterns;
- Estimating regularly;
- Using visual models and manipulative materials to demonstrate mathematical concepts;
- Showing relationships among perimeter, area, and volume; and
- Making connections among concrete, representational, and abstract ideas.

Adapted from Mathematics Assessment: Myths, Models, Good Questions, and Practical Suggestions, NCTM, 1991.

Performance Events/Exhibitions

To prepare students for future success, both curriculum and assessment must promote the kind of performance which people encounter in the real world. People are recognized for the tasks or projects they do, their ability to work with others, and their responses to problem situations. A performance event or exhibition is an assessment based on an observation of a student's actual performance on a given task or project.

Performances or exhibitions should

- be core performances, roles, or situations that all students should encounter and be expected to master;
- be authentic, meaningful, rich, engaging, feasible and active;
- assess the academic expectations which all students are expected to meet; and
- be complex with multiple solutions.

Job roles provide ample opportunities for designing tasks. Some of these follow:

- engineer-bid and meet specs for largest-volume container or build a working roller coaster;
- ad agency director-design advertising campaigns or book jackets;
- psychologist-conduct surveys or perform statistical analyses;
- archaeologist-determine the culture or time frame of a mystery artifact or person;
- expert witness to Congress-testify for or against advertising claims or regulation of children's television;
- commercial designer-propose artwork for public buildings; and
- policy analyst-predict the future in a country being studied.

In designing a task, teachers should begin with an idea (from life, a magazine, book, or conversation), consider the way students can communicate their responses, determine academic expectations, consider materials needed, determine whether it should be individual or group, define levels of performance, and develop an evaluation rubric.

Portfolio Development

A portfolio is a showcase or collection of student work completed over a period of time.

This form of assessment enables students to present their best thinking and creative work. The portfolio should include a variety of assignments and projects from a broad curriculum (while using various resources, manipulatives, and tools).

The focus in student portfolios is on these items:

- student thinking,
- growth over time,
- connections with other subjects,
- views of oneself as a learner, and
- problem solving.

Contents of a portfolio could include the following:

- report of a group project;
- problems made up by the student;
- excerpts from a student's daily journal;
- draft, revised, and final versions of student work, including writing, diagrams, charts;
- a photo or sketch made by the student of his/her work with models or manipulatives;
- notes from an interview or conference;
- teacher-completed checklists;
- an autobiography;
- work which integrates other subject areas;
- work which shows the student's correction of errors or misconceptions;
- artwork done by the student;
- a letter from the student to the reader of the portfolio, explaining each item;
- copies of awards or prizes; and
- video, audio, and computer-generated examples of student work.

It is helpful for students to keep separate working portfolios and assessment portfolios. The working portfolios hold student work for a period of several weeks. At the end of the time period, they can review their working portfolios to create assessment portfolios.

The work in the portfolio may be re-entered for revisions, extensions, reflections, and introspection. The advantages of portfolios over other assessments are that they give a more complete picture of the student's achievement and provide an opportunity for conversations or conferences about the content.

Self-Assessment/Reflection

Reflecting on one's learning is a continuous process which enables the student to become an independent learner. It is a powerful method which also promotes metacognitive skills and ownership of learning.

Students who think about and discuss their progress toward the achievement of goals and the learning of concepts, on the basis of the evidence they see in their own work, will build better understanding and control of their own success.

Responses to self-assessment provide significant insight into student learning which aids in diagnosing problems, adjusting teaching strategies, and planning instruction. In students' self-assessments, teachers should look for

- signs of change and growth in attitudes, understandings, and achievement
- alignment of students' beliefs about their performance with their actual performance; and
- a match between students' and teacher's views of expectations and criteria for evaluation.

Some ideas for self-assessment are to have students

- Collaborate with peers for editing/checking and rewriting/reworking.
- Complete checklists where they can regularly share concerns and successes with teacher.
- Examine their work, portfolios, and journals for evidence of growth or change in their self-confidence or their understanding. Then, ask them to write a summary of their progress.

One way to help students be more in control of their own learning, thinking, and productive efforts is to foster goal setting, designing strategies, implementing these strategies, and reflecting on progress. Goal setting is one of those strategies transferable to any domain of life. Ask students questions such as "When you wanted to get a bicycle for your birthday, what did you do?" or "When you wanted to get a better grade, what did you do?"

Two examples of a self-assessment are on the following page.

A Sample Self-Assessment Response Sheet

Name _____ Teacher _____

Class _____ Date _____

- Write down the two most important things you have learned during the past month.
- Write down at least one sort of task you have continued to find difficult.
- What would you most like more help with?
- How do you feel in _____ class at the moment? (*Circle the words that apply to you.*)

a) Interested	b) Relaxed	c) Worried
d) Successful	e) Confused	f) Clever
g) Happy	h) Bored	i) Rushed
- Write down one word of your own _____
- What is the biggest worry affecting your work in _____ at the moment?
- How could we improve _____ class?

A Sample Self-Assessment Form

Student Name _____ Date _____

	Very Well				Very Poorly
1. How well do I compare information? My comments and examples:	1	2	3	4	5
2. How well do I classify information? My comments and examples:	1	2	3	4	5
3. How well do I make inductions? My comments and examples:	1	2	3	4	5
4. How well do I make deductions? My comments and examples:	1	2	3	4	5
5. How well do I analyze errors? My comments and examples:	1	2	3	4	5
6. How well do I construct support? My comments and examples:	1	2	3	4	5
7. How well do I make abstractions? My comments and examples:	1	2	3	4	5
8. How well do I analyze perspectives? My comments and examples:	1	2	3	4	5

V. Graphic Organizers

- Advance Organizers
- Compare/Contrast Structures, Venn Diagrams, Matrices
- Flowcharts, Sequence Chains, Time Lines
- Graphic Representations
- KWL
- Mapping/Webbing
- Notetaking
- Storyboards
- Story Maps

Graphic organizers provide a visual, holistic representation of facts and concepts and their relationships within an organized frame. They aid learning and thinking by helping students and teachers represent abstract information in more concrete form, depict relationships among facts and concepts, relate new information to prior knowledge, and organize thoughts for writing. Graphic organizers exist in a variety of forms.

Graphic organizers may be used before an instructional activity (e.g., reading, viewing a film) to activate prior knowledge, to provide a conceptual framework for integrating new information, and to encourage student prediction. During instruction, they can help students actively process and reorganize information. After instruction, they may be used to summarize learning, encourage elaboration, help organize ideas for writing, provide a structure for review, and assess the degree of student understanding.

Teachers should describe the purpose of a new graphic organizer when introducing it to students. They should also model its use and provide ample opportunities for guided practice. When students are choosing a particular graphic structure to use, they should ask themselves questions such as: Are concepts presented in a hierarchy? Does the text suggest a time line of information? Does the author compare and contrast two or more concepts? Is the text an explanation of something?

Advance Organizers

An advance organizer is a road map- a short set of verbal or visual information presented prior to learning a larger body of content. Advance organizers become conceptual "bridges" from the prior knowledge to the information to be learned. They give the student a "what to look for" frame of reference or provide hooks or anchors to knowledge previously acquired. They may give the student background information and/or assist the student to remember and apply old information.

Advance organizers are usually given at the beginning of the lesson but may be used as the lesson unfolds to reinforce and direct student thinking. Examples include, but are not limited to, stating clear and interesting objectives and expectations, making generalizations, defining terms, reviewing previous learning, personalizing the learning, and making analogies. Advance organizers are included under Graphic Organizers but do not have to be graphic.

Teacher's Sample Cue Card for Using an Advance Organizer	
<u>Review Previous Learning</u>	"Okay, let's go over the steps that we discussed yesterday." "Where could you use this at school or at home?"
<u>Personalize</u>	"What do you think would happen if you used this in...?" "Tell me why you think this is going to help you."
<u>Define the Content</u>	"That's right, but what's a...?" "What are you going to be learning?"
<u>State Expectations</u>	"What do you think I am going to do?" "Remember, today you are going to be involved in...."

Compare/Contrast Structures, Venn Diagrams, Matrices

Compare/Contrast Structures, including Venn Diagrams and Matrices, are visual organizers that compare and contrast characteristics of information or ideas. The selected format will depend on the subject area and the student's learning preference.

Compare/Contrast Matrix

	Attributes	Object 1	Object 2
1			
2			
3			

Similar/Different

Subject A

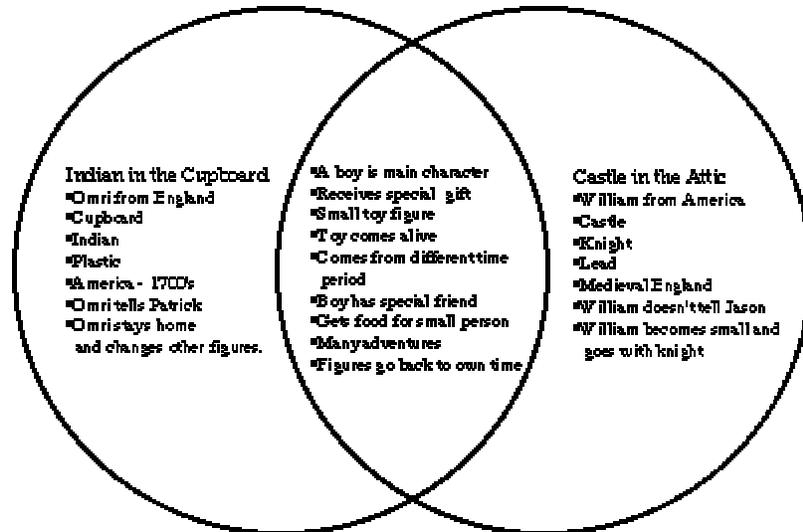
Subject B

Similarities

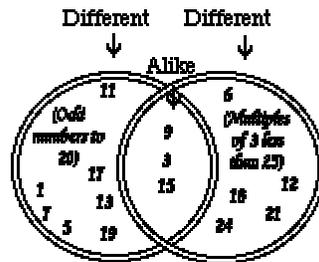
Differences

Venn Diagrams

1. Comparing the books *Indian in the Cupboard* by Lynn Reid Banks and *Castle in the Attic* by Elizabeth Winthrop



2. Comparing two sets of numbers



Comparison Matrix

	Dogs	Snakes	Birds	Horses	Cats
Hair	+	.	.	+	+
Bark	+
Four Legs	+	.	.	+	+

- is different

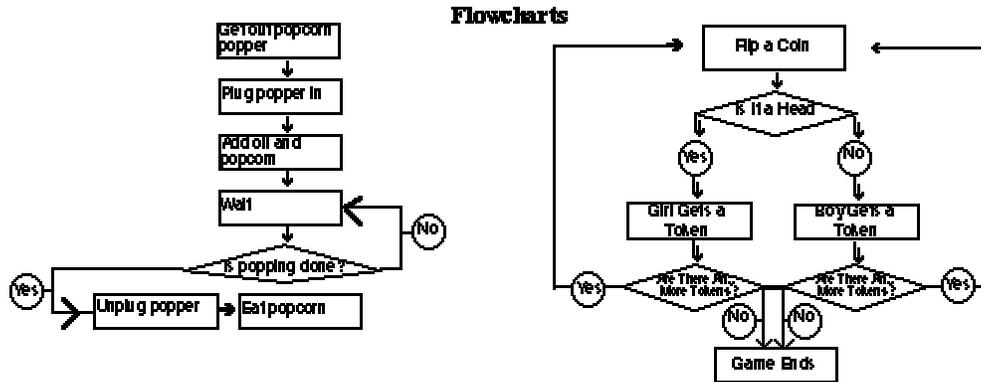
+ is similar

Flowcharts, Sequence Chains (Series of Events Chains), Time Lines

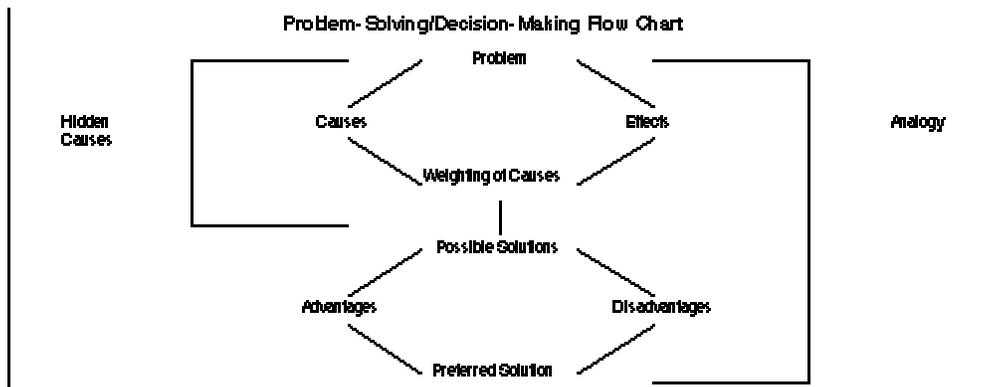
Flowcharts, Sequence Chains (Series of Events Chains), and Time Lines are diagrams that represent a sequence of events, actions, or decisions.

Flowcharts are particularly useful for

- depicting social or natural cycles,
- solving mathematics and scientific problems, or
- depicting the consequences of decisions.



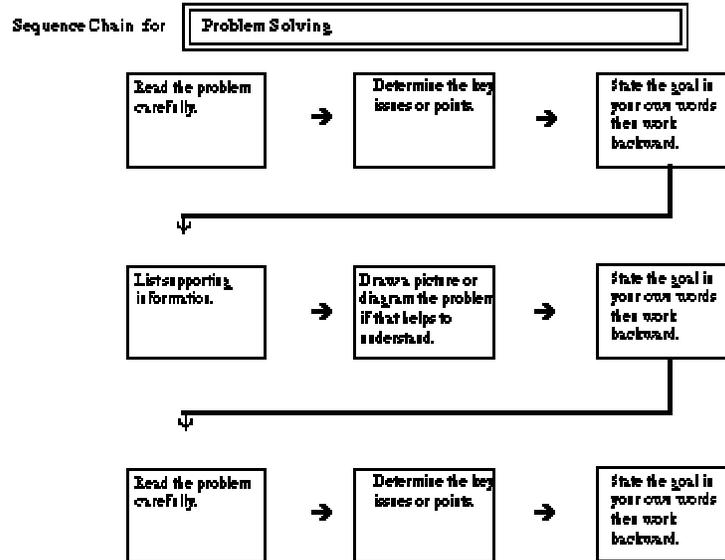
The problem-solving/decision-making flowchart closely follows the way most people solve problems and helps students understand the advantages of having an organized approach to problem-solving. It was developed by G. Eley and F. Lyman (Maryland A.T. E. Journal, Spring, 1987) to help teachers and students with classroom problems and decisions.



Sequence Chains can be used to

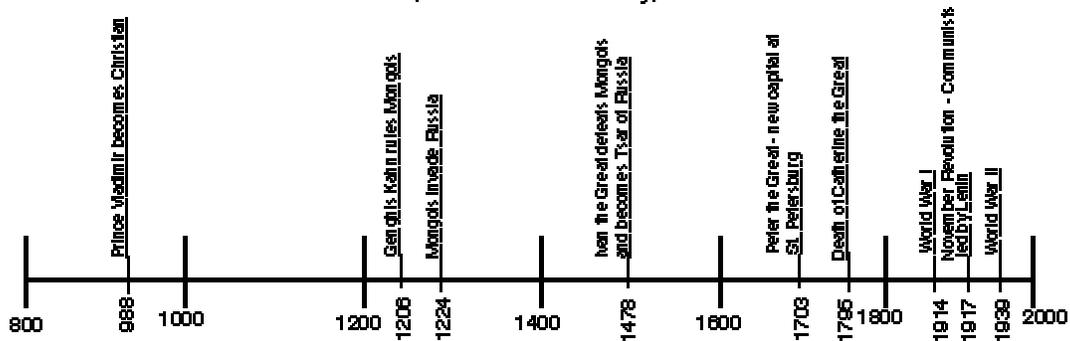
- sequence events in plots, historical eras, or laboratory instructions;
- picture stages in the development of organisms, social trends, or legislative bills; or
- plan a course of action.

Sequence Chain



A Time Line is used to record and correlate events with given dates and depict correlations or parallels between events occurring at the same time (use two time lines). Shelf paper, adding machine roll paper, string, or tape measures can be used to design time lines.

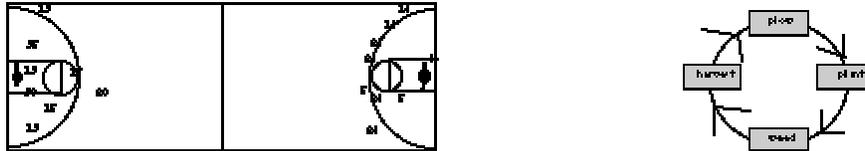
Time Line (events in Russian history)



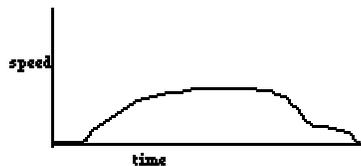
Graphic Representations

Graphic Representations are also Graphic Organizers and the terms are sometimes used interchangeably. The differentiation made for this section is that Graphic Representations are visual illustrations of verbal statements, learning aids that use symbols to create a picture of the structure of the material. They may not indicate relationships between ideas as organizers generally do. Examples of graphic representations follow:

Iconic strategies are personalized representations using drawings or sketches (e.g., basketball game, cycle graphics).



Other examples are graphs and charts such as the speed/time graph and the long distance phone call chart below.



Mileage	Day Rate	Evening Rate	Night/Weekend
1-10	\$30/ minute	\$22/ minute	\$18/ minute
11-16	\$32/ minute	\$23/ minute	\$19/ minute

Mathematics uses many graphic representations particular to the subject. Students need to be able to understand their meaning in order to be able to read and communicate mathematically.

Know/Want/Learned (KWL)

Know/Want/Learned is a strategy that models the active thinking needed when reading new material or participating in a learning activity. It encourages the student to think about ideas and to ask questions while reading. The letters KWL represent what students KNOW about a topic, what they WANT to find out or learn, and what they LEARNED as they read. The strategy is a five-step process that can be used across the curriculum, at all grade levels, with any size group or with a whole class.

Step 1 - Preparation - The teacher determines a key concept from the material to be studied.

Step 2 - Group Instruction - Students brainstorm what they already KNOW about the topic and try to create general categories as two or more pieces of information group together under a category. The teacher models the thinking-aloud process while identifying, combining, and categorizing information. The teacher asks students to think about the categories of information they would expect to find, and these are listed so that students see them.

Step 3 - Individual Questions - They record what they feel confident they KNOW about the concept under "What I Know" on the KWL chart (see below). Under "What I Want To Find Out," students list questions or information they might WANT to learn. Students are encouraged to generate questions from information gleaned as they brainstormed and as they read.

Step 4 - Reading the Text - The text should be divided into manageable segments based on the student's needs and abilities. Some students may be able to read only one or two paragraphs. The intent is for the student to monitor comprehension by referring to the questions listed. In this way, students become aware of what they learn. They should jot down the answers to their questions as well as new questions under "What I Learned."

K-What I Know	W-What I Want to Find Out	L-What I Learned
<i>had ceremonies</i> <i>ate berries</i> <i>lived in America</i> <i>lived in teepees</i> <i>hunted</i> <i>made canoes</i>	<i>Did Indians live in one place?</i> <i>Did they use stone tools?</i> <i>Did they domesticate the dog?</i> <i>Did they believe in spirits?</i> <i>How did they make pottery?</i>	<i>many different tribes in America</i> <i>used many different kinds of tools</i> <i>rode horses, had dogs</i> <i>cooked many dishes</i> <i>lived off the land</i> <i>had sophisticated religion</i>

Step 5 - Reflection - Engage the students in a discussion about what they learned from reading. When all questions have been answered, the student's summary of the material may be a starting point for a writing assignment.

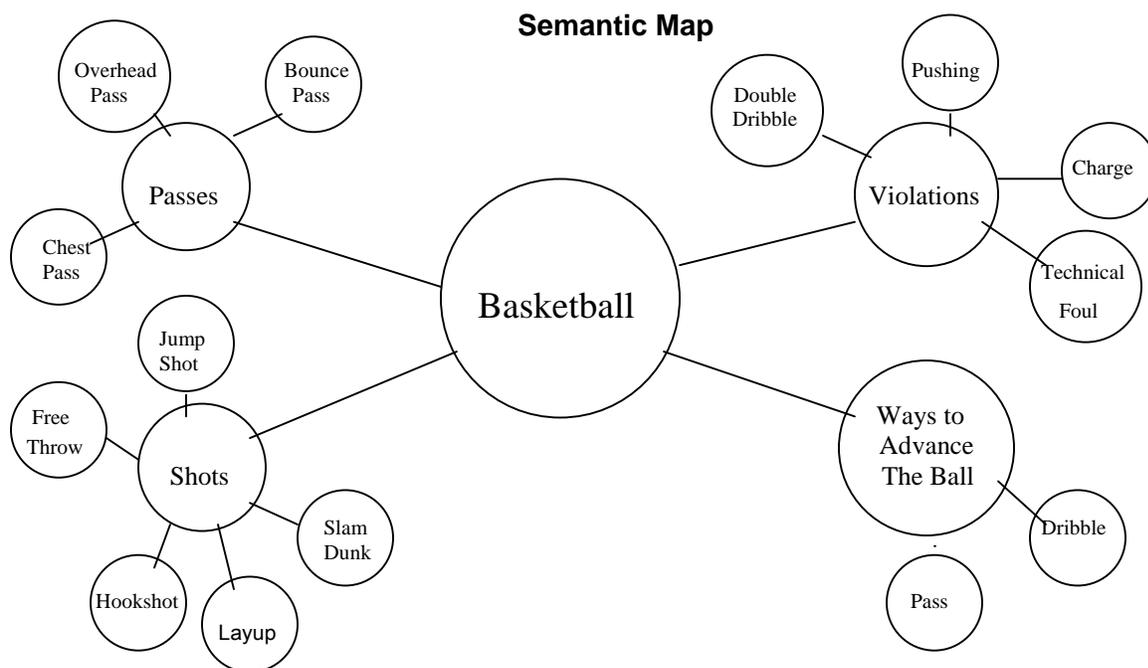
KWL Plus is a modification of KWL which also includes a semantic map and/or a summary of the material.

KWWWL is a modification which includes "Where they need to go to find it," and "What they want to do with it."

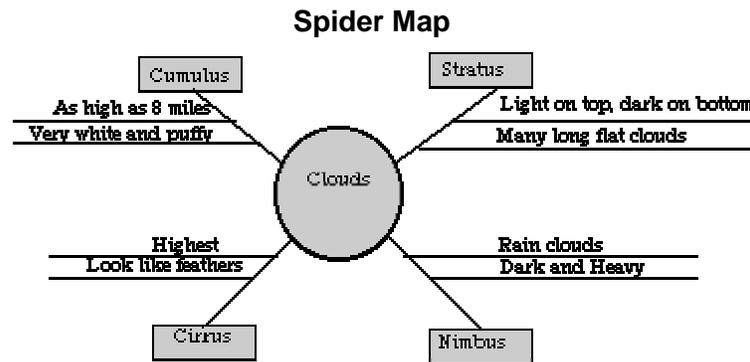
Mapping/Webbing

Students use mapping/webbing to indicate the relationship between ideas in text. The symbols indicate that one item is an example of another item, occurred before another item, etc.

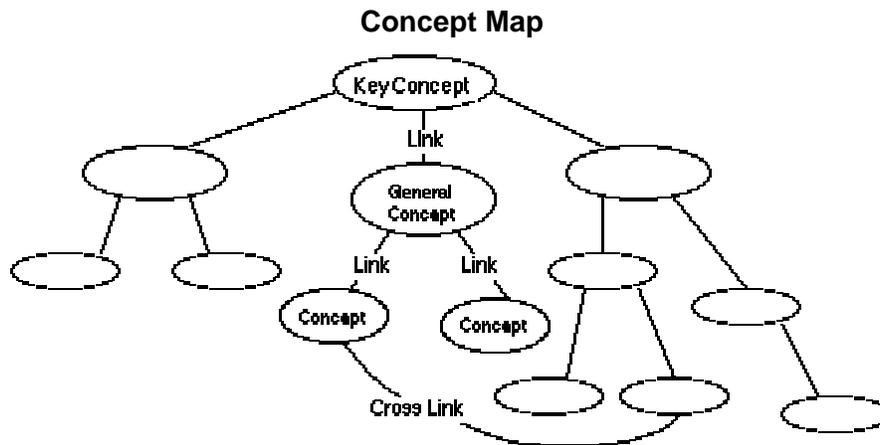
In semantic mapping, circles and lines are used to show relationships between concepts. A semantic map could be used to learn vocabulary words or to activate prior knowledge in brainstorming.



A spider map is used with a main theme or concept at its center and related themes branching from the core.



Concept maps link concepts and propositions hierarchically. The broader, general concepts are placed at the top and the more specific concepts below. Concepts build on one another and are connected to identify the relationship.



Notetaking

Notetaking has been shown to facilitate memory of the most important ideas if it entails processing a way that is compatible with the task students will eventually perform. To take good notes, one must separate the major points from the minor ones and consider the relationship between ideas.

One system, which has resulted from decades of research and is widely used, is the Cornell Notetaking Method. The notes, ideas, facts, or important information are written on the right side. In the left column a few key words are written that help students remember what is on the right side.

