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The Concept of the Theory of Multiple Intelligences and an Interdisciplinary, Arts Inclusive Curriculum: A Model for Teaching Whose Time Has Come

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by

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THE CONCEPT OF THE THEORY OF MULTIPLE INTELLIGENCES AND AN INTERDISCIPLINARY, ARTS INCLUSIVE CURRICULUM: A MODEL FOR TEACHING WHOSE TIME HAS COME

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The biting critique of A Nation at Risk (National Commission on Excellence in Education, 1983) caused the nation to initiate school reform on federal and state levels. The initiatives have defined education's deficiencies in meeting the needs of students in a rapidly changing, technological society. Students and the society in which they live are the premise and focus for the new outcome-based curriculum. Educators and researchers are developing new concepts of teaching that radically change the traditionally accepted curriculum, instructional delivery, and assessment. Many of these changes are based on new knowledge of the mind's capacity to function in several intelligences. If educators recognize the implications of these findings, they will be empowered to customize their educational strategies to the needs of the learner. The theory of seven intelligences Gardner (1983) and an interdisciplinary, arts inclusive curriculum may be the method to engage students in the process of learning and realize the child's full potential.

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To my colleagues, who I hope are dedicated to recognizing the intellectual freedoms needed to learn in the style most suited to the student's needs, I leave this thought:

> Do not then train youth to learning by force and harshness: but direct them to it by what amuses their mind, so that you may be better able to discover with accuracy the peculiar bent of the genius of each. Plato

Finally, to my family for their tolerance during my studies I sincerely say, thank you. I dedicate this thesis and my Master of Arts in memory of my father, Reginald E. Woolner, for always instilling in me the value of education.

Loraine W. Cowe

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CHAPTER I

INTRODUCTION

A Nation at Risk

The Purpose of the Study

In the last ten years in the revolution of school reform educators and researchers have unveiled a vast amount of information that has implications for how children learn. The purpose of this research is to heighten awareness for educators whose practices may have been unchanged since first receiving their teacher certification. No longer can the attitude "if it ain't broken, why fix it?" prevail.

Initiatives to reform educational practice from legislative levels, such as the Michigan State Board of Education (1991), have defined the curriculum as what is essential for a student to know and be able to do to serve as a productive citizen in the workplace of the 21st century. It places curriculum, instructional delivery, and assessment around higher order exit outcomes; it does not foster subject knowledge in isolation. Curriculum must be relevant to the student. It challenges the teacher to create curriculum with depth and breadth rather than fill and drill. The Core Curriculum uses an interdisciplinary model of instruction to reduce discontinuity and fragmentation between bodies of knowledge, engaging students in the journey or process of learning.

For educators, this thesis will promote a paradigm shift, hopefully expanding their singular view of intelligence to the pluralistic views of Howard Gardner's Theory of Multiple Intelligences. It proposes that teachers become innovative in research methods to foster measurable improvements in schools. It advocates teaching across

disciplines, dropping traditional boundaries of subject and content. It empowers and encourages teachers to lead in curricular design and move away from the textbook or test driven curriculum. It encourages testing what is taught in more than a singular view of intelligence and challenges teachers to center curriculum and assessment around higher order exit outcomes.

The thesis explains the new research in brain functions, research which suggests that the right hemisphere of the brain is responsible for creativity and emotion, while the left hemisphere of the brain is responsible for language and logic. It negates the traditional belief of one intelligence and suggests the existence of several intelligences. Gardner and Hatch (1984) state that recognizing several intelligences allows educators to custom fit the instructional delivery to the child, depending on the child's particular bent or intelligence, uncovering a full range of abilities. It recognizes students do not learn in the same way and do not possess the same minds; therefore, they learn, remember, and perform in different ways. Educators must create genuine understanding and involve the child in the learning process if learning is to occur.