Cornell Notetaking System	
Key Words	Notes
Special Trapezoid (isosceles)	Isosceles trapezoids have two congruent sides.
	Base angles are congruent.
	Opposite and consecutive angles are supplementary.
median of trapezoid	

Storyboards

A storyboard provides a visual means for conceptualizing and organizing information in a scenario. It is a template for depicting action to show a sequence of events for a story or a procedure. Methods used for teaching children techniques of storyboarding include using advertising photographs and comic strips from Sunday newspaper supplements. Students learning storyboarding study elements such as perspective, lighting, texture, composition, and lines. To help students interpret stories, teachers can ask students questions such as

- Does the story line make sense?
- Might the visuals have been sequenced differently? If so, how?
- Are more visuals needed for the story board's story line? Explain.

In video production, students add audio effects to the storyboard design. For elementary mathematics, students write or interpret story problems using manipulatives such as toy animals or cartoon characters in a dimensional scenario on a storyboard. A sample scenario for addition could include a picture or drawing of a swimming "pool" with manipulatives representing ducks. The teacher would pose a series of problems for primary students, while moving the manipulatives around on the storyboard. An example follows:

"Donald Duck decided to go swimming in his pool. Daisy brought 3 of her friends to the pool. How many ducks are in the pool now? Then Donald's nephews jumped in and splashed one of Daisy's friends, so she got out of the pool. How many ducks are in the pool now? Donald got out to get her a towel..."

Story Maps

Story maps identify literary elements such as main characters, setting, problem, major events, problem solution, and a theme for a story. Before completing the story map, students should first listen to or read the entire story or the portion of a book which has been assigned.

TITLE: Molly's Pilgrim

SETTING: Home and School

CHARACTERS:	<u>Molly</u>	<u>Elizabeth</u>
	<u>Mama</u>	<u></u>
	<u>Miss Stickle</u>	<u></u>

PROBLEM: The other children laugh at and make fun of Molly.

EVENT 1 The children tease Molly.

EVENT 2 The class has to make Pilgrim clothespin dolls.

EVENT 3 Mama makes Molly's doll look like herself.

EVENT 4 The children laugh at Molly's doll because it doesn't look like a Pilgrim.

EVENT 5 The teacher tells about modern Pilgrims and the Jewish holiday that inspired Thanksgiving.

SOLUTION The children understand about Molly and decide to be friends with her.

VI. Problem Solving

A. Process

Brainstorming

Discussion

Heuristics

Inquiry/Investigation/ Experimentation

Questioning

Problem solving is often seen only as an end, a goal, or a product rather than as a strategy for learning. Indeed, problem solving is an academic expectation in Goal 5: Think and Solve Problems; however, as a strategy, problem solving takes the form of both process and product. Students solve problems to learn related concepts such as sampling, critical thinking, predicting, historical perspective, and cause and effect. For example, many concepts are involved in a problem which requires students to determine the inventory needed for the school bookstore or to examine a court case to determine the applicable laws.

Brainstorming

Brainstorming can be used to solve problems by eliciting multiple ideas from students in a short amount of time. Teachers should

- create a relaxed, informal atmosphere;
- state or write the problem;
- set a time limit; and assign a recorder.

Students contribute ideas which are recorded for all to see. No judgments are expressed by either students or teacher. After ideas are exhausted, students

- critically examine and eliminate duplicates or unreasonable responses;
- prioritize remaining suggestions; and
- solve the problem, if possible.

Brainstorming can be used to stimulate creative thought, involve all students, and practice communication skills.

Discussion

Discussion should be used consistently to encourage students to use dialogue as a tool for thinking and understanding. Teachers should ask questions which allow them to explore, brainstorm, and react. This permits students to control and become "owners" of the ideas.

To promote discussion, teachers can

- allow students to talk without raising their hands,
- encourage students to listen carefully to student speakers,
- provide wait time,
- ask speakers to summarize comments of the previous speaker, and
- avoid repeating student comments.

Heuristics

A set of heuristics, sometimes defined as conscious mental procedures, have been identified for solving problems.

To make a problem smaller, easier and more manageable students can

- look for a pattern,
- account for all possibilities, or
- construct a table.

To solve more complex problems students can

- work backwards,
- act out the problem,
- make a drawing or diagram,
- employ trial and error (in mathematics, guess and check),
- make a model,
- restate in their own words, or
- break into smaller pieces.

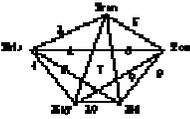
More skillful problem solvers can

- identify subgoals,
- change their points of view,
- solve a simpler or similar problem, or
- check for hidden assumptions or mistaken inferences they may have drawn.

In addition to these, there are procedures traditionally associated with mathematics problems, such as

- selecting appropriate notation,
- identifying wanted, given and needed information, or
- writing an open sentence.

An example for solving a problem by selecting appropriate notation follows:

<p>At the first meeting of the Chess Club, the five members decided that everyone in the club should play everyone else one time to determine the two best players for interschool competitions. How many games had to be played?</p>	
<p>Appropriate notation 5 dots represent 5 people Games played shown by line segment ——— •</p>	

Inquiry/Investigation/Experimentation

In inquiry training, students are presented with a puzzling event. They observe and gather data about the event; verify and conduct an experiment (try out a hypothesis and test relationships); organize information obtained during the data gathering; and formulate an explanation. The problem-solving strategies are analyzed, necessary revisions are made, and the process is repeated, if necessary. Generally, experiments are more formal types of investigations. The inquiry training model is outlined below:

In inquiry training, students should be able to	
<ul style="list-style-type: none">• Formulate usable questions<ul style="list-style-type: none">generate a number of possible questionsrecognize which questions are in the domain of scientific inquirybe aware of the complexity of the questions being generated• Plan experiments<ul style="list-style-type: none">select a question that can be explored through experimental proceduresdesign a procedure for systematic collection of datachoose appropriate measuring tools• Conduct systematic observations<ul style="list-style-type: none">choose and/or design and build tools and apparatususe tools and apparatuscollect and record data, judge precision, and accuracyorganize and represent data• Interpret and analyze data<ul style="list-style-type: none">graph dataretrieve, use, compare data from other investigations	<ul style="list-style-type: none">• Draw conclusions<ul style="list-style-type: none">relate conclusions to data and their analysisrelate their investigation to other experimentsrelate their experiment to models and theoriessuggest further investigations (formulate new questions)• Communicate<ul style="list-style-type: none">use words, graphs, pictures, charts, and diagrams to describe the results of their investigationsproduce summaries or abstracts of their workuse technology to improve communicationanalyze critically other people's work• Coordinate and implement a full investigation<ul style="list-style-type: none">formulate questionsplan experimentsconduct systematic observationsinterpret and analyze datadraw conclusions and communicate the entire process

Questioning

Research on Bloom's Taxonomy has concluded that teachers who use higher-order questions during instruction promote learning by asking questions at the application, analysis, synthesis, and evaluation levels. They require students to engage in more sophisticated thinking. Sample questions follow:

- How are the two main characters alike and different?
- What do you think is the editor's stand on gun control?
- What are the pros and cons of extending the number of days in the school year?
- What might happen if gasoline prices are increased?
- How is an argument like an exothermic reaction?
- How might we confirm that these figures are duplicates?

Over 2000 years ago, the Greek philosopher Socrates demonstrated the power of questioning to stimulate thinking-the "Socratic method." It involves conducting an argument or imparting information by means of question and answer. Critical thinking, divergent interpretation, and reflection are important to the process. The way a teacher structures a question influences the nature of the thinking required to respond. Discussion strategies, such as asking for elaboration, influence the degree and quality of classroom discussion.

Probing questions that press students to consider and weigh diverse evidence, to examine the validity of their own deductions and inductions, and to consider opposing points of view contribute to a classroom climate of inquiry and thoughtful examination of ideas. Students who are regularly exposed to questions that require them to defend their responses with reasons and evidence may internalize this "critical thinking" habit.

Wait Time

The time which is allowed to elapse after a teacher question is referred to as Wait Time I, and time after a student response as Wait Time II. Results of analysis of 300 classroom tape recordings by Mary Budd Rowe in 1974 showed a mean Wait Time I of 1 second and a mean Wait Time II of .9 seconds. Later studies indicated that when teachers waited 3-5 seconds after asking a question and after hearing the answer, the following occurred:

- student responses grew from three to seven times longer and contained more explanation and elaboration;
 - students supported more of their inferences with evidence and logical arguments;
 - students asked more questions, proposed more experiments, and increased speculative thinking;
 - students competed less for the teacher's attention and listened more to one another;
 - fewer students responded with an "I don't know" answer;
 - discipline problems decreased and more students participated and volunteered;
 - students appeared more confident and phrased fewer of their responses as questions; and
 - achievement improved on written assessments requiring complex thinking and problem solving.
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VI. Problem Solving

B. Product

Case Studies

Creative Problem Solving/Future Problem Solving

Debate

Formulating Models

Interviews/Surveys/Polls

Oral History

Research

Role-play

Simulations

Case Studies

A case study refers to an intensive investigation about a person, group, institution, or community. It is constructed around experiences, events, or interrelationships to form a comprehensive, integrated picture. For example, in order to understand why young people join gangs, an investigator could study case studies of particular gang members which provide details of the persons' childhood, home life, school and work experiences, and personality traits.

Students can learn to analyze and research other questions through the use of case studies. Students can use reasoning, decision-making, and reflecting skills to make generalizations about the data and suggest possible solutions or appropriate alternatives. They can also make predictions for the future.

Creative/Future Problem Solving

Creative or future problem solving results in products such as artistic composition or inventions. To prepare students to creatively solve problems, they should participate in activities such as:

- mind stretchers which encourage them to
 - think divergently
 - think beyond constraining boundaries
 - make new connections
 - view difficult situations in unusual ways
- brainstorming and force fitting
- discussing and evaluating projects, problems, and topics in groups.

Teachers should encourage students as they look for alternative solutions, make intuitive leaps, and eliminate nonproductive or less productive ways of solving problems. The idea illustrated below helps students begin to think divergently:

Teacher says:

"I have behind my back an object that I found (an unfamiliar object like an unusual kitchen utensil or an item from the garage or attic). I want to know what you think it might be. The first person that I hand it to will have one minute to pass it silently around the group. At the end of that minute, I will say, 'Begin.' Whoever has the object in hand will give a response and pass the object on to the next person for a response. We will stop at the end of two minutes. You may begin the one minute silent thinking."

"I invent nothing, I rediscover." **Auguste Rodin**

Invention is the process of creating something new to meet a perceived need. As opposed to solving a problem in which an outside constraint or limiting condition must be overcome, invention involves standards or criteria which are set by the inventor. For example, while a group of students are inventing a better procedure for their class to use in going to recess, they might decide that they want the new approach to be quieter and quicker than the one currently in use. Those are the standards they have imposed, which may or may not be accomplished.

Inventing also involves a revise and refine phase. For example, if a student is asked to build a bridge that is as strong as possible, a standard will relate to the strength of the bridge. The model would be revised to assure it meets the standard as completely as possible.

A logical beginning point for the study of invention and innovation is the clarification of terminology. Ask students to define invention, imagination, evolution, engineering, discovery, and creativity. It is important that students share a common understanding of these terms and their subtle, semantic differences.

The most widely used CPS (Creative Problem Solving) model of inventing was created by Isaksen and Treffinger (1985). The stages follow:

- Mess-Finding-recognize that there is a problem and accept the challenge to attempt solutions.
- Data-Finding-determine the need for the invention, the cost, and the existence of other patents.
- Problem-Finding-select the key problem.
- Idea-Finding-look for ways to combine and alter the known world.
- Solution-Finding-compare the most promising ideas generated in the previous step and apply selection criteria like cost, feasibility, ethics, or environmental impact.
- Acceptance-Finding-physically invent and implement the best solutions

Choice	Identify a situation requiring improvement or response.	State the purpose or goal; write or say it from different perspectives.
Rehearsal	Identify specific standards for the invention.	Make a model, sketch, or outline of the invention.
Drafting	Start developing the product; keep looking for alternatives for creating the product.	Occasionally, set aside your product to allow for reflection.
Revising	Continue revising the invention with attention to detail.	Stop when a level of completeness has been reached consistent with the established standards.

"Our greatest national resource is the minds of our children." Walt Disney

Some ideas for inventions include:

- a map showing economics, terrain, and politics of a region;
- improvement on the periodic table;
- a new way to divide;
- something that will conserve water on the moon;
- design of a "wheelchair friendly" kitchen;
- an improved version of an animal;
- a more effective reading lamp; and
- an organizer for clothing.

Debate

Debates encourage people to examine reasonable arguments on each side of a significant issue in order to make a reasoned decision about a complex issue. A formal debate has a structured format where two positions on a controversial issue are presented in a specific format. Each debater is given a certain amount of time to state a position, respond to questions from others, and pose questions.

Debate requires that every claim be supported by evidence and be answered by opponents, who also present evidence to support their beliefs. Evidence is limited to facts, statistics, examples, and the opinions of experts. Preparation requires critical thinking and forces students to reason through problems or issues.

A debate usually centers on a proposition which contains suggestions for a change in an action or decision. A proposition may also be a set of rules or may refer to a particular plan. If teams are selected for debate, the team that argues for the proposition is called the affirmative team, and the team that argues against the proposition is called the negative team.

General steps for a debate are

- select topic,
- state proposition,
- list arguments and choose strongest,
- predict opponent's arguments,
- research and prepare evidence,
- prepare summary statement, and
- conduct debate.

Formulating Models

Models are representations of things, abstract ideas, or relationships. They can be used to study something too large to see in its entirety (such as the solar system), or too heavy (such as an airplane), or too small or delicate (such as a molecule or an eye). As manipulatives, they can be used to help students visualize 3-dimensional figures represented in a textbook. As computer-generated simulations, they can help students identify aspects of the object or idea they represent.

Models can be

- physical such as maps, blueprints, sculptures, or mathematics and science manipulatives;
- mathematical such as equations, graphs, proportions;
- conceptual or mental such as analogies, metaphors, graphic organizers; and
- theoretical such as a set of rules or laws that represent an object or event such as predicting election results or the future growth patterns of a forest.

Interviews/Surveys/Polls

No single method for obtaining data is appropriate for solving every problem. The scope and nature of the problem dictates the most appropriate form to be used. An unwieldy problem can be tackled by sampling, while interviews are preferred for gathering data when personal interaction is preferred. An interviewer can observe facial and body expressions, hear incidental comments and tone of voice, and probe more deeply into a problem.

Whichever sampling tool is used, it must be bias-free. The information gathered must be representative of the entire population sampled and allow for logical inferences to be drawn.

Oral History

Oral history centers around the process of interviewing individuals, called narrators, to obtain historical information. The narrators can include family or community members who can provide insights into the identified topic. The student questions the narrators about family traditions; length of time in the community; specific contributions in a particular field; or knowledge about an institution, event, or process. The content of the interviews are recorded in the form of notes, videotapes, or audiotapes for later use.

Learning experiences include interviewing, transcribing, researching, and writing oral history articles. Students apply and extend thinking and communication skills, thus learning to use the tools of the trained worker. They engage in concrete and abstract reasoning as they move from fact to divergent questioning during the interview process.

Many times narrators convey a sense of the past through specific images and anecdotes. Through questioning, the oral historian preserves narrative history through time and generations.

Research

In an informal sense, research can mean a "search" for information about a topic which is of interest. However, the discussion here will relate to research used in solving problems.

Identifying and analyzing a problem is a prerequisite for conducting a research study. To form the problem statement, students should

- accumulate data and information that might be related to the problem;
- determine which data or information is relevant;
- propose explanations for the cause of the problem; and
- question assumptions made.

Then, they need to determine

- the necessary background knowledge and skills needed to study the problem;
- the tools, equipment, and resource people necessary to conduct the investigation; and
- the practical value of the findings.

To solve the problem, students formulate a hypothesis or construct an argument which must be confirmed or refuted by data. To test the hypothesis or argument, students must deduce its consequences, develop experiments to determine whether the consequences actually occur, and carry out the experiments. The results of the experiments must be analyzed and compared to the hypothesis.

Role-play

Role-play allows students the opportunity to portray real-world situations. This requires students to use reasoning and problem solving to deal with the reality of the experience as it unfolds.

Uses and purposes of role-play include:

- developing skills in interpersonal communication and problem solving,
- promoting understanding of others,
- explaining to real-life situations, and
- creating insight into the motives of others.

During role-play, the teacher should accept responses in a nonevaluative manner and help students explore various sides and compare alternative solutions. Students should reflect, paraphrase, and summarize responses.

Simulations

A simulation is a representation of a real event in a reduced and compressed form that is dynamic, safe, and efficient. Students participating in a simulation become active participants in the learning process and receive immediate feedback. Simulations can be brief, simple activities or month-long, complex re-creations. Teachers may need to construct or improvise unavailable materials or settings, such as those for a simulation of a shuttle mission, a bank where students can make deposits or secure loans, or an 18th century scenario where students can make soap, build cabins, or cook outdoors. Many excellent simulations and games are available commercially for use in the classrooms or on computers.

Through simulations, students can learn about competitive business, community cooperation, empathy, the social system, scientific concepts, technical skills, the role of chance, and the ability to think critically and make decisions. Monte Carlo and mock trials are examples of simulations which are used in the classrooms.

Monte Carlo

Monte Carlo simulation uses random number generators such as dice or spinners to solve problems of probability. A classic example of the Monte Carlo defines a problem. For example, there are several different prizes in cereal boxes. Determine how many boxes of cereal must be bought to get a complete set of prizes. If there are ten different prizes, numbers are generated (with dice, a computer, etc.) until all ten appear at least once. The simulation is done by several students, and the class average determines the best estimate of the number of cereal boxes that must be bought before all prizes are acquired.

Mock Trials

Mock trial simulations put on trial someone or something such as historical figures, nations, or concepts. Students play the roles of attorneys, witnesses, judge, and jurors. They prepare and present the case after studying trial procedures.

VII. Technology/Tools

Adaptive Devices
Calculators
Computer Utility
Data Collection Tools
Design
Distance Learning
Games
Interactive Video
Manipulatives
Multimedia
Puppets
Telecommunications
Video/Audio Production/Videotaping

Electronic technology and other teaching, learning, and management tools enable teachers and students to access, organize, interpret, connect, and express information and ideas more quickly, more effectively, and in ways previously unavailable.

The terms "technology" and "tool" have many connotations, depending upon the context in which they are used. Within this section, the following operational definitions are assumed:

A tool is any object or device used to increase the efficiency, effectiveness, or productivity of what teachers and students do.

Technology refers to tools that are electronic in nature.

Teachers and students use a variety of tools. Manipulatives, such as magnets, terraria, geoboards, and pattern blocks allow students to interact directly with phenomena, and get hands-on experience that enables concept-building. It is critical that students engage in interpretive discussions constructing meaning of concepts from their direct experiences in using manipulatives. For more details on the use of manipulatives, see the Instructional Resources section of this framework. Games, puppets, and similar tools engage students in simulating real situations or imagining new ones.

The use of technology by students is a critical factor in the educational vision which views the student as an active information worker, rather than as a passive information receptacle. **Adaptive devices** enable students with disabilities to take advantage of their educational environment in ways that were never before imagined; CD ROM and telecommunications link students to the most current sources of information, regardless of their particular geographic location; spreadsheets, **calculators**, and **data collection tools** such as laboratory probes, databases and videotaping provide the capability to collect and derive meaning from large bodies of information in a timely manner; word processing, video production, audio production, multimedia technology, and **graphics-design software** enable teachers and students to represent information and ideas in a variety of formats.

While tools and technology are certainly not the answer to all instructional problems, they have enormous potential due to the flexibility with which they allow people to work with information and ideas. The human element is the key; these devices are only as powerful and creative as the human mind which directs them. Helping students develop appropriate ways to harness the power of tools and technology is the goal for which teachers and administrators should strive.

The use of one type of technology or tool not only overlaps with the use of another, but also facilitates teaching many other strategies and academic expectations. Therefore the information presented in this strategy component is compiled in a different format than in the preceding sections. All examples and descriptions are contained in scenarios so that teachers can see how the tools are used in a real situation. They are intended to illustrate just a few of the ways that technology can help students achieve the goals set for them. They are composite descriptions, not meant to represent a specific teacher or school. However, the technology described is available today and is already in use by creative, innovative

Kentucky teachers. By their nature, the learning situations described touch on a wide variety of the academic expectations.

"Technology For the Birds"

Today is the big day for the students in Ms. Morgan's fifth grade class. For the past three weeks, they have been making careful observations of the kinds of birds visiting the birdfeeders they built and placed around the school grounds. Learning how to identify the birds wasn't easy: they practiced by using pictures from a CD ROM disc and a classification key sent by a naturalist with whom they corresponded via electronic mail. During these three weeks, they carefully recorded their daily observations in a spreadsheet from which they could rapidly summarize and graph their data. Deciding on the best kind of graph to use was a challenge, since each kind of graph let them visualize their information in a different way.

At the same time that Ms. Morgan's class has been gathering data, fifth grade students at nine other schools across Kentucky have been doing the same thing. The classes have been corresponding with each other all along; they are all part of the same huge project. At last the time has come for the classes to share the information they have compiled. Using an electronic bulletin board, each class sends its findings to the others. Now each class has data from across the state. They compare bird sightings from the various regions and build a composite picture of bird distributions based on their data. Drawing software provides a way for them to illustrate their findings on a Kentucky map.

How does their statewide data compare with other information about bird distribution in Kentucky? Using their electronic information-searching capabilities, they find just what they need at the Kentucky Nature Preserves Commission a database of Kentucky animal species, their habitats, and sighting information. They use this information to construct a second map showing habitat regions of the state and areas of expected occurrence of the bird species. This new map leads to several discussions, including: Why do different birds prefer different habitats? Have the habitats changed over the years? What role have people played in the changing habitats?

Finally, Ms. Morgan's class compares the two maps they constructed. They propose explanations for differences. During a live "debriefing" telecast via interactive video, they discuss their findings with a scientist who helps them interpret what they have done and answers questions from students at the participating schools. Working in small groups, they prepare a written report of their research, illustrating their findings with the graphs and maps generated.

"It's All in How You Look at It"

Mr. Platt's physics class is working on its final exam. But it's not the kind of final that used to be given, with students responding to page after page of questions and problems that the teacher has constructed. Instead, Mr. Platt's students have been assigned to construct and present a **multimedia** representation of several fundamental ideas of physics. Throughout the school year, the students have had ample opportunity to polish their multimedia skills, both in Mr. Platt's class and in their other classes. Thus, they take to the assignment with confidence and enthusiasm.

The results of the students' efforts are as varied as the students themselves. Richard uses animation software to create pictorial sequences illustrating velocity, acceleration, force, and momentum. He even incorporates audio samples of sound effects to make the visual effects more appealing. Holly, on the other hand, looks for more "practical" examples. Combining images from a **video disc** with videotape she shot herself, she builds her presentation around amusement park rides as examples of physics principles. Abstract concepts such as inertia, torque, and gravitational acceleration take on a visceral meaning as she relates the concepts to the physical experience of the rides. James takes an altogether different approach, deciding to look for evidence of physics in the world of the arts. Slides from a Metropolitan Museum of Art video disc provide images to illustrate kinetic and potential energy, reflection and refraction of light, and frames of reference. A **video clip** from the movie, "Who Framed Roger Rabbit" provides the context for distinguishing between vector and scalar quantities. Working in a similar vein, Janet uses science fiction as an organizing theme for her project. Text passages from Issac Asimov, Arthur C. Clarke, and Frank Herbert are analyzed for the science underlying the fiction with digitized speech accompanying the text display. Audio and video clips from motion pictures and television provide

further examples and non-examples of physics concepts. Her presentation ends with a segment demonstrating links between the science fiction of previous decades and the scientific achievements of today. Coming from yet another direction, Pat traces the parallel between understanding physical principles and the development of technology and culture from the 1600's to the present. Using video clips, scanned photographs, and computer graphics, Pat highlights thermodynamics, electricity, and planetary motion as topics to illustrate the impact of scientific knowledge on social organization and industrial development, and the impact of cultural beliefs on the direction and development of scientific thought.

The students present their products to Mr. Platt and the rest of the class, providing additional information and elaboration in response to questions. Each student has used multimedia tools to express his or her personal interpretation of what physics means. Mr. Platt can use their presentations to evaluate how deeply they can connect physics to the world around them.

"Everyone's a Critic"

The schools participating in the "Authors' Network" have placed their students' writing efforts in a new context. Besides using word processors to write, revise, and print their work, the students also use technology in the critiquing process. As persuasive essays, stories, narrative reports, or other written products are composed, they are shared via modem with student "writing partners" in the other schools. These partners react to the writing, sharing both complements and criticisms with the author in a non-threatening manner. Of course, the authors work hard on their first drafts wanting the work that is read to be of good quality. The partners benefit, too, as their critiquing skills become transferred to analyzing their own writing.

The Network serves as a testing ground for many novel ideas. When one school's students wrote reports and opinion articles about the homeless in their town for submission to the local newspaper, their Network partners served as proxies for community readers, checking for clarity of communication of the issues. Another school's students submitted manuscripts for a set of stories to produce for students at the local elementary school. For practice in explanatory writing, another school gave students the task of preparing orientation handbooks for new students. Several schools established pen-pal programs to encourage writing for informal communication.

The Author's Network is not just for language arts classes. Social studies classes exchange student writing about social, historical, economic, or cultural questions. Foreign language students polish their skills by composing letters or reports in their new language to be read by international partners for whom it is the native tongue. School newspaper staffs share articles and editorials. The Network has students thinking about writing and reading in a whole new way.

"Math Explorers"

Ms. Blackwell's eighth grade Algebra class is studying functions. Ordinarily this would consist of computation, followed by plotting the graphs of the functions. But since she is satisfied that her students' computation and graphing skills are reasonably mastered, Ms. Blackwell uses technology to eliminate some of the drudgery. Her students use graphing calculators to produce function graphs quickly and accurately. Today they are exploring functions with the form $y=mx + b$.

Working in groups, the students generate graphs of a given series of functions. They begin to notice some regularities. Each of the functions is a straight line; as the "b" value changes, the line moves up or down on the graph; as the "m" value changes, the line gets steeper or flatter. The more functions they test, the more certain they become about the patterns they have found. They predict the equation of a function that would produce a given graph, then test their prediction and make revisions. All along, the students are writing about what they are doing and what they are finding out. New terms that are introduced, such as "slope", "intercept", and "linear function" make sense because the students have first-hand experience with what they are and how they can change.

"City Planners"

Tenth graders at Anytown High are engaged in an interdisciplinary study of growth and change. Activities up to now have included investigating the growth rates and patterns of bacteria, including the effects of

crowding; examining economic principles of supply and demand by case studies; and using census data to track and interpret population shifts. Technology, especially spreadsheet and database applications, has been used to store and organize information so that patterns and relationships might be explored.

Today, they will begin to use computer modeling software to investigate the influence of zoning on the growth of cities. The discussions heard in the classroom are remarkably similar to those that would arise in planning a scientific experiment identifying and controlling variables, formulating hypotheses, planning trials. Working in groups, the students decide on the features of two cities, identical in every respect except for the zoning patterns. They follow the computer simulation as it models the development of the cities over time, making note of the changes that occur. At the end of the simulation period, they analyze the two cities, looking for similarities and differences. Why did this area develop into slums, while this one prospered? What kinds of businesses developed? What areas had pollution problems? The groups can decide to adjust certain variables and run the simulations again, testing their hypotheses about what will happen. In the end, each group will prepare an oral presentation, including visual aids, to share their findings with the other students.

The results and insights gained from the simulations will next be applied to their own city. What effects have local zoning policies had on the growth and development of their hometown? What changes in zoning might be necessary to improve the economically-depressed areas of the city? Video and audio recordings will be made of interviews with town officials, city planning experts, and ordinary citizens to get their views and recommendations to add to the discussions.

"Happy Trails"

Students in Ms. Adelman's sixth grade social studies class are learning first-hand about the rigors of pioneer life. They are participating in a **computer-simulated** wagon train journey across the early West. Each computer station in their networked lab is a wagon in the train. Groups of students work together at each station. Each student is a different character in the simulation, representing the range of individuals who might have traveled on a real wagon train. Each group discusses how to use their money to stock their wagon with food, water, ammunition, personal belongings, and other items. Group consensus is an important factor in reaching decisions.

As the wagons proceed on the trail, students communicate with each other via their computers. They follow their progress on computer-generated maps making decisions about when to stop to hunt for food or water. The wagon groups must consult with each other to decide how to respond to incidents that occur along the way illness, accidents, bad weather, criminal acts, etc.

Can the students work together to make the decisions that will take them safely to their new homes in the West? That is the challenge they face. Of course, the simulation may be run as many times as the students need, in order to learn the problem-solving and decision-making skills they need to help the group reach its goal. Each trip is different and presents a new set of challenges to the student pioneers.

Ms. Adelman helps the students understand the historical context in which they are working and encourages them to act in accordance with their roles. She also helps them discuss issues that arise and analyze the consequences of decisions that are made. She observes the students throughout the simulation. She looks for evidence of historical understanding, communication skills, and group process skills.

"You Make the Arrangements"

Ever since they began learning to play their instruments, the students in Mr. Taylor's high school band have used music composed and arranged by someone else. Their focus has been on accurate performance of their given parts. Mr. Taylor has decided that it's time for them to experience another side of music the process of exploring musical communication and putting musical elements together in a way that expresses ideas and emotions.

Personal computers, connected to electronic synthesizers via a MIDI interface, provide the musical sketchpads that Mr. Taylor's students use. They start with a piece of music that they have already performed. By altering tempo and key signature, eliminating parts, and assigning parts to different instruments, the students experiment with the music. The synthesizer allows them to hear the results of

their manipulations immediately without the whole band having to try the new version. Listening through headphones, they compare the new music's effects with how it sounded previously. Because the technology is networked like a language lab, Mr. Taylor can observe and listen to what each student is doing. He can even bring students together to listen to each others' experiments. As they explore, the students begin to realize the contributions of such factors as key signature, tempo, meter, rhythm, register, voicing, and instrument blend to the overall effect of music on the listener.

Next, the students are given a specific task alter the arrangement of a given piece of music to change its effect from gaiety to sadness. Working in groups, the students manipulate the elements of the piece, slowing its tempo, changing to a minor key, assigning parts to different instruments. The synthesizers play the results of their work, and the groups compare the different approaches they took. Notation software allows the groups to print a high-quality copy of their arrangement to place in their music portfolios. Those students who wish are now given the opportunity to experiment with composition, putting together melody, rhythm, and harmony elements in an original manner. The flexibility of the computer/synthesizer combination means that they can "play" and hear parts for instruments that they cannot physically play themselves. They experiment with their song and its arrangement until it is ready to be played for the other students. Again, they print copies of the transcriptions for their portfolios.

The technology can assist in honing students' performance skills as well. By playing their part on an appropriate MIDI instrument, the performance data is recorded by the computer. A transcription of what they played can then be compared to the original piece, looking for timing or note errors. Mr. Taylor can compose exercises for individual students needing to work on particular skills.

Thanks to MIDI technology, music in Mr. Taylor's class is truly a creative experience.

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VIII. Whole Language Approach

Although Whole Language consists of several discrete strategies, it is described here as one intact component, one philosophy, in which all parts must be interwoven and integrated to achieve the goal.

The term "whole language" is difficult to define because of the wide diversity of practices which have been placed under this broad label. However, the perimeters of the term can be more easily drawn if the whole language approach is described as a philosophy as opposed to methodology.

The whole language philosophy is based on a theory about how people learn and think. The processes involved in learning and thinking are social and constructive in nature, involve experimentation in a risk-free environment, necessitate relating newly learned materials to previously gained knowledge, and are more successful when learners are actively engaged in them.

According to whole language proponents, children should use language in ways that relate to their lives and cultures. In many cases, the final answer (product) is no more important than the process of learning to define and solve problems which are academic expectations in the Kentucky Education Reform Act.

Skills are the means to an end and are practiced in the context of any given opportunity. Mere memorization of facts becomes less important than creative thinking and the application of those facts in performance situations. Stress is placed on language being kept whole and uncontrived.

Within this philosophical framework, children are trusted to learn in student-centered, print-filled classrooms, where learning is enjoyable and materials have meaning and relevance to their lives. Teachers are viewed as resources, coaches, and co-learners, allowing children to make choices and share in decision making. Student interest and intrinsic motivation rather than external rewards and teacher control promote learning. Questions are asked to generate discussion rather than to provide answers. Collaboration with peers is encouraged as students become fellow learners in the pursuit of a subject. In this way, whole language teaches skills and processes that create "literate people" able to function in various types of communication-based situations.

The focus of assessment shifts to match the type of learning in the whole language classroom. The format becomes more open-ended and less formal. Teacher observations and frequent progress notes become key to evaluation of classroom performance. Students monitor and self-evaluate their own procedures and expectations and set personal goals for improvement. Holistic assessments of finished products treat both reading and writing projects as a whole. Ability to "make-meaning" is understood to be both process and product-oriented in this type of assessment.

Advantages of a Whole Language Program

The advantages to such a literature-based curriculum relates to KERA's academic expectations. "Integration of knowledge" is advocated. Because authentic reading tasks are provided in print-rich environments, students learn to monitor and assess their own reading skills through the act of reading. Rather than being limited to reading class, reading skills become personal tools to promote independent learning in other classes. The elements of reading and writing are viewed as integrated processes and are integrated into all disciplines rather than being isolated within the language arts curriculum. As students become aware of the processes used to gain knowledge through reading, they are able to adapt to differing reading tasks faced daily across

the curriculum. Practice with real, rather than contrived reading tasks, helps students make the transition to "self-sufficiency," and independent reading. Transfer of these basic skills and concepts to tasks beyond school occur more readily because the learner sees the value of accomplishments. Success comes because students learn by participating in activities that they have found meaningful. Ownership of knowledge is theirs and may be shared with peers in other problem-solving situations.

Key Elements in the Whole Language Approach

1. Print-rich environment with flexible seating that encourages reading and writing. The physical layout of the classroom supports the whole language philosophy of learning and teaching. There should be print everywhere and space for exploration and shared learning. (See Morrow reference and Routman's *Invitations*, Chapter 15).

2. Shared reading, the use of Big Books and the reading aloud of real literature. Observation by students of an expert modeling fluent, expressive reading in a relaxed environment focuses on books for pleasure. Students are encouraged to read along and follow the oral experience with personal rereadings. When Big Books are used, smaller versions are made available to students. (See Peetoom reference).

3. Guided Reading. The teacher supports children in thinking and questioning their way through a book. Students meet with the instructor to think critically about the material. This may be done with whole class, small groups, or individualized. (See Routman's, *Invitations*, Chapter 3).

4. Independent reading. Sustained silent reading for which all types of materials are provided. Students take care of their own reading by choosing and reading books. The teacher provides time, promotes ownership, and makes observations in order to give appropriate response. (See Routman's, *Invitations*, Chapter 3).

5. Interdisciplinary, thematic units that integrate subject-matter, skill usage, and interest levels. Content units focus on major concepts. Reading, writing, speaking, and listening become interrelated to facilitate student learning of those concepts. Literature becomes the vehicle to teach language arts across the curriculum. (See Pappas, et al. reference, Chapters 3 and 8).

6. Reading/writing connections made through written and oral activities. Since reading and writing involve similar processes to construct meaning, many skills can be learned and extended through their interrelatedness. Successful writers integrate reading into their writing experience, and successful readers integrate writing into their reading experience. (See Calkins reference).

7. Response logs and journal writing. Used to record student reactions to literature, response logs become excellent tools for connecting reading to writing, for extending meaning of text, and for giving readers ownership of the literary experience. Journal writing provides risk-free opportunities to explore both learning and personal experiences. These types of personal writing become a means of helping students connect school and all that it is to their personal lives. (See Atwell and Calkin's references).

8. Student published work. When students are encouraged to make their work communicate ideas to an audience other than the teacher's grading pen, desire for display and publication follow naturally. Whole language rooms are characterized by student displays of all kinds. (See Atwell and Calkins's references).

9. Student cooperation and cooperative learning. Because peers are recognized as teammates rather than competitors, working together toward common goals becomes a useful

instructional tool. Flexible grouping finds students working with a variety of personalities and abilities in a heterogeneous environment. (See Routman's, *Invitations*).

10. Conferencing and shared goal setting. Students and teachers become partners in the learning process. Both teacher and peer conferences help students rethink and revise oral and written projects. Out of a growing awareness of audience, students become more adept at self-monitoring and are less threatened by the need to change the way in which the ideas have been expressed or even the ideas themselves. As students and teachers become more aware of areas of strength and weakness, instructional decisions can become more student-centered rather than curriculum-controlled. (See Atwell reference).

Myths About Whole Language

The following represent some elements NOT included in the whole language approach:

- 1. An abandonment of teaching skills (e.g., spelling, grammar, and phonics).** Writing and reading skills are taught naturally through the context of whole literature rather than in isolation. Direct instruction and guided practice are provided as the need for a particular skill arises rather than on a preplanned curriculum or scope and sequence basis.
- 2. Limited to language arts or one type of literature.** Whole language teachers become opportunists, seeking chances for integrating content areas with language development through a variety of materials and methods. Writing is linked to reading as a natural continuum of the constructive process of effective communication.
- 3. Unplanned classroom and unprepared teachers.** Preparation includes long-range planning to achieve the broad academic expectations. Teachers concentrate on these to guide instruction generally, while allowing flexibility within that framework on a daily basis. Management of the varying activities and time allocations require much forethought and constant monitoring.
- 4. Lack of student accountability.** Rather than striving to please an external monitor in the person of a teacher, students are encouraged to meet, evaluate, and change their own expectations and instructional goals. This creates self-motivated, realistic learners, able to deal with individual strengths and weaknesses for the sake of self-improvement.
- 5. Limited to one age or ability group.** Active involvement in learning is important to the learner regardless of age and/or ability. Because the whole language environment fosters such involvement, it has been effective with all grade levels and learner types.
- 6. A pre-packaged formula.** While many publishers have presented materials that contain components of the whole language philosophy, caution should be used in implementing them "as is". Continued observation of students and reflection on instruction are needed to assure teachers that the needs of individual learners are being met regardless of the materials selected for use.

Contributed
by:

Barbara Stinnett and Peter Winograd,
University of Kentucky

IX. Writing Process

The writing process is a tool which can be used effectively by any teacher to promote thinking and learning. At the beginning of the writing process, students must identify their purpose and audience in order to choose a form for their writing. The writing is then developed through a series of stages which usually include: prewriting, drafting, revising, editing, and publishing. A chart illustrating the process is included at the end of this section.

Using the Writing Process

The purpose for writing instruction at the PREWRITING stage is to enable every student to become an independent generator of ideas. To fulfill this purpose

- teachers may provide whole class instruction and practice in a variety of prewriting strategies and activities such as clustering, brainstorming, labs, field studies, observations, class discussions, etc. The student, not the teacher, will choose which strategy best suits his/her particular needs based upon the purpose of the writing and the audience.
- teachers may allow students to select their own topics and develop them in a way that is suitable to their purpose and audience.
- teachers may provide particular topic components that still leave room for some student choice and do not deprive students of either ownership of their writing or opportunities to improve their writing abilities.

Drafting sentences and connecting one thought to another usually require a deeper level of thinking than do prewriting activities. Throughout the **DRAFTING** process

- teachers should maintain a supportive environment that allows for different learning styles, provides rich resources, and gives ample drafting time in and out of class.
- teachers need to respect the writer's ability to make choices about purpose, audience, form, content, and length and to refrain from setting artificial limits or constraints upon these areas.

Writers require feedback at all stages of the writing process. During a **CONFERENCE**, the writer interacts with teachers, peers, and/or others. It is essential, however, that during these conferences the student writer retains ownership of his/her writing. While responders (e.g., teachers and peers) may ask questions and offer suggestions, the writer will decide what to incorporate and what to reject.

Responders should

- question rather than dictate,
- encourage rather than edit,
- coach rather than correct,
- guide rather than direct,
- model rather than rewrite,
- suggest rather than impose, and
- critique rather than criticize.

Another integral part of writing is **REVISION**. Revision is, in a sense, rethinking or "re-visioning" ideas. During this stage, the writer reshapes and reorders the text to match as closely as possible the new ideas in his/her head. The general guideline in revision is that the students will make decisions about what to add, delete, or change. Toward this end

- teachers should raise questions to clarify the student's purpose, approach, meaning, content, ideas, organization.
- teachers should teach students how to review their writing with each other and to talk about possible changes and should provide class time during which this exchange can take place.
- teachers/students may demonstrate sample revisions and discuss what impact they make upon the effectiveness of the writing.
- peers may read each others' writing and offer written or spoken responses and suggestions for the author to consider.
- teachers may design revision checklists for students to use with their own writing and in conferencing with peers.
- teachers should ask students to talk about their revisions and the rationale behind them.
- teachers and students should ensure that authors have the final say in the revisions they make in their writing.

The writer's goal in the EDITING process is to produce the best possible paper according to his/her developmental level. During this process

- teachers will emphasize the role of students as owners of their work.
- teachers will support students in self-assessing and making final editing decisions.
- students may use dictionaries, thesauri (printed and mechanical), spell checkers, or computer writing programs.
- teachers will not at any time actually do writing or make direct corrections on student work.

When a final draft of the piece has been prepared, it should be PUBLISHED. Various methods of publishing have been used by teachers; such as, sharing the piece with peers or parents, placing it on bulletin board, or submitting it to a contest or periodical. Publishing is a critical part of the writing process because it gives students a real purpose for their writing.

Adapted from:

Kentucky Writing Portfolio, Teacher's Handbook

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Instructional Material Resources

"Instructional materials" are defined in state administrative regulation 704 KAR 3:450 as any print, non-print, or electronic medium of instruction designed to assist students in achieving the academic expectations.

No single instructional material can ensure that all students will develop the skills, abilities, attitudes, and behaviors necessary for success. However, using a variety of instructional materials can motivate students and provide successful learning experiences. Students are often attracted to hands-on instructional materials which can be a tool for connecting Decisions regarding the selection of instructional materials should include the following considerations:

- KERA goals and academic expectations,
- philosophy of the school/district,
- instructional goals, and
- needs of the students.

The instructional materials selected should address the multiple intelligences and various learning modalities of all students.

Instructional Materials Law

House Bill 545 allows Kentucky's schools and teachers more flexibility in the selection and purchase of instructional materials. Relevant to the adoption content area, any portion or all of a district's allocated state textbook/instructional material monies can now be spent on instructional materials for grades P-8. The types of instructional materials eligible for purchase are as follows:

• reference books	• globes	• maps
• trade books	• cassette tapes	• music materials
• pamphlets	• slides	• math and science manipulatives
• magazines	• recordings (that are not ancillary parts of basal programs)	
• periodical publications for student use		
• supplemental print materials	• graphic materials	• electronic instructional materials (requires KETS approval)
• supplemental video tapes	• transparencies	

The following instructional material resources section concentrates on resources that will assist teachers in transforming the learning environment.

The listing of instructional material resources does not indicate endorsement by the Kentucky Department of Education for a particular company or agency.

Instructional Material Resources for Arts and Humanities

Programs

Artists in Residence and Teacher Initiated Programs of the Kentucky Arts Council

Provides matching funds for working artists in the schools. For information contact: Kentucky Arts Council, 31 Fountain Place, Frankfort KY 40601 (502) 564-3757

Kentucky Institute for Arts in Education

Professional development in the arts for teachers and administrators. Two-week sessions in Louisville and Murray. For information contact: Education Director, Kentucky Center for the Arts (502) 562-0149

Regional Artists Showcases

Presented at seven sites each year by the Kentucky Center for the Arts. Artists who perform and conduct workshops in schools, make presentations, and provide information. For information contact: Education Director, Kentucky Center for the Arts (502) 562-0149

Ride to the Kentucky Center Program

Provides matching funds up to 50% to local school districts for the cost of transporting students to educational arts activities and performances at the Kentucky Center for the Arts in Louisville, Kentucky. For information contact: Division of Curriculum, Kentucky Department of Education (502) 564-2106

Publications: Books

A Guide to Arts and Cultural Education Programs and Services in Kentucky, 1992, 118pp.

A comprehensive listing of all state and local arts education resources. For information contact: Kentucky Arts Council (502) 564-3757 or, if you have a telephone line, computer and modem, access through KET-Net by calling (606) 281-9452

Building a Case for Arts Education, An Annotated Bibliography of Major Research, 1990, 69pp.

John McLaughlin, Ed.D. Published by the Kentucky Alliance for Arts Education and the Kentucky Arts Council. For information contact: Kentucky Alliance for Arts Education, P.O. Box 13280, Lexington KY 40583 (606) 254-4358

Publications: Periodicals

AATE Newsletter

American Alliance for Theatre and Education, Arizona State University, Department of Theatre, Tempe, AZ 85287-3411

Bluegrass Music News Kentucky Music Educators Association. Hazel Carver, Editor. 1007 Granville Lane, Russellville, KY 42276 (502) 726-6427

Kentucky Art Educators Newsletter Terry Epling, Editor. 137 Powell's Creek Road, Pikeville, KY 41501-9232

Teaching Theatre Educational Theatre Association, 3368 Central Parkway, Cincinnati, OH 45225 (513) 559-1996

Video for Arts and Humanities

Arts and the Valued Outcomes, KET, 1992. A two-part professional development workshop entitled "Patterns" and "Cultural Heritage" for teachers on integrating the arts into the curriculum which presents activities in dance, drama, music and visual arts.

Arts Express, KET, 1989. Twenty 15-minute programs with teacher guide on music, dance, drama and visual arts for elementary and middle school.

Imagine That, KET, 1991. A 10-part series designed to stimulate creative dramatic expression in fourth and fifth graders.

Old Music for New Ears, KET, 1992. Sixteen 15-minute programs designed to present traditional music in a new light.

Professional Organizations

American Alliance for Theatre and Education (AATE) Arizona State University, Department of Theatre, Tempe, AZ 85287-3411

American Council on the Teaching of Foreign Languages (ACTFL) 6 Executive Plaza, P.O. Box 1077, Yonkers, NY 10701-6801 (914) 963-8830 FAX (914) 963-1275

Educational Theatre Association (ETA) 3368 Central Parkway, Cincinnati, OH 45225-2392 (513) 559-1996 FAX (513) 559-0012

Getty Center for Education in the Arts 401 Wilshire Blvd., Suite 950, Santa Monica, CA 90401-1455 (310) 395-6657 FAX (310) 451-8750

Kentucky Alliance for Arts Education (KAAE) P.O. Box 13280, Lexington, KY 40583 (606) 254-4358

Kentucky Art Educators Association (KAEA) 8308 Easton Lane, Louisville, KY 40242-2518

Kentucky Association of Health, Physical Education, Recreation, and Dance (KAHPERD) Burch Oglesby, Executive Director. Western Kentucky University, Bowling Green, KY 42101

Kentucky Educational Speech and Drama Association, Inc. Breckinridge Hall, Morehead State University, Morehead, KY 40351-1689 (606) 783-2712

Kentucky High School Speech League Western Kentucky University, 135 Ivan Wilson Fine Arts Center, Bowling Green, KY 42101 (502) 745-6341

Kentucky Music Educators Association P.O. Box 65, Calvert City, KY 42029 (502) 395-4892

Kentucky Theatre Association Theatre Department, Northern Kentucky University, Highland Heights, KY 41076 (606) 572-5100

Music Education National Conference (MENC) 1902 Association Drive, Suite ATE, Reston, VA 22091 (703) 860-4000

National Art Education Association (NAEA) 1916 Association Drive, Reston, VA 22091 (703) 860-8000

National Clearinghouse for Bilingual Education (NCBE/TESOL) 1118 22 Street, NW, Washington, DC 20037 (202) 467-0867 FAX (202) 429-9766

National Coalition for Education in the Arts 1285 Avenue of the Americas, Third Floor, New York, NY 10019 (212) 245-4510 FAX (212) 245-4514

National Dance Association (NDA) 1010 College Avenue, Manhattan, KS 66502-2704 (913) 532-6887 FAX (913) 532-7004

Teachers of English to Speakers of Other Languages (TESOL) 1600 Cameron Street, Suite 300, Alexandria, VA 22314-2715 (703) 836-0774 FAX (703) 836 7864

Instructional Material Resources for Language Arts Programs

Kentucky Writing Program

The Kentucky Writing Program has two goals:

- 1) To raise to the "proficient level" the writing ability of Kentucky students and
- 2) To empower Kentucky teachers and administrators through staff development initiatives to create and support learning environments where improved student writing will occur.

The following are some of the opportunities offered by the program:

- Writing Resource Teachers (available in each of the regional centers). Experienced classroom teachers offer schools and districts professional development in all avenues of writing.
- University Writing Projects. Located at seven university sites, these projects provide long-term staff development opportunities in the process of writing and the teaching of writing.
- Writers Line. In cooperation with KET-Net, this technology allows students and teachers to share "on-line" writing activities.

For information, contact:

Kentucky Writing Program, 19th Floor, Capital Plaza Tower, 500 Mero Street, Frankfort, KY 40601 (502) 564-4394

The Kentucky Telecommunications Writing Program Wheelwright High School, Box 1700, Wheelwright, KY 41669 (606) 452-2110 FAX (606) 452-4080

Publications: Books

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- Trelease, J. *The New Read Aloud Handbook*. New York, NY: Penguin Books, 1989.
- Wurth, Shirley. *Books for You: A Booklist for Senior High Students*. Urbana, IL: National Council of Teachers of English, 1992.

Publications: Periodicals for Language Arts

Language Arts and English Journal National Council of Teachers of English, 1111 Kenyon Road, Urbana, IL 61801 (217) 328-3870 FAX (217) 328-9645

Portfolio News

Portfolio Assessment Clearinghouse, c/o San Diequito Union High School District, 710 Encinitas Blvd, Encinitas, CA 92024. A quarterly publication produced by educators involved in portfolio assessment.

Reading Today, Journal of Reading, The Reading Teacher, and Reading Research Quarterly

Above available from: International Reading Association, 800 Barksdale Road, P.O. Box 8139, Newark, DE 19714-8139

Publications: Parent Brochures and Booklets for Language Arts

These focus on practical reading concerns of parents and ways for parents to help their children develop reading skills and a lifetime reading habit.

- Beginning Literacy and Your Child
- Creating Readers and Writers
- Eating Well Can Help Your Child Learn Better
- Encouraging Your Junior High Student to Read
- Good Books Make Reading Fun For Your Child
- Helping Your Child Become a Reader
- How Can I Prepare My Young Child For Reading?
- Studying: A Key to Success...Ways Parents Can Help
- Summer Reading Is Important
- You Can Encourage Your Child To Read
- You Can Encourage Your High School Student to Read
- You Can Help Your Child Connect Reading to Writing
- You Can Help Your Child in Reading by Using the Newspaper
- You Can Help Your Young Child with Writing
- You Can Prepare Your Child for Reading Tests
- You Can Use Television to Stimulate Your Child's Reading Habits
- Your Child's Vision Is Important
- Your Home Is Your Child's First School

Available from: International Reading Association, 800 Barksdale Road, P.O. Box 8139, Newark, DE 19714-8139 (302) 731-1600 (800) 336-READ, ext. 266 FAX (302) 731-1057

Publications: Guidelines and Position Statements for Language Arts

Single copies of the following are available free upon request from the National Council of Teachers of English (NCTE) and may be copied without permission from NCTE.