The research embraces Howard Gardner's Theory of Multiple Intelligences (1983) and fosters the arts as the vehicle to guide of teachers wanting to embrace interdisciplinary practices. Arts advocates promote tolerance for diverse intelligences. It further advocates that the arts equip us to express, imagine, and create by developing a tolerance for diversity in multi-cultural and cross-generational curricula. The thesis promotes the arts as facilitators of creativity.

The research shows that schools practicing this theory are emphasizing cooperative learning to expand what the child uniquely brings to the situation. It focuses on the process of learning through projects and portfolios. Modeled after children's museums, a child sees a product from beginning to end, from conception to

reflection. Using performance based assessment instead of the traditional logical linear forms of assessment used in traditional schools, educators portray a picture of the whole child.

This integrative learning combines both process and content learning, believing that the whole is greater than the sum of the parts. It does not negate teaching a solid grounding in a particular discipline; it does promote creating insight into relationships between disciplines by involvement in rich and engaging experiences. This thesis proposes teaching the whole child.

Education for All

Literacy for all cannot be met until education agrees to educate all. While Outcome Based Education, discussed later in this research, agrees that all children can learn, all learning opportunities are not equal. The nation's rich man poor man system began early in this country's development. Howard Gardner (1983) sees educational roots developing when the settling colonies first established themselves. On the one hand, Europe and other continents tried to establish the roots of their homeland such as the classical languages and religions. Knowledge and schooling were built upon these cornerstones. Less formally, immigrants sought to pass on their most valued cultural practices. Crafts, rituals, attitudes and beliefs were passed on from generation to generation.

But early in the United States there was pressure to create a practical and functional government, and education gave way to practical skills. Scientific and mathematical knowledge gave way to such skills as mining and surveying or agriculture. The classical languages gave way to German, French, and English. English prevailed as the common language. The classically educated were the elitists

headed for higher education, and the practically educated were the less privileged. Gardner (1983).

Horrace Mann, an educational reformer, designed the common school. It was the first publicly financed admission of education for all. It was to ensure at least the basic literacies, acquaintance with some text, and even a small exposure to scientific knowledge.

Gardner (1983) further states that after the Civil War, more diversified forms of education were developed. We not only saw the common school, but public education, formation of high schools, institutes of teacher education, universities of higher education, even preschools and kindergartens. Efforts were made to centralize the schools and make them uniform. This uniformity mandated rigid curriculums, explicit schedules, reward and punishment systems, and regular examinations. Gardner (1991) states that education remained, for the most part, unchanged since the Civil War. The centralized form of top down heirarchal management was the norm.

The educational system remained the same for decades and failed to adjust the curriculum to meet the needs of the job markets. In the early 1980's a nation would be in shock.

The Report by the National Commission on Excellence in Education

The Reagan administration appointed the National Commission on Excellence in Education and thereby started the move toward educational reform in the United States. The Commission's biting critique, A Nation at Risk, spoke of a rising tide of mediocrity in the schools. The National Commission on Excellence in Education (1983) state:

> The educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation

> and as a people. What was unimaginable a generation ago has begun to occur-others are matching and surpassing our educational attainments. Our society and its educational institutions seem to have lost sight of the basic purpose of schooling, and of the high expectations and disciplined effort needed to attain them. We live among determined, well-educated, and strongly motivated competitors. We compete with them for international standing and markets, not only with products but also with the ideas of our laboratories and neighborhood workshops. America's position in the new world may have once been reasonably secure with only a few exceptionally well-trained men and women. It is no longer. If only to keep and improve on a slim competitive edge we still retain in world markets, we must dedicate ourselves to the reform of our educational system to the benefit of all-old and young alike, affluent and poor, majority and minority. Learning is the indispensable investment required for the success in the "information age" we are entering. The people of the United States need to know that individuals in our society who do not possess the levels of skill, literacy, and training essential to this new era will be effectively disenfranchised, not simply from the material rewards that accompany competitive performance, but also from the chance to participate fully in our nationa life. A high level of shared education is essential to free, democratic society and to the foster ing of a common culture, especially in a country that prides itself on pluralism and individual freedom (pp. 5-7).

The Commission recognized several deficiencies and pointed out that the risks we face are largely due to education's failure to recognize rapidly changing technology. Computer technology is influencing lives in homes, factories, and offices. Laser technology will be providing millions of jobs by the turn of the century, and other technology is radically changing professions such as health care, medical science, food processing, and energy.

Some of those offering input to the report worry that schools will emphasize only reading and computation at the cost of other essential skills such as comprehension, analysis, problem-solving, and drawing conclusions. On the other hand, others are concerned that an over-emphasis on those skills will leave little time to study the arts and humanities. The latter further attest that the arts enrich daily life, help maintain civility, and help develop a sense of community.

The National Commission on Excellence in Education (1983) states:

> Knowledge of the humanities, they maintain, must be harnessed to science and technology if the latter are to remain creative and humane, just as the humanities need to be informed by science and technology if they are to remain relevant to the human condition (pp. 10-11).

Educational Reform Initiatives on State and Federal Levels

Some ten years after the Commission's report states have put educational reform packages together and through legislative acts have encouraged advocates to work harder to improve their schools. The Quality Educational Package (1990), more commonly known as Legislative Act 25, 1278 Michigan Compiled Laws, calls for local school districts to prepare an annual educational report for each school, adopt and implement a three to five year school improvement plan, and establish a core curriculum. In addition, it requires that each school in the state be accredited. The Michigan State Board of Education provides state dollars to schools that comply with the requirements, and denies state dollars for noncompliance. Michigan's Department of Education works with the intermediate school districts to provide local districts with consultation and technical assistance, supporting their responsibilities to the school improvement plan and the process for change. The legislative package is designed to promote authentic curricula to meet the needs of all students and for all districts to be accountable for their schools' improvement.

Using the school improvement process, staff identify what is important for students to know and to become. Ideally, teachers then structure the learning environment and student experiences to achieve that purpose. The process is intended to eliminate practices in our schools that have masqueraded as being good or helpful for students. Identifying the strengths and weaknesses of the school program is a preliminary step to make positive change in observable and measurable student-based outcomes. These outcomes should reflect how better to prepare the student for a

rapidly changing twenty-first century workplace.

The State proposed a Model Core Curriculum for all students from kindergarten through twelfth grades. It was developed by the State Board of Education in coordination with educators across the state. The model defines both the academic and the interdisciplinary educational outcomes that all students should achieve. The intent was to provide a model that schools could choose to adopt or adapt in creating their own core curriculum. The eleven curriculum content areas established as the core are global studies, language arts, science, math, fine arts, foreign language, physical education and health, cultural and aesthetic awareness, career and employability, life management, and technology. The State model further promoted the use of process skills in the teaching of the Core Curriculum, skills such as problem solving, team building and decision making. Michigan State Board of Education (1991) in the "Position Statement on Core Curriculum" states that curriculum alignment occurs when the vision of the outcomes for all learners (a) is agreed upon and written, (b) is referred to as the curriculum, (c) is reflected in the instructional delivery program, and (d) is assessed when the learner is evaluated to determine if the outcomes have been achieved and both the processor and the learner are informed. The Michigan State Board of Education (1991) states that the annual report will aprise the community of changes in progress and accreditation. The annual report will be the verification from the State Board that the change has been accomplished.

Alignment With Current Research on Effective Schools

The purpose of the "Position Statement on Core Curriculum," Michigan State Board of Education (1991) is to bring Michigan curriculum and learning in line with

current research on effective schools. The interest in curriculum design has expanded due to the explosive growth of knowledge of how children learn. The new model encourages a variety of approaches to curriculum construction and optional instructional delivery, making learning relevant to the student. The design also encourages critical thinking, discussion, and time for reflection on what was learned. Students in an active, rather than passive, learning environment will enhance problem solving and creative thinking which are deemed necessary skills. Broad student outcomes from The Michigan State Board of Education (1991) highlighted as: (a) a person who values and is capable of learning over a lifetime; (b) a person capable of applying knowledge in diverse situations; (c) a person who makes and implements decisions and plans for successful living; (d) a caring, sensitive and flexible human being; (e) a creative, innovative person; (f) a person able to communicate effectively in written, visual and spoken language; (g) a competent and productive participant in society.