An Introduction to the Guidelines for the Preparation of Teachers of English Language Arts

Summarizes the 1986 Guidelines for the Preparation of Teachers of English Language Arts discussion on the qualifications for teachers of English Language Arts, preparing effective English Language Arts teachers, and networking with other disciplines.

Basal Readers and the State of American Reading Instruction: A Call for Action

Discusses the technology that our information-age society uses to deal with the problem of illiteracy and recommends ways to improve reading instruction. 1989

Essentials of English: A Document for Reflection and Dialogue

Emphasizes the ways in which English contributes to the knowledge, understanding, and skills of our society. 1982.

Guidelines for a Gender-Balanced Curriculum in English, Grade 7-12

Encourages all English Teachers to integrate literature by and about women into the curriculum during the 1990's. Includes a recommended booklist. 1990.

Guidelines for Judging and Selecting Elementary Language Arts Textbooks

Offers eight guidelines that summarize current theory and research on language learning and provide substantive criteria for judging text materials. 1990.

Lost in the Crowd: A Statement on Class Size and Teacher Workload

Recommendations for schools, districts, and states for reducing class size and modifying instructional techniques that will allow students, as well as teachers, to become actively involved in their education. 1990.

NCTE Forum

Designed to answer questions about where NCTE stands on issues in education, this handbook includes selected Council position statements of the past 20 years on issues affecting the teaching of English. 1989.

Statement of Principles and Standards for the Postsecondary Teaching of Writing

Provides an introduction to writing instruction, details professional standards, and calls for teaching conditions necessary for quality education. 1989.

Teaching Composition: A Position Statement Defines essential principles in the teaching of writing. 1985.

Teaching Storytelling: A Position Statement from the Committee on Storytelling

Discusses oral storytelling and how storytelling is a unique classroom tool for learning about ourselves, about the ever-increasing information available to us, and about the thoughts and feelings of others. 1992.

Professional Organizations

American Library Association 50 East Huron Street, Chicago, IL 60601 (312) 280-4388 (800) 545-2433 FAX (312) 664-7459

Carnegie Center for Learning and Literacy 251 West Second Street, Lexington, KY (606) 254-4175

Center for the Study of Reading

University of Illinois at Urbana-Champaign, 51 Gerty Drive, Room 174, Champaign, IL 61820

International Reading Association (IRA) 800 Barksdale Road, P.O. Box 8139, Newark, DE 19714-8139 (302) 731-1600 ext. 225 FAX (302) 731-1057

Kentucky Council of Teachers of English/Language Arts (KCTE/LA)

Ken Spurlock, President. Holmes High School, 25th and Madison, Covington, KY 41014 (606) 292-5841

Kentucky State Council/International Reading Association (KCS/IRA) Sharon Martin. 1752 Plano-Richpond, Bowling Green, KY 42101

Laubach Literacy Action 1320 Jamesville Avenue, Box 131, Syracuse, NY 13210 (315) 422-9121

National Center for Family Literacy 401 South 4th Avenue, Suite 610, Louisville, KY 40202 (502) 584-1133

National Center for the Study of Writing and Literature School of Education, University of California-Berkeley, Berkeley, CA 94720 (510) 643-7022

National Council of Teachers of English (NCTE) 111 Kenyon Road, Urbana, IL 61801 (217) 328-3870 FAX (217) 328-9645

National Institute for Literacy 800 Connecticut Avenue, Suite 200, Washington, DC 20202-7560 (202) 632-1500

Speech Communication Association (SCA) 5105 Backlick Road, Building E, Annadale, VA 22003 (703) 750-0533 FAX (703) 914-9471

Whole Language Umbrella Unit 6-846 Marion Street, Winnipeg, Manitoba, Canada R2J0K4 (204) 237-5214

Writing to Learn Council for Basic Education, 725 15th Street NW, Washington, DC 20005 (202) 347-4171

Instructional Material Resources for Mathematics

Programs

Applied Mathematics: 9-12

Center for Occupational Research Development (CORD) 601-C Lake Air Drive, Waco, TX 76710 (800) 231-3015

Box-It or Bag-It: K-2

Math Learning Center, PO Box 1491, Portland, OR 97201

Elementary-Secondary: Mathematics Comprehensive Materials

National Science Foundation, 1800 G Street NW, Washington, DC 20550 (202) 357- 5000

K-4 Mathematics Specialist Project

Dr. Bill Bush, Director, 305 Dickey Hall, College of Education, University of Kentucky, Lexington, KY 40506-0017 (606) 257-2927

LATTICE (Learning Algebra through Technology Investigation and Cooperative Experiences) Dr. Bob Ronau, Director. Secondary Education, University of Louisville, Louisville, KY 40292

(502) 588-0593

Math In the Mind's Eye: 5-9 Math Learning Center, PO Box 3226, Salem OR 97302 (800) 547-8887

Mathematics Programs That Work: National Diffusion Network

Janet Stevens, State Facilitator, Kentucky Department of Education, 500 Mero Street, Frankfort, KY 40601 (502) 564-2672

Mathematics Their Way: K-2 Center for Innovation in Education, 20665 4th Street, Saratoga, CA 95070-5800

Publications: Books for Mathematics

Burns, Marilyn. A Collection of Math Lessons: From Grades 3 through 6. New Rochelle, NY: The Math Solutions, 1987.

Burns, Marilyn and Bonnie Tank. A Collection of Math Lessons: From Grades 1 through 3. New Rochelle, NY: The Math Solutions, 1988.

Charles, Randall, et al. Problem-Solving Experiences in Mathematics. Menlo Park, CA: Addison-Wesley Publishing Company, 1985.

Division of Assessment, Kentucky Department of Education. Kentucky Mathematics Portfolio Teacher's Guide. Frankfort, KY: Kentucky Department of Education, 1992.

Equals. Get It Together. Berkeley, CA: Lawrence Hall of Science, 1989.

Kriendler, Laurie and Barbara Zahm. MathFINDER Sourcebook: A Collection of Resources for Mathematics Reform. Armonk, NY: The Learning Team, Inc. 1992.

Kriendler, Laurie and Barbara Zahm. MathFINDER CD ROM. Armonk, NY: The Learning Team, Inc., 1992.

Mathematical Sciences Board. Measuring Up: Prototypes for Mathematics Assessment. Washington, DC: National Academy Press, 1993.

Stenmark, Jean Kerr, Virginia Thompson, and Ruth Cossey. Family Math. Berkeley, CA: Lawrence Hall of Science, 1986.

Publications: Periodicals

AIMS Newsletter AIMS Education Foundation, P.O. Box 8120, Fresno, CA 93747

Arithmetic Teacher National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091

COMAP(Consortium for Mathematics and Its Applications) COMAP, Inc., 60 Lowell Street, Arlington, VA 02174

Mathematics Teacher National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091

The Elementary Mathematician COMAP, Inc., 60 Lowell Street, Arlington, VA 02174

School Science and Mathematics Journal of the School Science and Mathematics Association (SSMA), 126 Life Sciences Building, Bowling Green State University, Bowling Green, OH 43403-0256

Professional Organizations

National Council of Teacher of Mathematics (NCTM) 1906 Association Drive, Reston, VA 22091 (703) 620-9840

Kentucky Council of Teachers of Mathematics (KCTM) Cynthia Lawson, Membership Chair (502) 875-5367

Manipulatives for Mathematics

Manipulatives are objects which are handled by students to develop an understanding of a concept or to model an experimental situation. The use of manipulatives has been found to enhance student understanding and achievement when it includes the following elements:

- the teacher must be knowledgeable about matching manipulatives to concepts;
- the manipulatives must be used over a long period of time, and;
- the use of manipulatives must be combined with explicit bridges between concrete and abstract concepts.

Manipulative materials can be elaborate and expensive, or simple and teacher-made.

Manipulatives suggested for use in the classroom are as follows:

Elementary	Middle	High
Attribute Blocks Base Ten Blocks Beansticks Place Value Mats Fraction Models Geoboards Tangrams Two-Dimensional Geometric Shapes Three-Dimensional Geometric Objects Interlocking Cubes Number Tiles Centimeter and Inch Cubes Objects for Sorting and Counting Calculators Objects for Measuring Nonstandard Units Number Rods Rulers/Tape Measures Trundle Wheels Scales and/or Balances Objects for Measuring Volume Thermometers Clocks Pattern Blocks Money Dice and Spinners Decimal Models	Spinners, Chips, Dice Fraction and Decimal Models Geoboards Number Tiles Cubes Pattern Blocks Scales Rulers Reflective Devices Compasses Protractors Calculators Place Value Models Geometric Shapes and Models Tangrams Pentominoes Tessellation Tiles Algebra Tiles Measuring Tools	Algebra Tiles Miras Polydrons Geoboards Tangrams Pentominoes Geometric Models (Two-Dimensional and Three-Dimensional) Volume Demonstration Kits Probability Tools Metric Measuring Devices Tessellation Tiles Calculators

Instructional Material Resources for Practical Living

Publications: Books

Association for the Advancement of Health Education (AAHE). HIV Prevention Education for Elementary and Middle School Grades. Atlanta, GA: Center for Disease Control, 1992.

Cochran, N., L. Wilkinson, and J. Furlow. A Teacher's Guide to Elementary School Physical Education. Dubuque, IA: Kendall/Hunt Publishing Company, 1982. Fourth ed.

Jefferson County Public Schools and the Kentucky Department of Education. Prevention of Family Violence. Frankfort, KY: Kentucky Department of Education, 1989.

Kentucky Department of Education. Parenting and Family Life Skills Education: Teachers Training Module. Frankfort, KY: Kentucky Department of Education, 1989.

Kentucky Department of Education. Resource Directory: Kentucky Aids Prevention Education Program. Frankfort, KY: Kentucky Department of Education, 1992.

Kentucky Department of Education, Division of Secondary Vocational Education. Life Skills. Frankfort, KY: Kentucky Department of Education, 1993.

Kentucky Department of Education, Division of Secondary Vocational Education. Consumer Economics. Frankfort, KY: Kentucky Department of Education, 1993.

Kentucky Department of Education, Division of Secondary Vocational Education. Parenting. Frankfort, KY: Kentucky Department of Education, 1993.

Kentucky Department of Education, Division of Secondary Vocational Education. Relationships. Frankfort, KY: Kentucky Department of Education, 1993.

Kotnour, M. Physical Fitness Games and Activities Kit. West Nyack, NY: Parker Publishing Company, 1990.

Quackenbush, Marcia and Sylvia Villareal, MD. Does Aids Hurt? Educating Young Children About Aids. Santa Cruz, CA: 1992.

Rohnke, K. The Bottomless Bag: Bag of Tricks. Dubuque, IA. Kendall/Hunt Publishing Company, 1991.

Turner, L.F. and S. Turner. Physical Education Teacher's Activities Program: Skill by Skill. West Nyack, NY: Parker Publishing Company, 1991.

Wheeler, K and O. Spilker. Physical Education Curriculum Activities Kit. West Nyack, NY: Parker Publishing Company, 1991.

Wnek, B. Holiday Games and Activities. Champaign, IL: Human Kinestics Book, 1992.

Professional Organizations

American Home Economics Association (AHEA) 1555 King Street, Alexandria, VA 22314 (703) 706-4600 FAX (703) 706-HOME

Kentucky Association of Health, Physical Education, Recreation, and Dance (KAHPERD) Burch Oglesby, Executive Director. Western Kentucky University, Bowling Green, KY 42101.

National Associations of Health, Physical Education, Recreation, and Dance (NAHPERD) 1900 Association Drive, Reston, VA 22091

National Association for Sport and Physical Education (NASPE) 1900 Association Drive,
Reston, VA 22091 (703) 476-3412

National Council for Economic Education (NCEE) 432 Park Avenue, New York, NY 10016 (212)
685-5499

Instructional Material Resources for Science Programs

Activity Centered Elementary Science (ACES): K - 6

Director of Education Programs, Kentucky Science and Technology Council, P.O. Box 1049,
Lexington, KY 40588 (606) 233-3502

Activities Integrating Mathematics and Science (AIMS): K - 6

AIMS Education Foundation, P.O. Box 7766, Fresno, CA 93747 (209) 291-1766

Chemical Education for Public Understanding Program (CEPUP): Middle Level Lawrence Hall of
Science, University of California, Berkeley, CA 94720 (510) 642-8718

Chemistry Lab Implementation Project (CLIP): High School

Kentucky Science and Technology Council, P.O. Box 1049, Lexington, KY 40588-1049 (606)
233-3502

Great Explorations in Math and Science (GEMS): Grades 4 - 8

Lawrence Hall of Science, University of California, Berkeley, CA 94720 (510) 642-7771

International and Regional Science and Engineering Fairs Science Service, 1719 N Street N.W.,
Washington, DC 20036 (202) 785-2255

Junior Science and Humanities Symposium: High School

Academy of Applied Science, 98 Washington St., Concord, NH 03301 (603) 228-4520

Kentucky Junior Academy of Science: Middle and High School

Dr. Valgene Dunham, Western Kentucky University, Biology Department, Bowling Green, KY
42101 (502) 745-3696

Kentucky Science Olympiad: Middle and High School

Kentucky Department of Education, 1829 Capital Plaza Tower, Frankfort, KY 40601 (502) 564-
2106

Kentucky Telecommunications Network (KYNet)

Science Consultant, Kentucky Department of Education, 500 Mero Street, Frankfort, KY 40601
(502) 564-2106

Partnership for Reform Initiatives in Science and Mathematics (PRISM)

National Science Foundation Grant, Dr. Daniel Ochs, Science Component Director, Kentucky
Department of Education, 500 Mero St., Frankfort, KY 40601 (502) 564-4394

Regional PRISM Directors for Science Initiatives:

Eastern Kentucky University Dr. Bob Miller (606) 622-2167

Morehead State University Dr. Ben Malphrus (606) 783-2212

Murray State University Dr. John Guyton (502) 762-2103

Northern Kentucky University Dr. Ron Gardella (606) 572-6380

University of Kentucky Dr. Ron Atwood (606) 257-3292
University of Louisville Dr. Karen Lind (502) 588-6431
Western Kentucky University Dr. Terry Wilson (502) 745-4424
National Science Olympiad: K -12 materials available, 5955 Little Pine Lane, Rochester, MI 48064 (313) 651-4103
Newton's Apple National Science Teachers Association, 1742 Connecticut Avenue NW, Washington, DC 20009-1171
Outdoor Biology Instructional Strategies (OBIS)
Delta Education, Inc., Box M, Nashua, NH 03061
People Sharing Information Network (PSINET),
JaKel, Inc., 585 Southfork Drive, Waukee, IA 50263 (515) 225-6317
Project RAMPS: Relationships and Mathematics in Physical Science
P.O. Box 712, Devon, PA 19333 (800) 444-5729
Project Wild
Kentucky Department of Fish and Wildlife Resources, Division of Information and Education, #1 Game Farm Road, Frankfort, KY 40601 (502) 564-4762
Science Curriculum Improvement Study 3 (SCIS3)
Delta Education, Inc., Box 915, Hudson, NH 03051
Space Science Student Involvement Project: Gr. 3 -12
National Science Teachers Association, 1742 Connecticut Ave. NW, Washington, DC 20009-1171 (202) 328-5800
The Total Science Safety System: Science Teaching and the Law - Safety and Chemical Management
JaKel, Inc., 585 Southfork Drive, Waukee, IA 50263 (515) 225-6317
Science Programs That Work: National Diffusion Network
Office of Educational Research and Improvement, 555 New Jersey Avenue, NW, Washington, DC 20208 (202) 357-6149
Science Sleuths
Videodiscovery, Inc., 1700 Westlake Avenue North, Suite 600, Seattle, WA 98109-3012 (206) 285- 5400 (800) 548-3472
Windows on Science Optical Data Corporation, 30 Technology Drive, P.O. Box 4919, Warren, NJ 07060 (201) 668-0022 (800) 524-2481
3-2-1 Classroom Contact
GPN University of Nebraska-Lincoln, P.O. Box 80669, Lincoln, NE 68501-0669 (402) 472-2007 (800) 228-4630

Publications: Books for Science

American Association for the Advancement of Science. Science Books and Films. Washington, DC: American Association for the Advancement of Science, 1991.

Barhydt, Frances and Paul Morgan. *The Science Teacher's Book of Lists*. Englewood Cliffs, NJ: Prentice Hall, 1993.

Butzow, Carol and John. *Science Through Children's Literature: An Integrated Approach*. Englewood, CO: Teacher Ideas Press, 1989.

Cheek, Dennis, Robert Briggs, and Robert Yager, eds. *Science Curriculum Resource Handbook: A Practical Guide for K-12 Science Curriculum*. Millwood, NY: Kraus International Publications, 1992.

College Entrance Examination Board. *Academic Preparation in Science*. New York, NY: College Entrance Examination Board, 1990.

Eggen, Paul and June Main. *Developing Critical Thinking Through Science, Book 2*. Pacific Grove, CA: Critical Thinking Press & Software, 1990.

Facts on File. *Science Experiments on File*. New York, NY: Facts on File, 1989.

Helgeson, Stanley, Robert Howe, and Patricia Blosser. *Promising and Exemplary Programs and Materials in Elementary and Secondary Schools - Science: Science Education Information Report*. Columbus, OH: Clearinghouse for Science and Mathematics, 1990.

Holdzkom, David and Pamela Lutz, eds. *Research within Reach: Science Education*. Charleston, WV: Research and Development Interpretations Service, Appalachia Educational Laboratory, 1984.

Kovalik, Susan and Karen Olsen. *Kid's Eye View of Science: A Teacher Handbook for Implementing an Integrated Thematic Approach to Teaching Science, K-6*. Oak Creek, AZ: Center for the Future of Public Education, 1991.

Kraus International. *Science Curriculum Resource Handbook*. Millwood, NY: Kraus International Publications, 1992.

LHS GEMS. *To Build a House: GEMS and the "Thematic Approach" to Teaching Science*. Berkeley, CA: Regents of the University of California, 1991.

Lennon, Mary Beth and Barbara Walthall, eds. *Sourcebook for Science, Mathematics and Technology Education, 1992*. Washington, DC: American Association for the Advancement of Science, 1992.

Main, June and Paul Eggen. *Developing Critical Thinking through Science, Book 1*. Pacific Grove, CA: Critical Thinking Press and Software, 1991.

Moutran, Julia. *Science Teachers Almanac: Practical Ideas and Activities for Every Month of the School Year*. West Nyack, NY: The Center for Applied Research in Education, 1992.

National Science Resources Center. *Science for Children: Resources for Teachers*. Washington, DC: National Academy Press, 1988.

National Science Teachers Association. *Science and Math Events: Connecting and Competing*. Washington, DC: National Science Teachers Association, 1990.

National Wildlife Federation. *Ranger Rick's Nature Scope*. Washington, DC: National Wildlife Federation, 1989.

Prentice Hall Science. *Teacher's Desk Reference: A Professional Guide for Science Educators*. Englewood Cliffs, NJ: Prentice Hall, 1993.

Roth, Charles and Linda Lockwood. Strategies and Activities for Using Local Communities as Environmental Education Sites. Columbus, OH: Clearinghouse for Science and Mathematics, 1979.

Tchundi, Stephen and Margie Huerta. Teaching and Writing in the Content Areas. National Education Association Professional Library, 1983.

United States Department of Energy. Education Programs 1992. Oak Ridge, TN: Office of Scientific and Technical Information, 1992.

Walthall, Barbara and Janice Merz, eds. American Association for the Advancement of Science Education Directory, 1989. Washington, DC: American Association for the Advancement of Science, 1989.

Publications: Periodicals for Science

American Biology Teacher National Association of Biology Teachers, 11250 Roger Bacon Drive, Reston, VA 22090

Journal of Research in Science Teaching John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10016

Nature Study The American Nature Study Society, 5881 Cold Brook Road, Homer, NY 13077

Science Activities Heldref Publications, 4000 Albermarle Street, NW, Suite 512, Washington, DC 20016

Science and Children 1742 Connecticut Avenue NW, Washington, DC 20009

Science, and Science Books and Films

American Association for the Advancement of Science, 1333 H Street NW, Washington, DC 20005 (202) 326-6410

Science and You University of Kentucky, Research and Graduate Studies, 404 Kinthead Hall, Lexington, KY 40506-0057

Science News 1719 N Street NW, Washington, DC 20036 (202) 785-2255

Science Scope 1742 Connecticut Avenue NW, Washington, DC 20009

Science World Magazine

Scholastic, Inc., 902 Sylvan Avenue, Box 2001, Englewood Cliffs, NJ 07632

Scientific American 910 17th Street, NW, Washington, DC 20006 (202)-457-9592

The Physics Teacher

American Association of Physics Teachers, 5110 Roanoke Place, Suite #101, College Park, MD 20740

The Science Teacher 1742 Connecticut Avenue, NW, Washington, DC 20009

Professional Organizations and Resources for Science

American Association for the Advancement of Science (AAAS) 1333 H Street NW, Washington, DC 20005 (202) 326-6624

American Astronomical Society (AAS) 2000 Florida Avenue NW, Washington, DC 20009 (202) 328-2010

American Chemical Society (ACS) 1155 16th Street, NW, Washington, DC 20036 (202) 872-4388

American Meteorological Society (AMS) 45 Beacon Street, Boston, MA 02108 (617) 227-2425

Appalachia Educational Laboratory (AEL) 1031 Quarrier Street, P.O. Box 1348, Charleston, WV 25325 (304) 347-0400 (800) 624-9120

Eisenhower National Clearinghouse for Mathematics and Science Education

Ohio State University, 104 Research Center, 1314 Kinnear Road, Columbus, OH 43212 (614) 292-1431 FAX (614) 292-1595

ERIC Clearinghouse for Science, Mathematics and Environmental Education (ERIC/SMEAC) 1200 Chambers Road, Columbus, OH 43212 (614) 292-6717

Kentucky Academy of Science (KAS) P.O. Box 22313, Lexington, KY 40522

Kentucky Association for Environmental Education (KAEE) 3200 Tucker Station Road, Louisville, KY 40299 (502) 267-8919

Kentucky Association of Biology Teachers (KABT): National Association of Biology Teachers Affiliate, 11250 Roger Bacon Drive, # 19, Reston, VA 22090

Kentucky's Aviation and Space Education Resource Center

Eastern Kentucky University, Hummel Planetarium, Richmond, KY 40475 (606) 622-1547

Kentucky's NASA Teacher Resource Center Murray State University, Waterfield Library, Media and Curriculum Resource Department, Murray, KY 42071 (502) 762-2850

Kentucky Physics Teachers Association (KPTA): American Association of Physics Teachers Affiliate 5112 Berwyn Road, College Park, MD 20740 (301) 345-4200

Kentucky Science and Technology Council (KSTC)

Director Science Education Programs, P.O. Box 1049, Lexington, KY 40588 (606) 233-3502 FAX (606) 259-0986

Kentucky Science Teachers Association (KSTA) 1026 Club Drive, Goshen, KY 40026 (502) 228-3206

Kentucky Space Grant Consortium

Thomas Coohill, Director. Western Kentucky University, Department of Physics and Astronomy, 1526 Russellville Road, Bowling Green, KY 42101 (502) 745-4357

Lawrence Hall of Science University of California, Berkeley, CA 94720 (510) 642- 7771

National Academy of Sciences (NAS) 2101 Constitution Avenue NW, Washington, DC 20077-5576

National Association for Science, Technology, and Society (NATS) 117 Williard Building, Pennsylvania State University, University Park, PA 16802 (814) 865-3046

National Center for Improving Science Education 2000 L. Street NW, Suite 603, Washington, DC 20036 (202) 467-0652 FAX (202) 467-0659

National Science Foundation (NSF) 1800 G Street, NW, Washington, DC 20550 (202) 357-5000

National Science Resources Center Arts and Industries Building, Room 1201, Smithsonian Institution, Washington, DC 20560 (202) 357-2555

National Science Teachers Association (NSTA)

1742 Connecticut Avenue NW, Washington, DC 20009 (202) 328-5800

North American Association for Environmental Education (NAAEE) P.O. Box 400, Troy, OH 45373 (513) 676-2514

Science and Mathematics Alliances: Funded by Eisenhower Grants

District Six Science and Mathematics Alliance John C. Philley, Director. Morehead State University (606) 783-2002

District Three Alliance John A. Oppelt, Director. Bellarmine College (502) 452-8490

Western Kentucky Alliance

Kenneth Phillips, Director. Madisonville Community College (502) 821-2250

Fifth District Alliance

Don Ryoti, Director. Eastern Kentucky University (606) 622-5942

Mathematics / Science Alliance - Region Four

Paul Blankenship, Director. Lexington Community College (606) 258-2272

Mathematics / Science Alliance - Region 1

Joseph Baust, Director. Murray State University (502) 762-2537

Mathematics / Science Alliance - Region Four North

Linda Sheffield, Director. Northern Kentucky University (606) 572-5431

Instructional Material Resources for Social Studies Programs

Citizen Bee

Nancy Gilligan, Coordinator. Fayette County Schools, 701 East Main, Lexington, KY 40502

Geography Bee

Kate Fischer, Coordinator. 2819 Elanor Avenue, Louisville, KY 40205

Kentucky Mock Trial Competition

Elizabeth Lucas, Coordinator. Administrative Office of the Courts, Frankfort, KY 40601

Kenucky United Nations Assembly (KUNA)

State YMCA. 402 Broadway, Frankfort, KY 40601

The Stock Market Game

Jan Heiman, Coordinator. Kentucky Council on Economic Education, 203 East Jefferson, Louisville, KY 40202

Publications: Books

Atwood, Virginia A., ed. Elementary School Social Studies: Research as a Guide to Practice. Washington, DC: National Council for the Social Studies, 1986.