The Michigan Student Outcomes are in direct alignment with the National Core Curriculum's broad student outcomes.

The National Core Curriculum

The National Association for Core Curriculum proposes many new approaches to interdisciplinary curriculum. Many interdisciplinary models are being implemented to lessen fragmentation of information being delivered to the student. Core Curriculum is the chosen method of instructional delivery from teacher to student. Vars (1991) sees core curriculum as focusing directly on the problems, issues and concerns of students. In core, the curriculum begins with the students and the society in which they live. This serves as a beginning point to start a unit that integrates the

teacher's outcomes and the student's problems, issues and concerns.

Holistic approaches to education encompass more than just the logical or literate strength in a child. It encourages active engagement of all the senses. This is handled more in depth in Chapter II.

This holistic approach may also be referred to as integrative instruction. The link is that each instructional delivery focuses on a balance of the child's physical and mental potentials. These holistic or integrative forms of instruction can vary in how educators approach them. The interdisciplinary theme is one approach. Teachers representing several disciplines design a unit that inter-connects across the disciplines. Each teacher links into the other by making relevancies connecting the two. Yet another possibility is an arrangement of block-time and self-contained classes. In this approach one teacher has the responsibility to teach two disciplines within the extended time frame. The teacher may choose to integrate disciplines and decide the depth that they will cross.

The National Association of Core Curriculum, established finally in 1964, has built its program on the following assumptions and beliefs

1. Interests, concerns, and needs expressed by students provide a valid basis for curriculum and are central to the learning process.

2. Learning involves changes in behavior which are brought about through the experience.

3. A democratic society values the worth and dignity of the individual.

4. A democratic society requires citizens who are skilled in the decision making process.

5. Appropriate emphasis must be given to the various aspects of learning, including clarification of values, development of learning skills, mastering important

steps, and acquiring needed information.

6. Learning experiences are enhanced when the learner is encouraged and helped to draw upon all appropriate sources of information.

7. The extent and the nature of the classroom activity should determine the allocation of time.

8. The teacher's primary role should be those of an advisor, a facilitator, a friend, and a fellow learner.

9. Teaching as in many aspects of guidance is a complementary functions of the teacher.

10. To bring about continuous improvement in learning, all concerned parties should be involved in evaluation.

Core Curriculum is not a new byword; it appeared as early as the 1800's. Since the Progressive Education Movement, integrative approaches with the student as the center of learning have been used under the name of core curriculum. Winslow (1939) writes about integration during the Progressive Movement in education:

> Obviously, an effective unit of teaching must be broader than a single school subject while integration, in which progressive teachers so strongly believe, calls for an enriched curriculum made up of subjects that have been carefully balanced one against the other. ....the planning of units of teaching, whether they be in art or in some other subject area will, therefore, sooner or later bring those engaged in their planning to the realization that, normal human experience being integrated, the curriculum must likewise be integrated. (p. 32).

Vars (1991) perceives, "The continuing challenge is to design curriculums that simultaneously take into account solid subject matter, the needs of the learner and society's problem." (p. 15).

Aligning the Interdisciplinary Curriculum

Educators acknowledging the problem of fragmentation have designed various

integrative or interdisciplinary curriculums including the distinct form of Core Curriculum which focuses directly on problems, issues, and concerns of students. The concept of Core Curriculum is a full and important step beyond either correlation or fusion. In core, the curriculum begins with the students and the society in which they live. The need for interdisciplinary curriculum design might lie, in its simplest form, in students who define subject areas as separate bodies of knowledge with little relationship to one another. For example, when an elementary student sees one subject from 9:45 to 10:30 and a new, unrelated subject from 10:30 to 11:15, the student assumes that one subject has no relationship to another. Another example is the high school student that is one who sees little relevancy between learning and outside of school. The fragmentation of the school day does not, as adolescents soon discover, model how we encounter problems in situations, use resources, and generate solutions to real life.