Dobkin, William S., ed., et al. *A Handbook for the Teaching of Social Studies*. Boston, MA: Allyn and Bacon, Inc., 1985.

Jenness, David. *Making Sense of Social Studies*. New York, NY: MacMillan Publishing Company, 1990.

Kraus International. *Social Studies Curriculum Resource Handbook: A Practical Guide for K-12 Social Studies Curriculum*. Millwood, NY: Kraus International Publications, 1992.

Laughlin, Mildred Knight and Patricia Payne Kardaleff. *Literature-based Social Studies: Children's Books and Activities to Enrich the K-5 Curriculum*. Phoenix, AZ: The Oryx Press, 1991.

National Commission on Social Studies in the Schools. *Charting a Course: Social Studies for the 21st Century*. Washington, DC: National Commission on Social Studies in the Schools, 1989.

Parker, Walter C. *Renewing the Social Studies Curriculum*. Alexandria, VA: Association for Supervision and Curriculum Development, 1991.

Rosenzweig, Linda W., ed. *Developmental Perspectives on the Social Studies*. Washington, DC: National Council for the Social Studies, 1982.

Shaver, James P., ed. *Handbook of Research on Social Studies Teaching and Learning*. New York, NY: MacMillan Publishing Company, 1991.

Wronski, Stanley and Donald Bragaw, eds. *Social Studies and Social Sciences: A Fifty-Year Perspective*. Washington, DC: National Council for the Social Studies, 1986.

Publications: Articles/Brochures for Social Studies

Academic Freedom Committee. "Academic Freedom and the Social Studies Teacher." *Social Education*. January, 1991.

Association for Supervision and Curriculum Development. "Social Studies." *ASCD Curriculum Handbook*. Alexandria, VA: Association of Supervision and Curriculum Development, 1991.

Brophy, Jere E. and Janet Alleman. "Elementary Social Studies Should be Driven by Major Social Education Goals." *Social Education*. January 1992.

NCSS Task Force of Ethnic Studies Curriculum Guidelines. "Curriculum Guidelines for Multicultural Education." *Social Education*. September 1992: 274.

National Council for the Social Studies. "Alternative Scopes and Sequences." *Social Education*. October, 1989: 375.

National Council for the Social Studies. "Social Studies for Early Childhood and Elementary School Children Preparing for the 21st Century." *Social Education*. January 1989: 14.

National Council for the Social Studies. *The Essential Statements: Essentials of Social Studies*. Washington, DC: National Council for the Social Studies, 1991.

Nickell, Pat, ed. "Special Section: Student Assessment in the Social Studies." *Social Education*. February 1992: 89.

Wassermann, Selma. "A Case for Social Studies." *Kappan*. June 1992: 793.

Publications: Periodicals

Multicultural Review

Greenwood Publishing Group, Inc., 88 Post Road West, P.O. Box 5007, Westport, CT 06881-5007.

Social Education National Council for the Social Studies, 3501 Newark Street NW, Washington DC, 20016, (202) 966-7840.

Social Studies and the Young Learner The National Council for the Social Studies, P.O. Box 90364, Washington, DC

Social Studies Review The American Textbook Council, 475 Riverside Drive, Room 518, New York, NY 10115 (212) 870-2700.

Southern Social Studies Journal

The Kentucky Council for the Social Studies, UPO 738, Morehead State University, Morehead, KY 40351.

Professional Organizations

Alliance for Education in Global and International Studies (AEGIS)

Stanford University, 300 Lausen Room 14, Stanford, CA 94305 (415) 725-1494 FAX (415) 723-6784

American Historical Association (AHA)

400 A Street SE, Washington, DC 20003

Kentucky Association of Teachers of History (KATH)

Denver Fugate, President. Elizabethtown Community College, 600 College Street Road, Elizabethtown, KY 42701

Kentucky Council for the Social Studies (KCSS)

Ora Nall, President. 2815 Delaware Drive, Owensboro, KY 42301

Kentucky Council on Economic Education (KCEE)

200 East Jefferson Street, Louisville, KY 40202 (502) 584-2100

Kentucky Geographic Alliance

Dr. Dennis Spetz, Coordinator. University of Louisville, Louisville, KY 40292

Dr. Albert Peterson, Coordinator. Western Kentucky University, Bowling Green, KY 42101

National Council for Economic Education (NCEE)

432 Park Avenue, South, New York, NY 10016 (212) 685-5499

National Council for History Education (NCHE)

Elaine Wisley Reed, Executive Secretary. 26915 Westwood Road, Suite B-2, Westlake, OH 44145 (216) 835-1776

National Council for the Social Studies (NCSS)

3501 Newark Street NW, Washington, DC 20016 (202) 966-7840

Instructional Material Resources for Vocational Studies Programs

COIN Micro Junior: Career Exploration and High School Planning for Junior High
COIN Educational Products, 3361 Executive Parkway, Suite 302, Toledo, OH 43606
College Finder

Wintergreen Software, Inc., P.O. Box 15899, New Orleans, LA 70175

Social Skills on the Job: Career and Social Skills Training

The Conover Company, P.O. Box 155, Omro, WI 54963

Publications: Books

Bingham, Mindy and Sandy Stryker. Career Choices: A Guide for Teens and Young Adults. Santa Barbara, CA: Able Publishing, 1990.

Bolles, R.N. What Color is Your Parachute? Berkeley, CA: Ten Speed Press, 1993.

Educational Development and Training Center. Computerized Competency Profile. Commerce, TX: East Texas University, 1990.

Educational Development and Training Center. Educational and Career Planning Instructional Guide. Commerce, TX: East Texas University, 1989.

Educational Development and Training Center. Guidelines for Conducting a Quality Career Investigation Program. Commerce, TX: East Texas University, 1990.

Educational Development and Training Center. Inservice Model for Strengthening Secondary Teachers' Skills in Career Counseling. Commerce, TX: East Texas University, 1986.

Educational Development and Training Center. Self-Appraisal Instructional Guide. Commerce, TX: East Texas University, 1986.

Farr, J.M. Getting the Job You Really Want. Indianapolis, IN: JIST Works, Inc., 1988.

Farr, J. Michael, ed. Complete Guide for Occupational Exploration. Indianapolis, IN: JIST Works, 1993.

Jones, Lawrence, ed. Encyclopedia of Career Change and Work Issues. Phoenix, AZ: Oryx Press, 1992.

Kimbrell, G., and B. Vineyard. Succeeding in the World of Work. Mission Hills, CA: Glencoe, 1992.

Kimeldorf, M. Pathways to Work. Bloomington, IL: Meridian, 1989.

McCain, Barbara. Careers: Chance or Choice: A Teaching Strategy/Curriculum to Motivate the Academics. Cordova, TN: GMH Publications, 1991.

U.S. Department of Labor. The Occupational Outlook Handbook. Washington, DC: Department of Labor, 1990.

U.S. Department of Labor. The Dictionary of Occupational Titles. Washington, DC: Department of Labor, 1977.

Instructional Software for Vocational Studies

Career Directions

Career Finder

Careers of the Future

Computerized Career Assessment and Planning Program

Job Attitudes: Assessment and Improvement

The Work Activities Inventory

Working With Others

Working With an Organization

Above available from Johnson and Rudolph, 1027 Broadway, Bowling Green, KY 42104 (800) 248-5212

The School Survival Video Game Educational Development and Training Center, East Texas University Center, Commerce, TX 75429 (214) 886-5624 (800) 356-EDTC

Videos

HEADS UP: Attitudes About Work and Customers

Is There Life After High School? Planning Your Future

Preparing for the Jobs of the 1990's: What You Should Know

The Johnson/Rudolph Career Finder Video Service

Working for a Living: Job Skills for the Real World

Above available from Johnson and Rudolph, 1027 Broadway, Bowling Green, KY 42104 (800) 248-5212

Career Exploration: A Job Seeker's Guide

Career Planning Steps

Above available from Educational Development and Training Center, East Texas State University Center, Commerce, TX 75429 (214) 886-5624 (800) 356-EDTC

Professional Organizations

American Home Economics Association (AHEA)

1555 King Street, Alexandria, VA 22314 (703) 706-4600 FAX (703) 706-HOME

American Vocational Association (AVA)

1410 King Street, Alexandria, VA 22314 (703) 683-3111 FAX (703) 683-7424

International Technology Education Association (ITEA)

1914 Association Drive, Reston, VA 22091-1502.

Kentucky Association of Vocational Special Needs (KAVSNP)

Pat Vencill, President. Madison Central High School, 705 North Second Street, Richmond, KY 40475.

Kentucky Business Education Association (KBEA)

Ginny Richardson, Murray State University, Office Systems Business Education, Murray, KY 42071 (502) 762-4257

Kentucky Home Economics Association (KHEA)

Fran Maierhauser, Administrative Assistant. 4432 Cordova Road, Louisville, KY 40207-3422
(502) 895-8842

Kentucky Industrial Education Association (KIEA)

Bob Sillman, President. KY-Tech Region 5, Elizabethtown, KY 42071

Kentucky Marketing Education Association (KMEA)

Ray Roaden, President. Corbin High School, 1901 Snyder Road, Corbin, KY 40701 (606) 528-3902

Kentucky Vocational Association (KVA)

Gerald Slain, Executive Director. 626 Oak Hill Road, Somerset, KY 42501 (606) 678-5974

Marketing Education Association (MEA)

1375 King Avenue, Columbus, OH 43212 (614) 486-6708

National Association of Vocational Special Needs (NAVSNP)

Sandy Schmits, Special Populations Supervisor. Iowa Department of Education, Grimes State Office Building, Des Moines, IA 50319-0146

National Business Education Association (NBEA)

1914 Association Drive, Reston, VA 22091-1596 (703) 860-8300

General Instructional Material Resources

Publications: Books

ASCD Curriculum Handbook

Curriculum/Technology Resource Center. Association for Supervision and Curriculum Development, 1250 North Pitt Street, Alexandria, VA 22314-1403.

ASCD Curriculum Materials Directory

Curriculum/Technology Resource Center. Association for Supervision and Curriculum Development, 1250 North Pitt Street, Alexandria, VA 22314-1403.

ASCD Video Training Programs: Resources for Restructuring Schools

Association for Supervision and Curriculum Development, 1250 North Pitt Street, Alexandria, VA 22314-1403.

Brown's Directory of Instructional Programs

Infinity Impressions, Ltd., 88 East Main Street, Suite 500, Mendham, NJ 07945

Price varies with size of publication. This publication provides concise information regarding commercial, instructional programs to assist with selection decisions. Separate documents are available for Foreign Language, 7-12; Language Arts/Spelling/Handwriting, K-8; Language Arts, 7-12; Mathematics, K-8; Mathematics, 7-12; Reading, K-8, Science/Health, K-8; Science/Health, 7-12; Social Studies, K-8; Social Studies, 7-12; Vocational Education, 7-12; and Whole Language/Literature, K-8. Each entry provides a profile of the product which includes the following:

- bibliographic information,

- grade level(s),
- special features,
- detailed description of components, and
- customer service information.

Educators Index of Free Materials

Educators Progress Service, Inc., 214 Center Street, Randolph, WI 53956

Educational Testing Service Publications (ETS) P.O. Box 6736, Princeton, NJ 08541-6736

ERIC Directory of Education-Related Information Centers

Washington, DC: Educational Resource Information Center, 1992.

Guide to U.S. Department of Education Programs

Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402

Kraus Curriculum Resource Handbooks

Route 100, Millwood, NY 10546 (914) 762-2200 (800) 223-8323

This publication provides basic resources for creating curricula reflecting the various disciplines. Separate documents are available in Language Arts, English as a Second Language, Early Childhood Education, Mathematics, Science, and Social Studies. The books include the following:

- Annotated list of exemplary curriculum materials
- List of publishers
- Sources of ideas for special projects
- Design ideas
- Index of reviews

Products and Services Brochure

National Resource Center for Middle Grades Education, University of South Florida, College of Education, EDU 118, Tampa, FL 33620-5650 (813) 974-2530

Professional and Organization Development Programs

American Association of School Administrators and National Academy for School Executives. 1801 North Moore Street, Arlington, VA 22209-9988

The Curriculum Leader

Curriculum Leadership Institute, 2950 Rio Vista Drive, Emporia, KS 66801

Treasure Chest: A Teacher Advisory Sourcebook

Hoversten, Cheryl, Nancy Doda, and John Lounsbury. National Middle School Association, Columbus, OH: 1991

General Publications: Periodicals

Education Daily

Education Grants Alert

Education Monitor

Education USA
Federal Grants and Contracts Weekly
Foundation & Corporate Grants Alert
Report on Education Research
School Law News
Special Education Report
Student Aid News
The Catalog of Federal Education Grants
Vocational Training News

Above available from Capitol Publications, Inc., 1101 King Street, P.O. Box 1453, Alexandria, VA 22313-2053 (800) 327-7203 FAX (703)739-6517

Educational Literature Review Management Development Associates, P.O. Box 9328, Winterhaven, FL 33883-9328 (813) 293-4882

Other Resources

Educational Research Information Center (ERIC)

Access ERIC, 1600 Research Boulevard, Rockville, MD 20850 (800) USE-ERIC

Eisenhower National Clearinghouse

1314 Kinnear Road, Columbus OH 43212 (619) 292-7784 FAX (614) 292-2066 email:
lsmutis@ magnus.acs.ohio-state.edu

National Diffusion Network

Janet Stevens, Project Director. Kentucky Department of Education, 500 Mero Street, 1722 Capital Plaza Tower, Frankfort, KY 40601

Public Broadcasting Service

PBS Elementary/Secondary Service, 1320 Braddock Place, Alexandria, VA 22314-1698 (703) 739- 5402 FAX (703) 739-8495

United States Department of Education, Office of Education Research and Improvement, Washington, DC (800) USE- ERIC

General Professional Organizations

American Association of Colleges for Teacher Education (AACTE)

One Dupont Circle NW, Suite 610, Washington, DC 20036 (202) 293-2450 FAX (202) 457-8095

American Association of School Administrators/National Academy for School Executives (AASA/NASE) 11801 North Moore Street, Arlington, VA 22209-9988 (703) 528-0700

American Council of Learned Societies (ACLS)

228 East 45th Street, New York, NY 10017-3398 FAX (212) 949-8058

American Federation of Teachers (AFT)

555 New Jersey Avenue NW, Washington, DC 20001

American Library Association (ALA)

50 E Huron Street, Chicago, IL 60601 (312) 280-4388 (800) 545-2433 FAX (312) 664-7459

Association for Supervision and Curriculum Development (ASCD)

1250 North Pitt Street, Alexandria, VA 22314 (703) 549-9110 ext. 300 FAX (703) 549-3891

Association of Teacher Educators (ATE)

1900 Association Drive, Suite ATE, Reston, VA 22901 (703) 620-3110 (703) 620-9530

Council for Basic Education (CBE)

725 15th Street NW, Washington, DC 20005 (202) 347-4171 FAX (202) 347-5047

Education Commission of the States (ECS)

707 17th Street, Suite 2700, Denver, CO 80202 (303) 299-3652 FAX (303) 296-8332

Kentucky Association of School Administrators (KASA)

Louisville Road, Frankfort, KY 40601 (502) 875-3411

Kentucky Middle School Association (KMSA)

P.O. Box 3062, Frankfort, KY 40603

National Association for Core Curriculum, Inc.

404 White Hall, Kent State University, Kent, OH 44242. Dr. Gordon F. Vars, Executive Secretary/ Treasurer (216) 672-2792

National Association for Elementary School Principals (NAESP)

1615 Duke Street, Alexandria, VA 22314-3483 (703) 684-3345

National Association for Secondary School Principals (NASSP)

1904 Association Drive, Reston, VA 22091 (703) 860-0200

National Education Association

1201 16th Street NW, Washington, DC 20036 (202) 822-7369 FAX (202) 822-7482

National Middle School Association (NMSA)

4807 Evanswood Drive, Columbus, OH 43229-6292

Quality Education for Minority Network (QEMN)

1818 North Street NW, Suite 350, Washington, DC 20036 (202) 659-1818 FAX (202) 659-5408

General Networks and Resources

African-American Critical Issues Network

Delores R. Greene. Richmond Public Schools, 301 North 9th Street, 15th Floor, Richmond, VA 23219 (804) 780-6926

Alliance to Enhance Teaching of Science

Ira Hiberman. Penns Valley School District, RD2, Box 116, Spring Mills, PA 16875 (814) 422-8824

Arts in Education

Richard Sinatra. St. John's University, Grand Central and Utopia Parkways, Jamaica, NY 11439 (718) 990-6358

ASCD High School Futures II Network

Ronald Tesch, Highland Park High School, 433 Vine Street, Highland Park, IL 60035 (708) 432-6510

Authentic Assessment Network

Albert N. Koshiyama. Local Evaluation Assistance, California Department of Education, 721 Capitol Mall, Sacramento, CA 95814 (916) 324-7147

Clearinghouse for Learning/Teaching Styles and Brain Behavior

Kathleen Butler. The Learner's Dimension, 7 Lakeview Drive, Columbia, CT 06237 (203) 228-3786

Conflict Resolution Resources

The Community Board Program, 1540 Market Street, Suite 490, San Francisco, CA 94102 (415) 552-1250 FAX (415) 626-0595

Cooperative Learning

Harlan Rimmerman. Kansas City Schools, 625 Minnesota, Kansas City, KS 66101 (913) 621-3073

Curriculum Associates, Inc.

5 Esquire Road, North Billerica, MA 01862-2589

Curriculum Teachers (emphasis on teaching)

Marilyn Winters. California State University at Sacramento, 6000J Street, Sacramento, CA 95819 (916) 278-5517

Designing District Evaluation Instruments for Math and Science Process Skills

Shelley Ann Lipowich. 6321 North Canon del Pajaro, Tucson, AZ 87515 (602) 299-9583

Early Childhood Education

Shirle Moone Childs, Curriculum and Instruction. Windham Public Schools, 26 Regency Drive, Windsor, CT 06095 (203) 683-0030

Educational Futurists

Helen J. Wallace. 371 Patterson Street, Ashland, OR 97520 (503) 488-5824

Emergent Literacy and the Culturally or Linguistically Different Student

Zelene Lovitt. Carrollton-Farmers Branch I S D, 7856 La Cabeza, Dallas, TX 75248 (214) 247-7153

Equity Issues

Joyce Clark Waugh. University of West Virginia, College of Graduate Studies, 210 Minnesota Avenue, Beckley, WV 25801 (304) 252-0719

High Schools Networking for Change

Jim Ford. Sheldon High School, 2455 Willakenzie Road, Eugene, OR 97401 (503) 687-3381

Holistic Education

John Palladino. Long Island University, C W Post Campus, Brookeville, NY 11548 (516) 299-2374

Instructional Supervision

Jean M. Smith. Hilliard City Schools, 5491 Scioto Darby Road, Hilliard, OH 43026 (614) 876-1286

Interdisciplinary Curriculum

Benjamin P. Ebersole. Hershey Public Schools, Box 898, Hershey, PA 17033 (717) 534-2501 ext. 252

Intergenerational/Family Literacy

Maryann E. Nuckolls. Tucson Unified School District, 150 West Ajo Way, Tucson, AZ 85714 (602) 798-2740

Learning Community Network (teacher/administrator collaboration in research and practice)

F. James Clatworthy. School of Education, Oakland University, Rochester, MI 48309-4401 (313) 370-3052

Manipulative Mathematics

Rosemarie Dyer. Black Elementary School, 14100 Heritage, Sterling Heights, MI 48310 (313) 825-2840

Middle Schools Network

Evelyn Maycumber. Middle Grades Staff Development Center, North East Florida Educational Consortium, Route 1, Box 8500, Palatka, FL 32177 (904) 329-3800

National Occupational Information Coordinating Committee (NOICC)

2100 M Street, NW, Suite 156, Washington, DC 20037 (202) 653-7680

The Network for Outcome-Based Schools

NOBS Membership Services. TIES 1925 W County Road B2, Roseville, MN 55113-2791 (612) 638-2339

Network for Restructured Schools

Melanie Barron. University of Lowell, Center for Field Services and Studies, Read Hall, West Campus, Lowell, MA 01854 (508) 934-4650

NOICC Training Support Center (NTSC)

Oklahoma Department of Vocational and Technical Education, 1500 West Seventh Avenue, Stillwater, OK 74074-4364 (405) 743-5197

Pull-In Model for Compensatory Education

Rebecca Robinson Yarlott. Hale Elementary School, 1200 East 54th Street, Minneapolis, MN 55417 (612) 627-2387

School-University Partnerships

Richard Kobliner, College Counselor. Benjamin Cardozo High School, 5700 223rd Street, Bayside, NY 11364 (718) 631-7514

Science, Mathematics, and Technology Education

Dennis W. Cheek. New York State Department of Education, Rm 232 M ED, State Education Department, Albany, NY 12234 (518) 473-1759

Self-Directed Learning

Delmo Della-Dora. Department of Educational Leadership, California State University, Hayward, CA 94542 (415) 881-3962

Social Issues and Education

James T. Sears. University of South Carolina, Wardlaw 230, Columbia, SC 29208 (803) 777-6003

Staff Development

Debra Jagielski. Loyola University, School of Education, 820 North Michigan Avenue, Chicago, IL 60611 (312) 915-6034

Strategic Planning Network From Vision to Reality

Patricia R. Stelwagon. Berryessa Union School District, 1376 Piedmont Road, San Jose, CA 95132 (408) 923-1831

Teaching for Multiple Intelligences

David G. Lazear. Illinois Renewal Institute, 200 East Wood Street, Suite 200, Palatine, IL 60067 (708) 991-6300

Teaching Thinking

Robin Fogarty. Skylight Publishing, Inc., 200 East Wood Street, Suite 250, Palatine, IL 60067 (708) 991-6300

Understanding Educational Change

Martin Brooks. Shoreham Wading River Central School District, Route 25A, Shoreham, NY 11786 (526) 929-8500

Whole Language

Lenore Sandel. Hofstra University, Room 102, Mason Hall, Hempstead, NY 11550 (516) 560-5803

Kentucky Educational Television

Professional development seminars

Kentucky Educational Television (KET) Star Channel's Professional Development Seminars are developed by KET with input from Kentucky educators and the Kentucky Department of Education and are designed to help educators achieve the instructional goals of the Kentucky Education Reform Act. The seminars include advice from Kentucky educators, KDE officials, and nationally recognized experts in education reform along with actual footage from classrooms where strands of education reform are being implemented effectively. The seminars are delivered live from KET to every public school across the state. At every registered site, a seminar facilitator leads the sessions.

Enrichment and supplementary programs for students

Production, acquisition, and satellite delivery of instructional programming and accompanying teacher guides in language arts, math, science, social studies, foreign languages, fine arts, career education, economic and business education, health education, and personal development for pre-school through post-secondary students.

Advanced high school courses by satellite

The KET Star Channel's system delivers advanced high school courses to students in schools where previously the courses were not offered. These live, interactive courses are offered daily.

Electronic communications

KET-Net (Kentucky Educational Television Network) is an electronic communications network available to schools across the state. It is a way to add innovative classroom activities to the regular curriculum, to share ideas with educators in other schools, and to put students in touch electronically with other Kentucky students and experts in a variety of subjects. With a microcomputer, a modem, and the proper communications software, any school can "tap into" KET-Net.

Video rental library

Video resources on health/family life and parenting topics.

KET Education Division
600 Cooper Drive
Lexington, KY 40502-2296
(800) 432-0951

Kentucky Library Network

Information Sheet

The Kentucky Library Network (KLN) is a membership organization first incorporated in July, 1985. The Network is administered by the Kentucky Department for Libraries and Archives (KDLA).

The membership includes over 230 information providers of all types with a breakdown as follows:

- 50% public libraries,
- 20% academic libraries,
- 17% school libraries,
- 10% special libraries (e.g., business, health), and
- 03% consortia.

The goals of the Network are to

- Achieve resource sharing in the Commonwealth through:
 - Development and/or linking of bibliographic data bases and access tools,
 - Interlibrary loan of materials, and
 - Development of mechanisms for cooperative collection;
- Provide mechanisms for referral of information requests;
- Develop effective communication among all components of the Network;
- Promote development of network members or potential members by cooperating with other library and information organizations in the state; and
- Coordinate KLN activities with local, state, regional, and national information networks.

In the 1990-92 biennium, through support from the Kentucky legislature, KLN members received computer equipment configurations, consisting of a PC, internal modem, printer, and software, which allows their institutions to have access to the KLN database (currently 5.3 million holdings)

in all types of libraries). This Group Access Capability (GAC) enables KLN members to access electronically the nationwide interlibrary loan system (OCLC).

This computer base can also open access to all libraries regardless of size or location to the information resources of state government, commercial databases, federal government, private industry, academic research facilities, scientific institutions, and other information providers.

Instructional Material Resources for Making Connections

Publications: Books

Armstrong, Thomas. *In Their Own Way: Discovering and Encouraging Your Child's Personal Learning Style*. Los Angeles, CA: Jeremy P. Tarcher, Inc., 1987.

Association for Supervision and Curriculum Development. *Toward the Thinking Curriculum: Current Cognitive Research, 1989 ASCD Yearbook*. Alexandria, VA: Association for Supervision and Curriculum Development, 1989.

Bellanca, James. *Building a Caring, Cooperative Classroom*. Palatine, IL: IRI/Skylight Publishing, 1990.

Bradley, Marion. *What's Worth Teaching? Selecting, Organizing, and Integrating Knowledge*. Albany, NY: State University of New York Press, 1989.

Brownlie, Faye, Susan Close, and Linda Wingren. *Tomorrows Classroom Today: Strategies for Creating Active Readers, Writers, and Thinkers*. Markham, Ontario: Pembroke Publishers Limited, 1990.

Brusic, Sharon, et al. *An Overview of Mission 21: A Program Designed to Assist Teachers in Integrating Technology Into Their Present Curriculum Through a Problem-Solving Approach*. Blacksburg, VA: Virginia Polytechnic Institute, 1990.

Cohen, Elizabeth. *Designing Groupwork: Strategies for the Heterogeneous Classroom*. New York, NY: Teachers College Press, 1986.

Ellingsen, Robert. *Classroom of the 21st Century: Integrated Thematic Instruction*. Village of Oak Creek, AZ: Susan Kovalik and Associates, 1989.

Erb, Thomas, and Nancy Doda. *Team Organization: Promise - Practices and Possibilities*. Washington, DC: National Education Association, 1989.

Fogarty, Robin. *Designs for Cooperative Interactions*. Palatine, IL: IRI/Skylight Publishing, 1991.

Fogarty, Robin. *The Mindful School: How to Integrate the Curricula*. Palatine, IL: IRI/Skylight Publishing, 1991.

Fogarty, Robin, and James Bellanca. *Teach Them Thinking*. Palatine, IL: IRI/Skylight Publishing, 1986.

Katz, Lillian, and Sylvania Chard. *Engaging Children's Minds: The Project Approach*. Norwood, NJ: Ablex Publishing Corporation, 1990.

Kindrick, Karen, and Cynthia Black. *Adventures Down the Mississippi*. Village of Oak Creek, AZ: Susan Kovalik and Associates, 1990.

Kovalik, Susan. *ITI: The Model*. Village of Oak Creek, AZ: Susan Kovalik and Associates, 1992.

Kovalik, Susan. *Teachers Make the Difference with Integrated Thematic Instruction*. Village of Oak Creek, AZ: Susan Kovalik and Associates, 1986.

- Lazear, David. *Seven Ways of Knowing*. Palatine, IL: IRI/Skylight Publishing, 1991.
- Lazear, David. *Seven Ways of Teaching*. Palatine, IL: IRI/Skylight Publishing, 1991.
- Lewis, Barbara. *The Kid's Guide to Social Action: How to Solve the Social Problems You Choose and Turn Creative Thinking into Positive Action*. Minneapolis, MN: Free Spirit Publishing Company, 1991.
- Marzano, Robert. *A Different Kind of Classroom: Teaching with Dimensions of Learning*, Alexandria, VA: Association of Supervision and Curriculum Development, 1992.
- Miller, Raymond, ed. *Issues in Integrative Studies*. San Francisco: CA: Association for Integrative Studies, 1982, 1983, 1984 / 85.
- Northeast Foundation for Children. *A Notebook for Teachers: Making Changes in the Elementary Curriculum*. Greenfield, MA: Northeast Foundation for Children, 1987.
- Northwest Educational Service District 189. "Restructuring" Schools: Integrating the Curriculum. Mount Vernon, WA: Northwest Educational Services District 189, 1989.
- Reinhartz, Dennis and Judy Reinhartz. *Geography Across the Curriculum*. Washington, DC: National Education Association, 1990.
- Richards, M.C. *The Public School and the Education of the Whole Person*. Philadelphia, PA: The Pilgrim Press, 1980.
- Rick, Dorothy. *Mega Skills: How Families Can Help Children Succeed in School and Beyond*. Boston, MA: Houghton Mifflin Company, 1988.
- Roopnarine, J., and J. Johnson. *Approaches to Early Childhood Education*. Columbus, OH: Merrill Publishing Company, 1987.
- Shoemaker, Betty and Jean Eklund. *Integrative Education: A Curriculum for the Twenty-First Century*. Eugene, OR: Oregon School Study Council, 1989.
- Short, Kathy and Carolyn Burke. *Creating Curriculum: Teachers and Students as a Community of Leaders*. Portsmouth, NH: Heinemann Publications, 1991.
- Stevenson, Chris, and Judy Carr, eds. *Integrative Studies in the Middle Grades: Dancing through the Walls*. New York, NY: Teachers College Press, 1993.
- Vars, G.F. *Interdisciplinary Teaching in the Middle Grades*. Columbus, OH: National Middle School Association, 1987.
- Venalia, Carol. *Your Guide to Indoor Well-Being: Healing Environments*. Berkeley, CA: Celestial Arts, 1988.
- Wassermann, Selma. *Serious Players in the Primary Classroom: Empowering Children Through Active Learning Experiences*. New York, NY: Teachers College Press, 1990.

Publications: Articles, Periodicals for Making Connections

- Alverman, Donna. "The Discussion Web: A Graphic Aid for Learning across the Curriculum." *Reading Teacher*, October 1991: 92-99.
- Aschbacher, Pamela. "Humanitas: A Thematic Curriculum." *Educational Leadership*. October, 1991: 16-19.
- Charp, Sylvia. *The Journal: Technological Horizons in Education*. September 1992. Theme issue on curriculum integration.

- Costa, Art. "What Human Beings Do When They Behave Intelligently and How They Can Become More So." *Developing Minds: A Resource Book for Teaching Thinking*, Vol. 1. Alexandria, VA: Association for Supervision and Curriculum Development, 1991.
- Deake, Susan. "How Our Team Dissolved the Boundaries." *Educational Leadership*, October 1991: 47-49.
- Doyle, Charles. "Nature in the Classroom: Local Resources Often Overlooked." *New Jersey Education Association Review*, September 1982: 48-49.
- Gehrke, Natalie. "Explorations of Teachers' Development of Integrative Curriculums." *Journal of Curriculum and Supervision*, Winter 1991: 107-17.
- Goldman, Eric and Teri Langan. "The Civic Achievement Award: Civic Learning for Adolescents through Research, Writing, and Community Service." *Civic Perspective*, Fall 1990: 7-11.
- Jacobs, H.H. and J.H. Borland. "The Interdisciplinary Concept Model: Theory and Practice." *Gifted Child Quarterly*, Fall 1986.
- Marzano, R.J., D. Pickering, and R. Brandt. "Integrating Instruction Programs Through Dimensions of Learning." *Educational Leadership*, 1990.
- Meeth, L.R. "Interdisciplinary Studies: Integration of Knowledge and Experience." *Change*, Vol. 10: 6-9, 1978.
- Perkins, D.N. "Educating for Insight." *Educational Leadership*, October 1991: 4-8.
- Rubino, Ann. "The Science/Language Connection: Why to Make it...How to Do It (In the Classroom)." *Reading Teacher*, November, 1991: 248-49.
- Shoemaker, B. "Education 2000: Integrated Curriculum." *Kappan*, June 1991: 793-797.
- Vars, Gordon. "Designs for General Education: Alternative Approaches to Curriculum Integration." *Journal of Higher Education*, March/April 1982: 216-26.

Other Resources for Making Connections

- Colorado Middle Level Interdisciplinary Education Center (CMLIEC)
 Interdisciplinary instructional units are available for a modest fee.
 CMLIEC Middle School, McKee Hall, Room 213, Greeley, CO 80639 (303) 351-2369
 KET Series for Educators and Students
 Bringing Integrated Curriculum into the Elementary Classroom (for teachers)
 You Figure It Out! (for students) KET, 600 Cooper Drive, Lexington, KY 40502
 The Mailbox: Idea Magazine
 The Education Center, Inc. 1607 Battleground Avenue, P.O. Box 9753, Greensboro, NC 27429-0753
 Odyssey, Faces, Cobblestone and Calliope
 Cobblestone Publishing, Inc., 30 Grove Street, Peterborough, NH 03458 (603) 924-7209

Instructional Material Resources for Multicultural Education

Programs

Annual Multicultural Education "Connections" Conference

Offered by the Kentucky Department of Education through the Department's Multicultural Opportunities Branch. For information contact: the Multicultural Opportunities Branch, Division of Professional Development, Kentucky Department of Education, (502) 564-6916.

Publications: Books

Baker, Gwendolyn. Planning and Organizing for Multicultural Instruction. Reading, MA: Addison-Wesley Publishing Co., 1983.

Banks, James A. Teaching Strategies for Ethnic Studies, Fifth Edition. Boston, MA: Allyn and Bacon, Inc., 1991.

Banks, James A. and Cherry A McGee Banks. Multicultural Education: Issues and Perspectives, Second Edition. Boston, MA: Allyn and Bacon, Inc., 1993.

Instructional Material Resources for Technology

Programs

Assistive Technology Users Group (ATUG)

A bulletin board system started by the Kentucky Department for the Blind with a grant from the National Institute on Disability and Rehabilitation Research (NIDRR). Initially intended specifically for persons with blindness and other visual impairments, it now includes KATSNET, the bulletin board of the Kentucky Assistive Technology Service (KATS) Network. There are no on-line charges and the system can be accessed with a toll-free number from anywhere within Kentucky. For information contact: Assistive Technology Service, Department for the Blind, 1900 Brownsboro Road, Louisville, KY 40206 (502) 879-6439. For On-line Access: (800) 242-0490, (502) 894-0022, (502) 894-0393.

Kentucky Education Television Network (KET-Net)

An electronic communications network available to schools across the state. It is a way for educators to add innovative classroom activities to their regular curriculum, to share ideas with other educators across the state, and to put their students in touch with other Kentucky students and experts in a wide variety of subjects electronically. With a microcomputer, a modem, and the proper communications software, any school can "tap into" KET-Net. For information contact : Chela Kaplan, KET, 600 Cooper Drive, Lexington, KY 40502 (800) 432-0951 ext. 7265. For on-line access: (606) 281-9452.

National Distance Learning Center (NDLC)

An electronic, on-line computer database of over 2,100 individual listings for educational programming and materials that is accessible 24 hours a day to anyone with a personal computer and modem. It operates out of Owensboro, KY in partnership with the US Federal Government as a public service dedicated to reducing the barriers between the users and providers of educational programming and materials. For information contact: National Distance Learning Center, 4800 New Hartford Road, Owensboro, KY 42303, (502) 686-4550. For on-line access: (502) 686-4555 [Connections are supported to 2400 baud (N-8-1)].

Publications: Books

Information Power: Guidelines for School Library Media Programs. Chicago, IL: American Library

Association and the Association for Educational Communications and Technology, 1988.

Kentucky Department of Education and Jefferson County Public Schools. Technology in Education: Key Ideas for Kentucky Educators. Louisville, KY: Jefferson County Public Schools, 1990.

Kercher, L. Integrating Technology: Strategies. Laramie, WY: University of Wyoming.

Martin, M.J. Instructional Videotaping: A Teacher's Guide for Making Instructional Videotapes. Cape Canaveral, FL: Management Training Consultants, Inc., 1992.

Merrill, P., K. Hammons, M. Tolman, L. Christensen, B. Vincent, and P. Reynolds, Computers in Education. (2nd ed.). Boston, MA: Allyn and Bacon, 1992.

Ryba, K. and B. Anderson. Learning with Computers: Effective Teaching Strategies. Eugene, OR: International Society for Technology in Education, 1990.

Thornburg, D. Education, Technology, and Paradigms of Change for the 21st Century. San Carlos, CA: Starsong Publications, 1991. Available from EdTech Books, 1561 Laurel Street, Suite A, San Carlos, CA 94070.

Publications: Articles for Technology

Ray, Doris. "Technology and Restructuring Part I: New Education Directions." The Computing Teacher. March, 1991: 9-20.

Ray, Doris. "Technology and Restructuring Part II: New Education Directions." The Computing Teacher. April, 1991: 8-12.

Publications: Periodicals

Educational Technology

Educational Technology Publications, Inc., 720 Palisade Avenue, Englewood Cliffs, NJ 07632

Electronic Learning

Scholastic, Inc., 351 Garver Road, Monroe, OH 45050-2700

Journal of Research on Computing in Education

International Society for Technology in Education (ISTE), 1787 Agate Street, Eugene, OR 97403-1923

Media & Methods

American Society of Educators, 1429 Walnut Street, Philadelphia, PA 19102 (215) 563-3501 (215) 563-6005

Tech Trends

Association for Educational Communications and Technology, 1025 Vermont Avenue NW, Washington, DC 20005

Technology & Learning Peter Ki, Inc., 2451 E River Road, Dayton, OH 45439

The Computing Teacher

International Society for Technology in Education (ISTE), 1787 Agate Street, Eugene, OR 97403-1923 (503) 346-4414

Professional Organizations

Association for Educational Communications and Technology

1025 Vermont Avenue NW, Suite 820, Washington, DC 20005

International Society for Technology in Education

1787 Agate Street, Eugene, OR 97403-1923

Kentucky Assistive Technology Service Network

Coordinating Center, 427 Versailles Road, Frankfort, KY 40601

Kentucky Association of Technology Coordinators

238 Bowling Green Road, Scottsville, KY 42164

Professional Evaluations for Instructional Resources

This section lists references which review instructional resources. The school library media specialist can help you locate these publications and assist you with the evaluation and selection process. The code below is used to represent the type of resource reviewed.

AV- Audiovisual (audiocassettes, films, filmstrips, videocassettes, etc.)

B- Books

PB- Professional Books

P- Periodicals

PJ- Professional Journals

S- Software

CD-ROM- Compact Disc-Read Only Memory

Publications: Books of Professional Evaluations

A to Zoo: Subject Access to Children's Picture Books. 3rd ed., \$44.95. Bowker, 1989. (ISBN 0-8352-2599-2) (PreK-Grade 2) B

AAAS Science Book List, 1978-1986. \$25.00, AAAS, 1986. (ISBN-0-87168-313-6) (Grades 6-12) B, PB

Accept Me as I Am: Best Books of Juvenile Non-Fiction on Impairments and Disabilities. \$34.95. Bowker, 1985. (ISBN-0-8352-1974-7) (PreK-Grade 12) B

Adventuring With Books: A Booklist for PreK-Grade 6. 9th ed. \$16.50, paper. NCTE, 1989. (ISBN-0-8141-0078-3) (PreK-Grade 6) B

America A Story: Historical Fiction for Secondary Schools. \$15.00, paper. ALA, 1988. (ISBN-0-8389-0492-0) (Grades 6-12) B

American History For Children and Young Adults: An Annotated Bibliography Index. \$32.50. Libs. Unl., 1990. (ISBN 0-87287-731-0) (Grades K-12) B

Best Books for Children: Preschool through Grade 6. 4th ed. \$44.95. Bowker, 1990. (ISBN 0-8352-2668-9) (PreK-Grade 6) B

Best Books for Junior High Readers. \$44.95. Bowker, 1991. (ISBN 0-8352-3020-1) (Grades 7-9) B

Best Books for Senior High Readers. \$44.95. Bowker, 1991. (ISBN 0-8352-3021-X) (Grades 9-12) B

Best Encyclopedias: A Guide to General and Specialized Encyclopedias. \$39.50. Oryx Pr., 1986. (ISBN 0-89774-171-4) (PreK-Grade 12) B

The Best: High/Low Books for Reluctant Readers. \$12.50, paper. Libs. Unl., 1990. (ISBN 0-87287-532-6) (Grades 3-12) B

Best of Bookfinder - See The Bookfinder

The Best Science Books and A-V Materials for Children. \$20.00. AAAS, 1988. (ISBN 0-87168-316-4) (Grades K-9) AV, B

Beyond Picture Books: A Guide to First Readers. \$39.95. Bowker, 1989. (ISBN 0-8352-2515-1) (Grades 1-3) B

Book Bait: Detailed Notes on Adult Books Popular with Young People. 4th ed. \$12.00, paper. ALA, 1988. (ISBN 0-8389-0491-2) (Grades 7-9) B

The Bookfinder: When Kids Need Books, Volume 4: Annotations of Books Published 1983 Through 1986. \$34.94, paper. Am. Guidance, 1989. (ISBN 0-913476-51-X) (PreK-Grade 12)
See Best of Bookfinder B

The Museum of Science and Industry Basic List of Children's Science Books. \$11.95, paper. 1988. (ISBN 0-8389-0499-8) (PreK-Grade 9) B, P, PB, PJ

Non-Fiction for Young Adults: From Delight to Wisdom. \$32.50, paper. Oryx Press, 1990. (ISBN 0-89774-555-8) (Grades 7-12) B

Only the Best, 1985-1989: The Cumulative Guide To Highest-Rated Educational Software, Preschool - Grade 12. \$49.95. Bowker, 1989. (ISBN 0-8352-2851-7) (PreK-Grade 12) S

Only The Best, 1990: The Annual Guide to Highest-Rated Educational Software, Preschool-Grade 12. \$26.95. Bowker, 1989. (ISBN 0-8352-2766-0) (PreK-Grade 12) S

Only the Best, 1991: The Annual Guide to Highest-Rated Educational Software, Preschool - Grade 12. \$29.95. Bowker, 1990. (ISBN 0-8352-2952-1) (PreK-Grade 12) S

Picture Books for Children. 3rd ed., \$25.00, paper. ALA, 1990. (ISBN 0-8389-0527-7) (PreK-Grade 8) B

Recommended Reference Books For Small and Medium-Sized Libraries and Media Centers. \$37.00. Libs. Unl., 1990 (ISBN 0-87287-826-0) (N/A) B

Reference Books for Young Readers: Authoritative Evaluations of Encyclopedias, Atlases, and Dictionaries. \$49.95. Bowker, 1988. (ISBN 0-8352-2366-3) (PreK-Grade 12) B

The School Librarian's Sourcebook. \$34.95. Bowker, 1990. (ISBN 0-8352-2711-1) AV, PB, PJ, S

Science and Technology In Fact and Fiction: A Guide to Children's Books. \$35.00. Bowker, 1990. (ISBN 0-8352-2708-1) (PreK-Grade 6) B, PB

Science and Technology In Fact and Fiction: A Guide to Young Adult Books. \$35.00. Bowker, 1990. (ISBN 0-8352-2710-3) (Grades 5-12) B

Science Curriculum Resource Handbook. Kraus International Publications, 1992. AV, B, S

Senior High School Library Catalog. 13th ed. (Includes 4 annual supplements) Wilson, 1992. (ISBN 0-8242-0831-5) (Grades 9-12) B

Social Studies Curriculum Resource Handbook. Kraus International Publications, 1992. AV, B, S

Substance Abuse: A Resource Guide For Secondary Schools. \$28.50. Libs. Unl., 1991. (ISBN 0-87287-805-8) (Grades 6-12) AV, B, P, S

Your Reading: A Booklist For Junior High and Middle School Students. 7th ed. \$13.95, paper. NCTE, 1988. (ISBN 0-8141-5939-7) (Grades 5-9) B

Publications: Periodicals

Book Links. Connecting Books, Libraries, and Classrooms. Bimonthly. Booklist Publications, 50 E. Huron Street, Chicago, IL 60611. P

Book Report: The Journal For Junior and Senior High School Librarians. Bimonthly September-May. \$39.00. Linworth Publishing, Inc., 480 E. Wilson Bridge Road, Suite L, Worthington, OH 43085 AV B, PB, S, CD-ROM

Booklist. Twice monthly September-June (except monthly, July and August) \$56.00. American Library Association, 50 E. Huron Street, Chicago, IL 60611 AV, B, S

Bulletin of The Center For Children's Books. Monthly (except August). \$24.00. The University of Illinois Press, 54 E. Gregory Drive, Champaign, IL 61820 B

CD-ROM Librarian. Monthly (except for a combined issue July/August). \$79.50. Meckler Corporation, 11 Ferry Lane West, Westport, CT 06880 CD-ROM

Children's Video Review Newsletter. Bimonthly June-April. \$36.00. Children's Video Review Newsletter, 100 Lena Court, Grass Valley, CA 95949-9979 AV

The Computing Teacher. Monthly August-May (except for combined issues August/September and December/January) \$47.00. International Society for Technology in Education (ISTE), 1787 Agate Street, Eugene, OR 97403-1923 S

Electronic Learning. Monthly September-April (except for combined issues November/December and May/June) \$23.95. Scholastic, Inc., 351 Garver Road, Monroe, OH 40505-2700 S

Five Owls: A Publication for Readers Personally and Professionally Involved in Children's Literature. Five times a year. 2004 Sheridan Avenue S, Minneapolis, MN 55405 B

The Horn Book Magazine. Six times a year in January, March, May, July, September, and November. \$38.00. The Horn Book, Inc., 14 Beacon Street, Boston, MA 02108 B

The Horn Book Guide to Children's and Young Adult Books. Twice a year in March and September. \$50.00 (One-year subscription to both The Guide and The Horn Book Magazine.) The Horn Book, Inc., 14 Beacon Street, Boston, MA 02108 B

Incider/A+. Monthly. \$27.97. IDG Communications, 80 Elm Street, Peterborough, NH 03458 S

Kirkus Reviews. Twice Monthly. \$75.00. 200 Park Avenue S, New York, NY 10003 B

MacWorld: The Macintosh Magazine. Monthly. \$30.00 Macworld Communications, Inc., 501 Second Street, San Francisco, CA 94107 S, CD-ROM

School Library Journal. Monthly, January-December. \$63.00. P.O. Box 1978, Marion, OH 43305-1978 AV, B, PB, P, S

Science Books and Films. Monthly (except January, July, and August). \$35.00. American Association for the Advancement of Science, 1333 H. Street., Washington, DC, 20005 AV, B, PB, S

Technology and Learning. (Formerly Classroom Computer Learning). Monthly (except June, July, August, and December). \$24.00 Peter Li, Inc., 2451 E. River Road, Dayton, OH 45439 S

TnT: Tips and Titles and Books: Grades K-8. Jan Lieberman, 121 Buckingham Drive, #57, Santa Clara, CA 95051

Voice of Youth Advocates (VOYA). Bimonthly April-February. \$32.50. Scarecrow Press, Inc., 52 Liberty Street, Metuchen, NJ 08840 AV, B, PB

Wilson Library Bulletin. Monthly (except July and August). \$46.00. The H.W. Wilson Company, 950 University Avenue, Bronx, NY 10452 AV, B, PB, P, S, CD-ROM

Professional Organizations and Resources

American Association for the Advancement of Science (AAAS)

Marketing Department, 1333 H Street NW, Washington, DC 20005

American Guidance Service, Inc.

Publisher's Building, Circle Pines, MN 55014-1796.

American Library Association (ALA)

50 E. Huron Street, Chicago, IL 60611 (800) 545-2433

Divisions: American Association of School Librarians, Association for Library Service to Children, Library and Information Technology Association, Young Adult Services Division.

R.R. Bowker Company

Order Department, P.O. Box 31, 121 Chanlon Road, New Providence, NJ 07974

Brodart Company 500 Arch Street, Williamsport, PA 17705

Delacorte Press 666 Fifth Avenue, New York, NY 10103

Delta Books 666 Fifth Avenue, New York, NY 10103

Kentucky Library Association (KLA) Tom Underwood, Executive Director. Twilight Trail, Frankfort, KY 40601

Kentucky School Media Association (KSMA)

Sally Livingston, President. 116 Heady Avenue, Louisville, KY 40207

Kraus International Publications

A Division of The Kraus Organization Limited, Route 100, Millwood, NY 10546 (800) 223-8323

Libraries, Unlimited

P.O. Box 3988, Englewood, CO 80155-3988

McFarland & Company, Inc.

Publishers, Box 611, Jefferson, NC 28640

National Council of Teachers of English (NCTE)

1111 Kenyon Road, Urbana, IL 61801

Oryx Press

2214 North Central Avenue at Encanto, Phoenix, AZ 85004-1483

Scott, Foresman, and Company

1955 Montreal Road, Tucker, GA 30084

Society of School Librarians International (SSLI)

620 West Roosevelt Road, Suite B2, Wheaton, IL 60187

Viking Penguin

375 Hudson Street, New York, NY 10014-3657

H.W. Wilson Company

950 University Avenue, Bronx, NY 10452.

Notes
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Community Resources

The involvement of community resources in educational programs can add a new and exciting dimension to the learning process. Students interact with adults and are provided opportunities to become productive members of their communities; adults benefit accordingly by helping students learn. Student involvement in the community provides them with the following:

- opportunities to demonstrate competence,
- a social connection to people and to a place,
- avenues to explore a variety of careers, and
- enhanced self-esteem and sense of empowerment by "giving something back."

Community members can become involved with in-school projects that will improve the quality of instruction offered to students while providing the community with the following:

- renewal and enthusiasm;
- opportunities to become mentors to the next generation of leaders, taxpayers, and consumers;
- enhanced school-community good will;
- increased level of service; and
- a vested interest in the success of local young people.

Integrating community resources into the school curriculum is more than simply offering extracurricular activities. It expands the learning environment beyond the four walls of the traditional classroom to make learning more relevant for students.