Change is inevitable. With greater demands on education due to state regulations and mandates and with knowledge growing at phenomenal proportions, the curriculum planner must come to consensus on what needs to be taught.

However, Jacobs (1989) recognizes two practical deterrents to changing curriculum:

> Fragmented schedules. Schools respond to state requirements by dividing time into blocks to parcel out specific responsibilities and to maintain accountability. Frequently, state requirements are stated in terms of minutes per week. Relevance of curriculum. Most student instruction is based on a textbook used in isolation from its application. The fragmentation of the day only compounds the dilemma as students never have the chance to explore a subject in depth. Outside of school we deal with problems and concerns in a flow of time that is not divided into knowledge fields. It is not that schools should avoid dealing with specific disciplines, rather, they also need to create learning experiences that periodically demonstrate the relationship of the disciplines, thus heightening their relevancy. No matter what the content we can design active linkages between fields of knowledge. We can teach the works of Shakespeare with an eye to the history of the times, the arts, the

> values, the roles of science rather than simply sticking with specific passages. The curriculum becomes more relevant when there are connections between subjects rather than strict isolation. (pp. 4-5).

Jacobs (1989) cites an example of a doctor who is trained only in physiology and biology of the body who would be totally ineffective when treating the whole human being. Educators who decide to use the integrative approach to curriculum design and instructional delivery will need to be strong in beliefs and assumptions that they are treating the whole child. They combine process and content learning. They believe that the whole is greater than the sum of its parts. They believe that an integrated curriculum may have validity beyond a single discipline, and without this conviction their vision will not transcend the practical considerations of time, budget, and schedule. Ackerman (1989) cites the practical considerations of implementing an interdisciplinary curriculum as:

> Interdisciplinary curriculums are not simply intellectual edifices; they must occur within the realities of school time and space. Coordinating both the concepts and the people requires a determined effort and when there is a will there may not be a practically effective way. (p. 30).

Ackerman (1989) points out considerations for any curriculum change, but emphasizes that because of the complexities of an interdisciplinary curriculum three essential practical considerations--time, budget and schedule must be emphasized. Interdisciplinary curriculum design is not a panacea to educators' woes any more than any theory coming into practice might be. Many units of interdisciplinary design may become a sampling of knowledge from each discipline. Curriculum developers must design a content scope and sequence for any unit or course. Furthermore, traditionally interdisciplinary and discipline fields have promoted a range of conflicts, both feeling territorial about their subject and both threatened as their subject takes on new forms. (p. 30).

Jacobs (1989) defines a discipline field as "a specific body of teachable

knowledge with its own background of education, training, procedures, methods, and content areas." (p. 7). This can be termed as content learning. She defines interdisciplinary as "a knowledge view on curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic or experience." (p. 8). This can be termed as process learning. Without both of these experiences for students, educators are simply listing considered content for interdisciplinary curriculum, not applying the content into process learning focused around one common denominator.

To prepare a new curriculum to meet the needs of each, Jacobs (1989) suggests the following:

1. Educators creating a philosophy for interdisciplinary curriculum must first understand their personal philosophy, since the philosophy will permeate into the design of the new curriculum.

2. Students cannot fully benefit from interdisciplinary studies until they acquire a solid grounding in the various disciplines that interdisciplinary attempts to bridge.

3. Teachers should be active curriculum designers and determine the nature and degree of integration and the scope and influence of study. The teacher should be in power to work as a designer to shape and to edit the curriculum according to a student's needs.

4. The interdisciplinary curriculum should only be used when the problem reflects the need to overcome fragmentation, relevance, and the growth of knowledge.

5. The interdisciplinary unit or course should be presented to all members of the school community. Few parents will have experienced the integrative curriculum, and they will feel less suspicious if they are well informed.

6. Relevance begins with the rationale for educational choices affecting the school life of the student.

7. Students will break with the traditional view of knowledge and begin to actively foster a range of perspectives that will serve them better in the larger world when curriculum is properly designed and when criteria for excellence are met.