Kentucky Education Reform Act (KERA) called for new approaches to traditional classroom routines and asked educators to consider alternatives to standard teaching methods. KERA also challenged teachers to give students opportunities to apply in real-life settings the information acquired in books and encouraged students to become responsible members of their communities. These KERA initiatives can be accomplished by involving communities and their wealth of resources in the local education process. Community interaction benefits both students and community members by providing them opportunities to give and receive assistance.

Ways to Utilize Community Resources

Field studies	Speakers
Technical expertise	Free materials
Demonstrations	Mentors
Internship opportunities	Job shadowing
Co-op opportunities	Scholarships
Career days	Donations
On-the-job training	Business partnership programs
Incentives and recognitions	Mini-courses
Oral histories	

Suggestions for Organizing Resources

District Level - An individual in the central office could be responsible for initiating and coordinating a comprehensive list of community resources and for scheduling projects and speakers. This person could assist the classroom teacher by initiating and developing contacts for school/community partnership projects.

School Level - An advisory committee in each school could survey parents and members of the community regarding areas of expertise and willingness to participate as resources for classroom teachers. Directories of these resources could be compiled for each building. The advisory committee could work either with or in lieu of a district coordinator.

Database - In the central office or in a school technology lab, a comprehensive inventory of individuals, organizations, and businesses in the community willing to share skills, present programs, or otherwise get involved should be kept current. The database could contain the following fields:

- Category (e. g., civil, business/industry, environmental)
- Content area
- Developmental level
- Type of presentation (e.g, lecture, demonstration, multi-media, field study)
- Multiple intelligences for which most appropriate
- Academic expectations addressed

.Framework for Creating Community Resource Directory

The suggestions which follow provide categories for organizing a local database. A sampling of possible resources is provided with each category. Each community and locality will have resources unique to their area.

Agribusiness Resources

American Dairy Association of Kentucky 3901 Atkinson Drive, Suite 115, Louisville 40218 (502) 451-3328

Dairymen Inc. 10140 Linn Station Road, Louisville 40223 (502) 426-6455

Kentucky Farm Bureau Federation 9201 Bunsen Parkway, P.O. Box 20700, Louisville 40250-0700 (502) 495-5000

Kentucky Feed and Grain Association 2545 Weisenberger Road, P.O. Box 215, Midway 40347 (606) 254-0294

Kentucky Pork Producers Association 615 North Mulberry Street, Elizabethtown 42701 (502) 737-5665

Kentucky Quarter Horse Association 4403 Glenarm Road, Crestwood 40014 (502) 241-5962

Kentucky State Horticultural Society University of Kentucky, Agri Science Center North, #N308, Lexington 40546 (606) 257-3352

Kentucky Thoroughbred Association, Inc. 1718 Alexandria Drive, P.O. Box 4040, Lexington 40544 (606) 278-6004

Kentucky Veterinary Medical Association 410 West Vine Street, P.O. Box 12737, Lexington 40583-2737 (606) 233-0062

Kentucky Walking Horse Association 1445 Richmond Road, P.O. Box 522, Lancaster 40444 (606) 792-4141

Producers Livestock Marketing Association 1048 East Main Street, Louisville 40206 (502) 587-0945

Tobacco Institute 10101 Linn Station Road No. 525, Louisville 40223 (502) 426-6927

Other Resources

Botanical gardens
Farm equipment and supply businesses
Farms (e.g., locally owned, university farms, horse farms)
Landscaping and nursery businesses

Business/Industry Resources

American Automobile Association Kentucky 435 East Broadway, P.O. Box 1113, Louisville 40202 (502) 582-3311
Associated Builders & Contractors, Inc. 425 West Lee Street, Louisville 40208 (502) 637-6531
Associated General Contractors of Kentucky, Inc. 415 West Main Street, P.O. Box 457, Frankfort 40602 (502) 223-8845
Associated Industries of Kentucky 415 West Main, Frankfort 40601 (502) 875-5867
Association of Professional Businesswomen Executive Park, Suite 209, P.O. Box 34484, Louisville 40232 (502) 897-5158
Better Business Bureau Better Business Building, 844 South 4th Street, Louisville 40203 (502) 583-1492
Bluegrass Black Business Association P.O. Box 2206, Lexington 40595 (606) 299-8111
Kentucky Bar Association 514 West Main Street, Frankfort 40601-1883 (502) 564-3795
Kentucky Chamber of Commerce
P.O. Box 817, Frankfort 40602 (502) 695-4700
Kentucky Society of Professional Engineers
1600 Democrat Drive, Frankfort 40601 (502) 695-5680
Kentucky State AFL-CIO
340-1 Democrat Drive, Frankfort 40601 (502) 695-6172
Kentucky State Racing Commission
Kentucky Horse Park, 4063 Iron Works Pike, P.O. Box 1080, Lexington 40588 (606) 254-7021
Small Business Administration
600 Dr. Martin Luther King Jr Pl, Rm 188, Louisville 40202 (502) 582-5971

Other Resources

Local factories and industries
Local merchants
Local professionals
Local service providers
Local utilities
State, local, and public agencies

Civic/Altruistic Resources

American Legion

970 South 4th Street, P.O. Box 2123, Louisville 40201 (502) 587-1414

American Red Cross

318 Washington Street, Frankfort 40601 (502) 223-1795

Boy Scouts of America

824 Phillips Lane, P.O. Box 36273, Louisville 40233 (502) 361-2624

Girl Scout Council, Inc.

1325 South 4th Street, P.O. Box 32335, Louisville 40232 (502) 636-0900

Kentucky Commission on Women

614-A Shelby Street, Frankfort 40601 (502) 564-6643

Kentucky Extension Homemakers Association

University of Kentucky, Scovell Hall Room 203, Lexington 40546-0064 (606) 257-3888

Kentucky Federation of Women's Clubs

1228 Cherokee Road, Louisville 40204 (502) 451-8435

Kentucky Jaycees

822 Phillips Lane, P.O. Box 17378, Louisville 40217 (502) 366-6118

Kentucky League of Women Voters

P.O. Box 87, Hopkinsville 42241-0087 (502) 885-3928

Kentucky-Tennessee District Kiwanis

1474 Ninevah Road, Frankfort 40601 (502) 223-7034

Rotary International, District 6710

2707 Breckenridge Street, Owensboro 42303 (502) 684-3200

State YMCA of Kentucky

407 Wapping Street, P.O. Box 577, Frankfort 40602 (502) 227-7028

United Nations Association

132 Wildwood Lane, Anchorage 40223 (502) 425-0619

United Way of Kentucky

334 East Broadway, P.O. Box 4653, Louisville 40204 (502) 589-6897

Other Resources

Food pantries/soup kitchens

Garden clubs

Homeless shelters

Salvation Army

Cultural Resources

Kentucky Arts Council

31 Fountain Place, Frankfort 40601 (502) 564-3757

Kentucky Center for the Arts

5 Riverfront Plaza, Louisville 40202 (502) 562-0100 (800) 283-7777

Kentucky Guild of Artists and Craftsmen

128 Main Street, P.O. Box 291, Berea 40403 (606) 986-3192

Kentucky Heritage Council

300 Washington Street, Frankfort 40601 (502) 564-7005

Kentucky Historical Society

Broadway at St. Clair Mall, P.O. Box H, Frankfort 40602 (502) 564-3016

Kentucky Humanities Council

417 Clifton Avenue, University of Kentucky, Lexington 40508-3406 (606) 257-5932

Kentucky Opera

631 South 5th Street, Louisville 40202 (502) 584-4500

National Association for the Advancement of Colored People

501 High Street, Room 904, Frankfort 40602 (502) 564-3601

Office of Historical Properties

Berry Hill Mansion, Frankfort 40601 (502) 564-3000

Paramount Arts Center

P.O. Box 1546, Ashland 41105-1546 (606) 324-3175

Wickliffe Mounds

P.O. Box 155, Wickliffe 42087 (502) 335-3681

Museums

Adsmore Museum

304 North Jefferson, Princeton 42445 (502) 365-3114

American Saddle Horse Museum

4093 Iron Works Pike, Lexington 40507 (606) 259-2746

Behringer-Crawford Museum

1600 Montague Road, Devou Park, P.O. Box 67, Covington 41012 (606) 491-4003

Cross & Crucifix Museum

815 East Market, Louisville 40201 (502) 584-2826

Headley-Whitney Museum

4435 Old Frankfort Pike, Lexington 40510 (606) 255-6653

J. B. Speed Art Museum

2035 South 3rd Street, Louisville 40201-2600 (502) 636-2893

Kentucky Aviation Museum

Bowman Field, Louisville 40202 (502) 451-7858

Kentucky Derby Museum

704 Central Avenue, Louisville 40201 (502) 637-1111

Kentucky Railway Museum
P.O. Box 240, New Haven 40051 (800) 272-0152
Lexington Children's Museum
401 West Main Street, Victorian Square, Lexington 40507 (606) 258-3253
Locust Grove Historic Home Museum
561 Blankenbaker Lane, Louisville 40202 (502) 897-9845
Metropolitan Children's Museum
727 West Main, Louisville 40202 (502) 449-3383
Museum of History and Science
727 West Main Street, Louisville 40202 (502) 561-6100
Museum of the American Quilter's Society
P.O. Box 3290, Paducah 42001 (502) 898-7903
National Museum of the Boy Scouts of America
Murray State University, Murray 40271 (502) 762-3383
Nostalgia Station Toy Museum & Train Shop
279 Depot, Versailles 40383 (606) 873-2497
Oldenberg Brewery & Entertainment Complex
I-75 at Buttermilk Pike, Ft. Mitchell 41017 (606) 341-2804
Portland Museum
2308 Portland Avenue, Louisville 40202 (502) 776-7678

Other Resources

Art galleries and museums
Cemeteries
Ethnic restaurants
Performing arts groups
State agencies
Theatres

Educational Resources

American Printing House for the Blind
1839 Frankfort Avenue, Louisville 40218 (502) 895-2405
Arnim D. Hummel Planetarium
Eastern Kentucky University, Richmond 40475 (606) 622-1547
Carnegie Center for Learning and Literacy
251 West Second Street, Lexington 40511 (606) 254-4175
Council on Higher Education
1050 U.S. 127 South, Suite 101, Frankfort 40601 (502) 564-3553
Cumberland Gap National Historical Park
P.O. Box 1848, Middlesboro 40965 (606) 248-2817
Department for Libraries & Archives
300 Coffee Tree Road, P.O. Box 537, Frankfort 40602-0537 (502) 875-7000
Department of Travel Development

Capital Plaza Tower, P.O. Box 2011, Frankfort 40602-2011 (502) 564-4930
Georgetown College Planetarium
Georgetown College, Georgetown 40324 (502) 863-8436
Golden Pond Planetarium
Tennessee Valley Authority, Land Between the Lakes, Golden Pond 42211-9001
(502) 924-5602 ext. 238
Governor's Commission on Literacy
1100 U.S. 127 South, Frankfort 40601 (502) 564-4062
Hardin Planetarium
Western Kentucky University, Bowling Green 42101 (502) 745-4044
Junior Achievement of Kentuckiana
8911 Shelbyville Road, P.O. Box 24403, Louisville 40224 (502) 425-8833
Kentucky Community Education
1705 Capital Plaza Tower, 500 Mero Street, Frankfort 40601 (502) 564-6117
Kentucky Council on Economic Education
203 East Jefferson Street, Louisville 40202 (502) 584-2100
Kentucky Retired Teachers' Association
3901 Atkinson Drive, Number 111, Louisville 40218 (502) 459-8125
Mammoth Cave National Park
Mammoth Cave 42259-0027 (502) 758-2225
Mid-America Remote Sensing Center (MARC)
Murray State University, Murray 42071 (502) 762-2148
Owensboro Area Museum Planetarium
2829 South Griffith Avenue, Owensboro 42301 (502) 683-0296
Rauch Memorial Planetarium
University of Louisville, Louisville 40292 (502) 588-6665
Regional Airport Authority of Louisville and Jefferson County
P.O. Box 9129, Louisville 40209-9129 (502) 368-6524
The Jesse Stuart Foundation
P.O. Box 391, Ashland 41114 (606) 329-5233
Upward Bound & Educational Talent Search
Murray State University, Murray 42071 (502) 762-4327
Weatherford Planetarium
Berea College, CPO 1630, Berea 40404 (606) 986-9341 Ext. 6240

Colleges and Universities

Alice Lloyd College Pippa Passes 41844 (606) 368-2101
Asbury College Wilmore 40390 (606) 858-3511
Bellarmine College Louisville 40205 (502) 452-8211
Berea College Berea 40404 (606) 986-9341
Brescia College Owensboro 42301 (502) 685-3131
Campbellsville College Campbellsville 42718 (502) 465-8158

Centre College Danville 40422 (606) 236-5211
Cumberland College Williamsburg 40769 (606) 549-2200
Eastern Kentucky University Richmond 40475 (606) 622-1000
Georgetown College Georgetown 40324 (502) 863-8011
Kentucky Christian College Grayson 41143 (606) 474-6613
Kentucky State University Frankfort 40601 (502) 227-6000
Kentucky Wesleyan College Owensboro 42302 (502) 926-3111
Lindsey Wilson College Columbia 42728 (502) 384-2126
Midway College Midway 40347 (606) 846-4421
Morehead State University Morehead 40351 (606) 783-2221
Murray State University Murray 42071 (502) 762-3011
Northern Kentucky University Highland Heights 41076 (606) 572-5100
Pikeville College Pikeville 41501 (606) 432-9200
Spalding University Louisville 40203 (502) 585-9911
Thomas More College Crestview Hills 41017 (606) 341-5800
Transylvania University Lexington 40508 (606) 233-8300
Union College Barbourville 40906 (606) 546-4151
University of Kentucky Lexington 40506 (606) 257-9000
University of Louisville Louisville 40292 (502) 588-5555
Western Kentucky University Bowling Green 42101 (502) 745-0111

Other Resources

Community Colleges
Community education programs
Council for International Education
School clubs and organizations
State agencies
Vocational/technical schools

Environmental Resources

Audubon Society of Kentucky 284 Old Kingston Road, Lexington 40505 (606) 299-4105
Bernheim Forest Highway 245, Clermont 40110-9999 (502) 585-3575
Department for Environmental Protection 18 Reilly Road, Ash Building, Frankfort 40601 (502) 564-3035
Department for Natural Resources 107 Mero Street, Frankfort 40601 (502) 564-2184
Geological Society of Kentucky Morehead State University, Morehead 40351 (606) 783-2915
Kentuckians for the Commonwealth 26 Earl, P.O. Box 864, Prestonsburg 41653 (606) 886-0043
Kentucky Geological Survey 228 Mining & Mineral Resources Building, University of Kentucky, Lexington 40506-0107 (606) 257-5500
Louisville Zoo 1100 Trevilian Way, P.O. Box 37250, Louisville 40233 (502) 459-2181

Louisville Zoological Garden 1100 Trevilian Way, P.O. Box 37250, Louisville 40233 (502) 459-2181

Nature Preserves Commission 407 Broadway, Frankfort 40601 (502) 564-2886

Sierra Club 5304 Oak Creek Lane, Louisville 40212 (502) 452-8534

U.S. Department of Fish and Wildlife Service 600 Federal Place, Louisville 40202 (502) 582-5980

Kentucky State Parks

John James Audubon P.O. Box 576, Henderson 42420-0576 (502) 826-2247

Barren River Lake 1149 State Park Road, Lucas 42156-9709 (800) 325-0057

Ben Hawes Box 761, Owensboro 42302-0761 (502) 684-9808

Big Bone Lick 3380 Beaver Road, Union 41091-9627 (606) 384-3522

Blue Licks Battlefield P.O. Box 66, Mt. Olivet 41064-0066 (606) 289-5507

Buckhorn Lake HC 36, Box 1000, Buckhorn 41721-9602 (800) 325-0058

Carter Caves Route 5, Box 1120, Olive Hill 41164-9602 (800) 325-0058

Columbus-Belmont Battlefield P.O. Box 8, Columbus 42032-0008 (502) 677-2327

Cumberland Falls 7351 Highway 90, Corbin 40701-8814 (800) 325-0063

Dale Hollow Lake 6371 State Park Road, Bow 42714-9728 (502) 433-7431

Fort Boonesborough 4375 Boonesborough Road, Richmond 40475-9316 (606) 527-3131

General Burnside P.O. Box 488, Burnside 42519-0488 (606) 561-4192

Grayson Lake Route 3, Box 800, Olive Hill 41164-9213 (606) 474-9727

Green River Lake 179 Park Office Road, Campbellsville 42718-9351 (502) 465-8255

General Butler Box 325, Carrollton 41008-0325 (800) 325-0078

Greenbo Lake HC 60, Box 562, Greenup 41144-9517 (800) 325-0083

Jenny Wiley HC 66, Box 200, Prestonsburg 41653-9799 (800) 325-0142

Kenlake Route 1, Box 522, Hardin 42048-9737 (800) 325-0143

Kentucky Dam Village P.O. Box 69, Gilbertsville 42044-0069 (800) 325-0146

Kincaid Lake Route 4, Box 33, Falmouth 41040-9203 (606) 654-3531

Kingdom Come P.O. Box M, Cumberland 40823-0420 (606) 589-2479

Lake Barkley P.O. Box 790, Cadiz 42211-0790 (800) 325-1708

Lake Cumberland 5465 State Park Road, Jamestown 42629-7801 (800) 325-1709

Lake Malone Dunmore 42339-0093 (502) 657-2111

Levi Jackson Wilderness Road 998 Levi Jackson Mill Road, London 40741-8944 (606) 878-8000

Natural Bridge 2135 Natural Bridge Road, Slade 40376-9701 (800) 325-1710

Old Fort Harrod P.O. Box 156, Harrodsburg 40330-0156 (606) 734-3314

Paintsville Lake 150 Staffordsville 41256 (606) 297-1521

Pennyrile Forest 20781 Pennyrile Lodge Road, Dawson Springs 42408-9212 (800) 325-1711

Pine Mountain 1050 State Park Road, Pineville 40977-0610 (800) 325-1712

Rough River Dam Route 1, Box 1, Falls of Rough 40119-9701 (800) 325-1713

Breaks Interstate Park P.O. Box 100, Breaks VA 24607 (703) 865-4413

Many materials are available at no charge from the Kentucky Department of Travel Development. These materials include list of state parks and attractions, maps, area brochures, and information on specific sites. Materials are available on a limited basis. Requests need to be made in writing to the Kentucky Department of Travel Development, P.O. Box 2011, Frankfort, Kentucky 40602-2011.

Other Resources

Environmental and conservation organizations

Federal agencies

Nature centers or preserves

Parks (e.g., national, state, and city)

Health Resources

American Cancer Society 701 West Muhammad Ali Boulevard, P.O. Box 1807, Louisville 40201-1807 (502) 584-6782

American Diabetes Association 745 West Main Street, Suite 150, Louisville 40202 (502) 589-3837

American Heart Association 333 Guthrie Street, Suite 207, Louisville 40202-1899 (502) 587-8641

American Lung Association P.O. Box 9067, Louisville 40209 (502) 363-2652

American Nursing Care Inc. 8172 Mall Road, Suite 238, Florence 41042 (606) 283-1500

Arthritis Foundation 3900-B Dupont Square South, Louisville 40207-4615 (502) 893-9771

Cystic Fibrosis 1941 Bishop Lane, Suite 507, Louisville 40218 (502) 452-6353

Dairy and Food Nutrition Council of Southeast, Inc. 901 Atkinson Drive, Suite 115, Louisville 40218 (502) 451-9837

Kentucky Association of Homes for the Aging 960 South 4th Street, Louisville 40203 (502) 635-6468

Kentucky Dental Association 1940 Princeton Drive, Louisville 40205 (502) 459-5373

Kentucky Domestic Violence Association 314 Wilkinson Boulevard, P.O. Box 356, Frankfort 40602 (502) 875-4132

Kentucky Medical Association 301 North Hurstbourne Parkway No. 200, Louisville 40222 (502) 426-6200

Kentucky Mental Health Association Mall Office Building, Suite 357, 400 Sherburn Lane, Louisville 40202 (502) 893-0460

Kentucky Nurses Association 1400 South 1st Street, P.O. Box 2616, Louisville 40201 (502) 637-2546

Kentucky Optometric Association 514 Capitol Avenue, P.O. Box 572, Frankfort 40602 (502) 875-3516

Kentucky Pharmacists Association 1228 U.S. 127 South, Frankfort 40601 (502) 227-2303

Kentucky Psychiatric Association P.O. Box 198, Frankfort 40602 (502) 695-4843

Leukemia Society of America 710 West Main Street, Suite 201, Louisville 40202 (502) 584-8490

Lupus Foundation 2210 Goldsmith Lane, Suite 209, Louisville 40218 (502) 459-6554

Mothers Against Drunk Driving P.O. Box 1238, Frankfort 40602 (502) 875-1250

National Kidney Foundation of Kentucky 250 East Liberty, Suite 710, Louisville 40217 (502) 635-5433

National Multiple Sclerosis Society of Kentucky 982 Eastern Parkway, P.O. Box 12, Louisville 40217 (502) 636-1700 & (800) 873-6367

Parents Against Drug Abuse 2222 Alta Avenue, Louisville 40205 (502) 459-4424

Spina Bifida Association of Kentucky 982 Eastern Parkway, Louisville 40217 (502) 637-7363

Other Resources

Child-care center

Family counseling agencies (e.g., Comp Care, abuse centers)

Family resource and youth service centers

Hospitals and clinics

Senior citizen assistance program

Support groups

Human Resources - Volunteer "Experts"

CampusServe 1050 U.S. 127 South, Suite 101, Frankfort 40601 (502) 564-3553

Kentucky Coalition of School Volunteer Organizations 1732 Capital Plaza Tower, 500 Mero Street, Frankfort 40601 (502) 564-8728

Kentucky Congress of Parents and Teachers, Inc. 314 Wilkinson Boulevard, P.O. Box 654, Frankfort 40602-0654 (502) 564-4378

Other Resources

Community members with expertise in crafts, recreation and other leisure activities, hobbies, or fitness

Ethnic families

Local celebrities

Senior citizens (e.g., retired individuals with time, energy, and skills serve as tutors and mentors to students)

Media Resources

Bloodlines 1-800-866-2361

Kentucky Broadcasters Association, Inc. Radio Station Road, P.O. Box 680, Lebanon 40033 (502) 692-6888

Kentucky Educational Television 600 Cooper Drive, Lexington 40502 (606) 258-7100

Kentucky Press Association 101 Consumer Lane, Frankfort 40601 (502) 223-8821

Kentucky Thoroughbred Media P.O. Box 11052, Lexington 40512

Other Resources

Magazines

Newspapers/newsletters

Radio stations

Television - public, commercial, and community access

Municipal Resources

Department of State Police 919 Versailles Road, Frankfort 40601 (502) 695-6300

Kentucky Association of Chiefs of Police, Inc. Florence Police Department, Florence 41042 (606) 371-3927

Kentucky Association of Counties 400 King's Daughters Drive, Frankfort 40601 (502) 223-7667

Kentucky County Judge/Executives Association 400 Thistleton Terrace, Frankfort 40601 (502) 223-5293

Kentucky Festivals Association 2773 Bardstown Road, P.O. Box 371, Hodgenville 42748 (502) 358-4974

Kentucky Fraternal Order of Police 2100 Gardiner Lane, Louisville 40205-2900 (502) 452-2828

Kentucky League of Cities 2201 Regency Road, Suite 100, Lexington 40503 (606) 227-2886

Kentucky Magistrates/Commissioners Association 400 King's Daughters Drive, Frankfort 40601 (502) 223-7667

Kentucky Sheriffs Association 311 Burch Avenue, LaGrange 40031 (502) 222-7490

National Guard Association of Kentucky 1111 Louisville Road, Frankfort 40601 (502) 564-7500

State Board of Elections Room 71, Capitol, Frankfort 40601 (502) 564-7100

Other Resources

Area development districts

Business Roundtable

City hall staff (e.g., mayor, town council, license bureau staff, voter registration personnel, tax assessors)

Governmental services (e.g., state and local law enforcement officers, firefighters, sanitation personnel)

Judicial system (e.g., circuit and district court judges, Court of Appeals staff, Commonwealth Attorney)

Local legislators (senators and representatives)

Military installations

State agencies (e.g., Justice Cabinet, Administrative Office of the Courts, Cabinet for Human Resources)

Gold Book

The most complete source of information for the state of Kentucky regarding people and organizations. Sells for \$20.00. Order through Clark Publishing, Inc., P.O. Box 24766, Lexington, Ky 40524 (800) 944-3995.

Additional Resources

ACTION

ACTION is the federal domestic volunteer agency. Its mission is to stimulate and expand voluntary citizen participation through the coordination of its efforts with public and private sector organizations and other governmental agencies. 1100 Vermont Avenue N.W., Washington, DC 20515 (202) 606-5256

Charles Stewart Mott Foundation

A leading innovator and funder of collaborative community and school programs. 4200 Mott Foundation Building, Flint, MI 48502 (444) 884-4000

Cities in Schools, Inc.

Sponsored by the U.S. Department of Justice, Health and Human Services, Labor, and Commerce, this organization seeks to create public-private partnerships to bring existing human resource services into schools where they can benefit youth at risk of dropping out of school. Cities in Schools offers fact sheets, brochures, newsletters, and training manuals. 401 Wyte Street, Suite 200, Alexandria, VA 22314 (703) 519-8999

National Association for Industry-Education Cooperation (NAIEC)

NAIEC advocates industry-education collaboration in school improvement, preparation for work through career education, and human resource and economic development. The association provides technical assistance in establishing formally structured industry-education councils composed of leaders in business, education, labor, government, and the professions. 235 Hendricks Boulevard, Buffalo, NY 14226-3304 (716) 834-7047

National Association of Partners in Education (NAPE)

NAPE is a membership organization representing schools, businesses, community groups, educators, and individuals who work together as partners to enhance the education of children. Materials and training for school-business-community relationships and volunteer and partnership initiatives are available. 209 Madison Street, Suite 401, Alexandria, VA 22314 (703) 836-4880

National Center on Education and the Economy

This organization was created to develop proposals for building the world class education and training system the United States must have if it is to have a world-class economy. The center conducts policy analysis and development, and it works collaboratively with others at the local, state, and national levels. 39 State Street, Suite 500, Rochester, NY 14610 (716) 546-6720

National Community Education Association (NCEA)

Founded in 1966, NCEA promotes and supports community involvement in public education, inter-agency partnerships, and lifelong learning opportunities for everyone in the community. The association publishes a journal, a newsletter, and other training materials and also provides technical assistance to communities. 801 North Fairfax Street, Suite 209, Alexandria, VA 22314 (703) 683-6232

National Dropout Prevention Center

This center seeks to reduce the nation's dropout rate by fostering public private partnerships in local school districts and communities across the country. It collects, analyzes, and disseminates information about such partnerships; provides technical assistance to develop and demonstrate dropout prevention programs; and maintains an online database of dropout prevention information called FOCUS. Clemson University, Clemson, SC 29634-5111 (800) 443-6392

National Mentor Network

Developed by the National Media Outreach Center with support from the U.S. Department of Labor, the National Mentor Network helps refer business volunteers interested in mentoring to schools in their area. Write or call for the names of contacts in your area and a list of print and video resources on mentoring. 4802 Fifth Avenue, Pittsburgh, PA 15213 (412) 622-1584/1491

National Society for Internships and Experiential Education (NSIEE)

This is an association of individuals, institutions, and organizations that promotes the effective use of experience as an integral part of education. Services include a bimonthly newsletter, publications, conferences, consulting services, and a clearinghouse of information related to experiential education and service-learning. 3509 Haworth Drive, Suite 207, Raleigh, NC 27609-7229 (919) 787-3263

National Youth Employment Coalition

This organization encourages information exchange between community-based organizations and corporations. It offers fact sheets, a bimonthly newsletter, directories, and reports related to

youth employment and training issues. 1501 Broadway, Suite 1111, New York, NY 10036 (212) 840-1834

National Youth Leadership Council

A membership organization that promotes and supports service-learning. Membership benefits include receipt of a semi-annual journal, current information through a newsletter, a membership directory, and an annual report. The council also has a toll-free hot line for referrals and technical assistance. 1910 West Count Road B, Roseville, MN 55113 (612) 631-3672

Points of Light Foundation

The Points of Light Foundation is a private nonprofit, nonpartisan corporation established to help call the nation to engage in direct and consequential service focused on serious social problems and to translate this call into action through a variety of specific and catalytic strategies and programs. "Youth Engaged in Service" is their initiative focused on service by persons aged 5-25. 736 Jackson Place N.W., Washington, DC 20503 (202) 408-5162

StarServe

This national, non-profit organization provides materials, resources, and ongoing assistance at no cost to teachers and administrators to make community service part of a class or school-wide activity. StarServe materials can help you and your students initiate service projects or enhance existing ones. They will provide a kit designed to offer specific ideas and activities for K-3, 4- 8, and 9-12. 701 Santa Monica Boulevard, Suite 220, Santa Monica, CA 90401 (800)-888-8232

Volunteer: National Center for Citizen Involvement

This membership organization encourages the exchange of ideas and information among volunteer program leaders through publications, training, and reference and information services. 1111 North 19th Street, Arlington, VA 22209 (703) 276-0542

Youth Service America

Dedicated to advancing the nationwide development of full-time service corps in states and localities, and community service programs based in secondary schools, colleges, and universities; to promoting the existing network of youth service programs nationwide; and to developing a permanent public mandate for youth service. 1319 First Street N.W., Suite 900, Washington, DC 20004 (202) 783-8855

Model Teaching Sites

The Model Teaching Sites section gives educators the opportunity to examine and receive information about unique and creative educational programs in Kentucky. This section was created in response to a Kentucky Education Reform Act (KERA) directive instructing the Department of Education to create a directory of model teaching sites.

The schools, selected as model teaching sites, submitted applications and were closely reviewed and examined by a committee of educators from across Kentucky. The evaluation committee found these programs replicable. The contact person is listed for each site if additional information is needed about these programs.

Ultimately, the success of KERA will be achieved through the efforts of schools and educators throughout Kentucky. We urge you to look at your own school and consider how one or more of these exemplary instructional programs might assist you in meeting the special needs of your students.

☆ = indicates primary category ✓ = supports primary category

Program

	Transforming the Learning Environment	Alternative Ways of Learning	Integrated Curriculum	Standards-Based Instruction	Assessment Curriculum Connection	Community Resources	Alternative Uses of School Time	Technology Applications	Unique Instructional Strategies	Multicultural Education	Diverse/Exceptional Children
Barret Middle School Technology Program	✓	✓				✓		☆			
Bell County Middle School Cooperative Learning Model	✓	✓							☆		✓
Boyd County Family Resource Center-East						☆				✓	✓
Central High School Young Executive Management Program		✓				☆			✓		
Daviess County High School Entrepreneurship Class		☆				✓			✓		
Emerson High School Teenage Pregnancy Program	✓					✓					☆
Greenwood High School A.P.E. Program		✓	☆				✓				
Hancock County High School TECH Prep Program		✓	✓	☆				✓			
Highlands High School American Studies		✓	☆	✓	✓		✓	✓			
Meece Middle School Eco-Check Bioassessment Program		✓	☆			✓					
Murray Independent School Volunteer Program	✓					☆	✓				
Roosevelt Perry Elementary Integrated Technology Program	✓							☆	✓		
Seneca High School Humanities Based Curriculum	☆	✓	✓			✓		✓	✓	✓	
Warfield Elementary Student Involvement Program		✓				☆	✓				
Washington County Elementary Portfolio Partners		☆			✓		✓	✓	✓		
Williamsburg Independent Schools	☆	✓		✓		✓		✓	✓		

Barret Traditional Middle School

Jefferson County Schools
Technology Program

Overview: Technology is the cornerstone of the school's curriculum.

The technology program at Barret Traditional Middle School demonstrates how teachers, administrators, and parents can work together to incorporate technology into model teaching practices. Students in all grades learn and use a variety of computer skills in all subject areas. Sixth graders master basic skills from keyboarding to spreadsheets. Seventh graders participate in a three-week immersion program where laptops replace traditional paper and pencil operations. Eighth graders conduct and present research using software. Computers are used to write and edit assignments; create science and social studies databases, graphs, and spreadsheets; and create projects that integrate the arts, humanities, and sciences.

Although a grant provided funds for some equipment, the commitment of students, teachers, administrators, and parents makes the program work. In addition to attending regular training sessions, teachers have modified schedules which allow a staff member to serve as a computer specialist. The principal has integrated technology into many administrative activities. Parents attend evening workshops to become familiar with the program, and a recent partnership forged with a local hospital will enable students to use newly acquired computer skills in a real-world setting.

Contact Person:

Kenwyn Wise

Barret Traditional Middle School, 2561 Grinstead Drive, Louisville, KY 40206 502-473-8207

Bell County Middle School

Cooperative Learning Model

Overview: A cooperative learning model is used to enhance academic and affective skills.

A cooperative learning model has been adopted for use in a variety of instructional programs at Bell County Middle School. The goals of the cooperative learning model include the following:

- improve academic achievement;
- improve social skills;
- eliminate social barriers;
- assist mainstreaming of students with disabilities; and
- provide an alternative to ability grouping and tracking.

The model is introduced to the students by first explaining how positive reinforcement facilitates and encourages the communication of ideas. Students are given opportunities to practice positive reinforcement skills and then are given academic tasks which require them to problem solve. As part of the model, they are asked to explain and defend their solutions to the rest of the class. The students in the audience analyze the solution to the task and offer opinions and suggestions for improvements. Audience responses have to be stated in positive terms. This technique effectively combines an academic task with a strategy for improving social skills.

This model is flexible enough to be used with a variety of instructional situations. For example, it has been used in a team-teaching format in which pre-algebra and special education classes were combined, and by individual teachers in a variety of classes.

During the last two years of this program's existence, 100% of the students have participated in oral presentations. Positive reinforcement and constructive comments create a non-threatening environment in which students feel comfortable and secure in making presentations before their peers. As a result of this project, significant positive effects on academic and interactive skills have been demonstrated in many classroom environments.

Contact Persons:

Stephen Baxter or Teresa Lasley
Bell County Middle School, Rt. 1, Box 87C,
Pineville, KY 40977 / 606-337-3104

Central High School

Jefferson County Schools
Young Executive Management Program

Overview: Entrepreneurship curriculum allows students to operate a business.

The Young Executive Management Program at Central High School combines an entrepreneurship-focused curriculum with student management and operation of a business. The curriculum for the Young Executive Management Program is consistent with the Kentucky Education Reform Act in that it encourages the development of skills in teamwork, problem solving, integration of knowledge, leadership, and communication.

A mobile restaurant unit is provided by KFC, Corp. (Kentucky Fried Chicken) and profits from the student-run restaurant are channeled into a scholarship fund for students actively involved in the program. KFC executives feel that the project has developed into one of the top corporate public-school partnerships in the country.

The Young Executive Management Program, an example of successful business-school partnerships, could be replicated in other schools on a large or small scale. "Regardless of the size of the business endeavor, the skills and knowledge gained by the students will be very valuable," said project coordinator, Linda Neal.

Contact Person:

Linda Neal, Project Coordinator, Young Executive Management Program
Central High School, 1130 W. Chestnut Street, Louisville, KY 40203 / 502-473-8226

Daviess County High School

Entrepreneurship Class

Overview: Students gain self-esteem and confidence through participation in a small business project.

The Entrepreneurship class at Daviess County High School is an elective business course which involves students in the decision-making process of setting up a small business project. Selling stock, forming a corporation, electing a board of directors, obtaining a bank loan, preparing financial statements, delegating job responsibilities, and manufacturing hand-made items allow the students to participate in real-life educational experiences. Career development is integrated into the class as students complete job application papers such as a resume' and employment application forms. The project also allows students to gain valuable experiences and insights into their personal entrepreneurial characteristics.

While the students enjoy participating in their business, they are actively engaged in a valuable experience which stresses decision-making, problem-solving, and interpersonal skills. All of these skills are extremely important facets of KERA.

Although the project was a resounding success, there were a few mistakes; however, these mistakes turned out to be meaningful learning experiences. "I've always wanted to teach my students that, although they may encounter problems and obstacles in life, they need to maintain a positive attitude and keep moving forward," said Gay Burden, teacher of the Entrepreneurship class. "The best thing that resulted from this project was the improvement in my students' self-esteem and confidence. It gave them the opportunity to be successful."

Contact Person:

Gay Burden

Daviess County High School, 4255 New Hartford Road, Owensboro, KY 42301 / 502-684-5285

Eidson Elementary

Boyd County Schools
Boyd County Family Resource Center - East

Overview: Community resources eliminate barriers to learning.

As is the goal of all resource centers, the Boyd County Center has developed a range of services to eliminate barriers to learning that are unique to the community. Because problems vary from community to community, no two centers are likely to create the same set of solutions.

The center has had a dramatic and positive effect on instruction and learning due to its outreach efforts. For example, the center worked with a local housing project to provide tutoring for parents which included parenting skills, infant CPR, and GED instruction. Additionally, the center provided an after-school academic tutoring program for students in the project. School attendance rates increased after the tutoring program started, and it was felt that the center's efforts were related to this positive result. A recently developed center program, Volunteer In-school Program (VIP), has provided over 1,400 hours of volunteer assistance to classrooms in the three elementary schools served.

The Boyd County Family Resource Center - East, which also serves Catlettsburg and Ponderosa Elementary Schools, is located in an Eidson Elementary school classroom. It has been renovated with sofas and other "homey" touches to make parents and students feel welcome. The center provides opportunities for both the students and their parents. Programs in childcare, nurturing, and education for the young child are common. Transportation is available if needed.

By "...meeting a child's basic needs, (we) can increase his/her chances to succeed in school," said Norma Meek, Director of the Boyd County Family Resource Center - East. "We intend to access all available resources in our community for all the families who need us. Enthusiasm, commitment, and caring continue to be terms not taken lightly by our center, as we work toward improving lives so children can succeed." This center is an outstanding example of schools effectively connecting with the community for the improvement of education for all students.

Contact Person:

Norma Meek, Director, Boyd County Family Resource Center - East
Eidson Elementary, 5701 Catletts Creek, Catlettsburg, KY 41129 / 606-739-4445

Emerson High School

South Park High School
The Jefferson County Teenage Pregnancy Program

Overview: A special-needs program enables at-risk students to graduate.

Kentucky's dismal rate of teenage pregnancy has been responsible for increased absenteeism and high dropout numbers throughout the state. Jefferson County has responded to this situation by developing the Teenage Pregnancy Program (TAPP). Housed on two regional campuses, the TAPP program is targeted for pregnant girls who are at risk of dropping out.

Teaching strategies targeting problem-solving and decision-making skills have been developed by this committed staff in an attempt to reach the at-risk student population. These strategies are woven throughout the school's curriculum in an effort to reinforce student learning in special courses such as Childcare and Nutrition.

Additionally, innovative programs allow teachers the opportunity to keep students motivated and interested in learning. For example, day care facilities at both campuses afford unique teaching opportunities for real-life and vocational education. In-school medical facilities have been used to both decrease absenteeism and provide students with essential medical instruction.

The basic philosophy of KERA, that all children can learn at high levels, is exemplified by the TAPP program. An innovative, energized, engaged staff is determined to provide a quality and practical education for students. By viewing each student as an unique individual, the staff has created a learning environment which could be adapted for schools throughout Kentucky.

Contact Person:

Georgia Chaffee, Principal/Director
Emerson High School, 1100 Sylvia Street, Louisville, KY 40217 / 502-473-8245

Greenwood High School

Warren County Schools
The A.P.E. Program

Overview: An integrated, thematic program involves algebra, physics, and English (A.P.E.).

The A.P.E. program is a three-hour block of integrated study including Algebra II, Physics I, and English III for junior students at Greenwood High School in Warren County. Teachers and students gather in a triad of rooms which include a science lab large enough to accommodate the whole group. The block of time available is arranged according to the needs of the students allowing them to participate in a variety of thematic activities. They explore concepts through group projects, skits and role-playing, field studies, videotaping, exploration of learning styles, and journal writing.

In keeping with the KERA philosophy of using all available resources, instructors have strongly encouraged students to use their "human resources" of peers, parents, and community. The students find that these resources are invaluable in their work on thematic activities. As a result, they see how people can work together to create solutions and solve problems.

Contact Person:

Sandra Taylor

Greenwood High School, 5065 Scottsville Road, Bowling Green, KY 42104 502-842-3627

Hancock County High School

Tech Prep Program

Overview: Tech Prep Program is an integration of academic and vocational instruction.

Although 52% of Hancock County graduates attend college, educators and citizens wanted to assure that the other 48% would be qualified to obtain some of the many industrial jobs available in the area. A local task force, representing government, industry, and education, recommended increased emphasis be placed on vocational guidance, new technology, and integration of academic and vocational education. Additionally, systematic activities are implemented P-12 to provide students insight into their job interests, personal capabilities, and available opportunities.

"It's rewarding for me to see teachers who are so excited about teaching in this program," said Dr. Ann Evans, Instructional Supervisor of Hancock County Schools. The Tech Prep Program is a standards-based project that integrates an academic and vocational class at each grade level 9-12. A seven-period school day facilitates the scheduling of the integrated classes. A mastery learning model incorporating multiple-intelligence theory is also a component of this project. In summing up the program, Dr. Evans said, "Our community appreciates the dedication and effort of the teachers and the principals involved in the Tech Prep Program. Their commitment makes it work!"

Contact Person:

Dr. Ann Evans, Instructional Supervisor
Hancock County Board of Education, P.O. Box 159, Hawesville, KY 42348
502-927-6914

Highlands High School

Ft. Thomas Independent Schools
American Studies

Overview: Integrated instruction results in a multifaceted study of American society and culture.

The American Studies classes at Highlands High School include the subjects of American literature, history, art, and music. The student-centered course emphasizes the societal changes in America as witnessed by the many diverse cultures of our society. Students participate in an array of learning experiences which include writing in a variety of modes, participating in oral projects, producing video and slide shows, holding debates, and engaging in projects that will appeal to each student's special interest and talent.

The teachers have developed a unit entitled "Take Me Out To The Ballgame" which focuses on the historical and literary impact of baseball on American society. They selected essays, poetry, and readings from texts; and they used slides and a video from the Baltimore Art Museum's exhibit, "Diamonds Are Forever," along with another video, "Baseball Goes To War." This unit was shared with other teachers who suggested ways it could be expanded into math, science, business, and other areas.

Students in the American Studies class are heterogeneously grouped. The two-hour block class allows the students the opportunity to achieve the rigorous standards which are established in the course. An "I" (incomplete) rather than an "F" (failure) is recorded on report cards when work is unfinished. Therefore, the responsibility for learning lies with the student. "One very desirable result of this program is that there have been fewer discipline problems, and student motivation has increased," said Dennis Chandler, teacher.

Each team of American Studies teachers has its planning period together which aids in class planning as well as student evaluation. Teacher collaboration has been an essential component of the course.

Contact Persons:

Dennis Chandler or Linda Johnson

Highlands High School, 2400 Memorial Highway, Ft. Thomas, KY 41075
606-781-3333

Meece Middle School

Somerset Independent Schools
ECO-CHECK Bioassessment Project

Overview: The outdoor environment is transformed into a learning laboratory for seventh-grade biology students.

The Kentucky Education Reform Act emphasizes providing real-life experiences. Seventh-grade biology students at Meece Middle School have literally used the school's backyard and nearby areas to create a new classroom.

In a unit entitled "Eco-Check," students applied concepts learned earlier. They collected insect, tree, and wildflower species while on a field study to a nearby stream. Additionally, they conducted a bioassessment of the stream itself. This unit expanded into other curricular areas. Pollution levels were studied and calculations completed in math classes; the history of the streams was studied in social studies classes; and written assignments on the project were completed in English classes.

"Students need to learn that we live in a very complex and fragile world. The more we learn about its plants and animals, the better stewards we will become. I wanted my students to look at all of nature as a classroom," commented Thomas Floyd, teacher of the class and designer of the unit.

This project is an excellent example of using readily available resources to create meaningful, hands-on learning experiences. As one of the students said, "Usually we just have to stay in our classrooms. Now we go outside and really study living things instead of looking at pictures in a book."

Contact Person:

Thomas G. Floyd

Meece Middle School, 210 Barnett Street, Somerset, KY 42501 / 606-678-5821

Murray Independent Schools

Volunteers and School-Business Partners Program

Overview: This community resources program enhances the learning environment.

Utilizing community resources effectively for the benefit of all students P-12 is exemplified by Murray's Volunteers and School-Business Partners Program. Volunteer instructors - adults and students - contribute their personal time, expertise, and commitment to help create a positive teaching-learning environment for the students. Jean Bennett, Program Coordinator states, "Eighty-seven percent of our students attend college upon graduation from Murray High School. We credit the dedication of our many volunteer instructors, plus the commitment of our business partners as contributing factors to these statistics."

The volunteer instructional program is in its seventh year. More than 600 members of the community contributed their time and energies in one school year alone. Volunteer instructors teach in a variety of classroom settings including individualized instruction and group tutorial sessions; after-school creative-writing and problem-solving courses; and in-school classes such as art. High school band members enthusiastically volunteer to teach marching band skills to middle school students, and foreign language students volunteer to teach different languages to primary students.

The district has made a decision to use discretionary funds to support the program and the coordinator's salary. "The success of this program has been the direct result of placing the program responsibilities in the hands of a director who has no other major responsibilities," said Assistant Superintendent Willy Jackson.

Contact Person:

Jean Bennett, Director, Community Education

Murray Independent School District, Poplar at 9th, Murray, KY 42071 / 502-753-4363

Roosevelt-Perry Elementary

Jefferson County Schools
Integrated Technology Program

Overview: Technology is used as a teaching tool.

Colorful computer murals at the entrance to Roosevelt-Perry Elementary School make you feel as though you have just entered the "technology zone." In fact, you have. Roosevelt-Perry is using technology as an instructional tool. A visit to the school would highlight the following:

- all ages engaged in desktop publishing;
- laptop computers used by multiage groups in the classroom and on field studies;
- laptop computers checked out for overnight use by students;
- global telecommunications used to exchange information with students in other countries; and
- electronic encyclopedias used for research in the library.

As Roosevelt-Perry principal, J.W. Back, explained the school's programs, he said, "Our school's vision materialized because we had the commitment of staff to train continuously, to take risks, and to seek and create quality learning experiences. We obviously have a challenge to lead our community into a future of high technology. However, our challenge is less expensive than living with the consequences of our failure. We will create a successful future with our vision for Roosevelt-Perry."

Contact Person:

J.W. Back, Principal

Roosevelt-Perry Elementary, 1606 Magazine Street, Louisville, KY 40203 / 502-473-8318

Seneca High School

Jefferson County Schools
Humanities-Based Curriculum

Overview: A humanities-based curriculum encourages interdisciplinary collaboration.

The Seneca administration and faculty are working together to provide a wide variety of active humanities-based programs and projects for their diverse student body. A partial listing of these programs includes:

- musical theatre where students are involved in all the production processes;
- ethnic lunches planned, prepared, and served by students to students and faculty;
- agricultural science program which involves active business projects;
- technology center which houses the most current programs and equipment;
- integrated teaching across the disciplines; and
- publications of student writing.

While other Kentucky high schools offer many of these programs, the unique leadership provided by the principal encourages collaborations and experimentation. A non-threatening, disciplined atmosphere allows the faculty and students to achieve a high level of success.

Seneca High School has used the talents of its student body and educators to create a curriculum which celebrates diversity. Instructional planning includes both students and teachers, and as a result, learning is an exciting and rewarding experience.

Contact Person:

John Locke, Principal
Seneca High School, 3510 Goldsmith Lane, Louisville, KY 40220 / 502-473-8323

Warfield Elementary

Martin County Schools
Student Involvement Programs

Overview: Special programs and projects involving students result in increased student motivation.

We will not allow any student to fail at Warfield Elementary," said principal, Estella Horn. She went on to clarify her statement by explaining the numerous programs and projects sponsored by the school in order to create a positive learning environment. The programs include science fairs, dramatic presentations, career day, monthly assemblies conducted by students, academic teams, and many others. The result is that 99% of the student body participates in some activity, and 100% receives some type of award or recognition during the school year.

The student projects and programs are so varied and numerous, that there is something for everyone. Since students are involved and excited about these programs, attendance rates have increased dramatically in recent years.

Warfield Elementary has created an excellent example of a student-centered program that is designed to meet the needs of the population. The programs do not require large expenditures but they do require planning, organization, and the commitment of the administration and faculty.

Contact Person:

Estella Horn, Principal
Warfield Elementary, HC 69 Box 180, Warfield, KY 41267 / 606-395-5121

Washington County Elementary

Portfolio Partners

Overview: Secondary students tutor elementary students in a multiage peer-tutoring program.

Senior English classes at Washington County High School are teamed with fourth grade students to improve student writing skills for portfolio development. In a mentoring format, the seniors work with the younger students to draft, revise, edit, and publish their works. The seniors plan and provide computer instruction for the fourth graders and provide an audience for completed works. The relationships which develop among the students are non-threatening and create a nurturing, productive environment. As students assume responsibility for their own learning, the teachers become facilitators and coaches.

Although this particular program was easily established because of the proximity of the facilities, any school which houses multiage classrooms could modify this format to meet the needs of the students. The Washington County program has been successful because the professionals at both schools were able to modify their curricula and utilize the resources available. It is built on creativity, flexibility, and the willingness to establish new paradigms in the areas of alternative uses of school time, transforming the learning environment, unique instructional strategies, and application of technology in the classroom.

Contact Person:

Pauletta Kutter, Principal

Washington County Elementary, Lincoln Park Road, Springfield, KY 40069

606-336-5490

Williamsburg Elementary and High School

Williamsburg Independent Schools
Transforming the Learning Environment

Overview: Multiple KERA initiatives impact a district's approach to education.

The Williamsburg Independent School District is transforming the learning environment through a variety of strategies applied at elementary, middle, and high school levels. The use of technology permeates the schools. Every classroom has access to one or more networked computer work stations complete with a large-screen projection device. Students and teachers use two special-purpose networked computer labs, a thirty-two station multiuse lab, and a writing center. Students produce a weekly video news program aired throughout the school via closed-circuit cable. High school students host a monthly school district television production that is aired throughout the community.

The community is an important resource for the instructional program. A "Celebrity Readers" program brings adults into the classrooms throughout the school year. Residents of Williamsburg share their talents and knowledge with students in an "After Hours" enrichment program.

Superintendent Jim Simpson states, "I continue to be amazed at how much of the Kentucky Education Reform Act actually reaches into classrooms to touch the lives of our children and youth." He gives credit to his "...talented, forward-thinking, professional staff which has devoted countless hours to a restructured school system that focuses exclusively on student learning."

Contact Persons:

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Gary Pate, Principal, Williamsburg Elementary School 606-549-6044
1000 Main Street
Williamsburg, KY 40769

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