8. Students' interests in the unit often enhance their involvement in the planning process.

Jacobs (1989) believes validity and relevance to the curriculum are of utmost importance. After selecting a topic, concept, or organizing center that uses two or more disciplines, educators must brainstorm to generate a set of curriculum elements inclusive of scope and sequence.

To ensure validity in the selection of interdisciplinary design, Ackerman (1989) suggests three criteria to test and guide the proposal that is under consideration. They are summarized as follows:

1. Validity within the discipline. Validity within the discipline requires teachers representing each discipline to verify that the concepts identified are not merely related to their subject, but are important to them.

2. Validity for the disciplines. A multidisciplinary approach might be mutually beneficial to teachers bent on pursuing their own subject goals. This enhances the learning of the discipline based concepts. A multidisciplinary approach can be said to have more validity for the disciplines.

3. Validity beyond the disciplines. Valid curriculum integration assembles a number of parts from different subjects with the hope that students will learn the parts better in the process of exploring the interrelationships among them.

Ackerman (1989) in the chapter "Intellectual and Practical Criteria for

Successful Curriculum Integration" in contrasts teachers of subject matter and content and teachers who use the interdisciplinary approach:

> To teach their subject matter logically and persuasively, science teachers talk to their students about the empirical data that underly textbook knowledge. History teachers acknowledge the importance of archival records, eye witness accounts and the like. English teachers exhort their classes for textual evidence for their interpretations. And geometry teachers ask "beginning with just these few axiums, what can we prove?" But, while the concept of evidence is thus in the curriculum of these four subjects, the standard, discipline center instructional approach takes little or no notice of this coincidence. In a more dynamic scenario, a team of teachers who decides to orchestrate a series of lessons in which students will compare and contrast the nature of evidence across the curriculum. This pedigogical strategy is based on the belief that students may grasp the distinctive features of scientific and other kinds of knowledge better by juxtaposing the perspectives of the different disciplines than by encounering them in isolation. (p. 28).

In further support of the interdisciplinary model, Perkins (1989) in the chapter "Integrating Thinking and Learning Skills Across the Curriculum" states the qualities of a good integrative theme as (a) "applies to a wide range of topic areas, (b) applies pervasively throughout a topic, (c) discloses fundamental patterns, (d) reveals patterns fundamental to subject matters, (e) discloses fundamental similarities and contrasts within and across disciplines, and (f) fascinates teachers and students especially once they get into it." (pp. 70-71). Perkins (1989), in conclusion, warns that all too often cute, accessible, but shallow integrative themes are chosen and warns that even a rich theme can be dealt with superficially.

Jacobs (1989) proposes a systematic approach to the development of the interdisciplinary unit at all levels of instruction. A central aim of this interdisciplinary model is to bring together the discipline perspectives and focus them on the investigation of a target theme, issue, or problem. As a byproduct, it is desirable to want students to be conscious of the relationship among disciplines as they investigate the subject matter. The following is a paraphrasing of the four steps needed to design

an interdisciplinary model.

1. Select an organizing center. The topic can be a theme, subject area, event, issue or problem; however, certain criteria should be considered when determining the center. An organizing center should neither be so general or all encompassing that it is beyond the scope of investigation nor should it be so narrow that it restricts the study. It is obviously important to select a topic that is relevant to students, interesting, and crosses discipline lines. Remembering that in Core Curriculum the student is the center of focus.

2. Brainstorming associations. To encourage the deliberate exploration of the theme from all discipline fields, teachers and students use a graphic device: a six-spoked wheel. The organizing center for the topic or theme is the hub of the wheel. Each of the spokes represents a discipline: mathematics, language arts, social studies, the arts, philosophy, and science. Before brainstorming associations, it is vital that students are aware of the distinct characteristics of each of the six disciplines and that each discipline allows them to view the theme from a distinct perspective. Brainstorming is an open-ended technique for generating ideas. Criticism should be ruled out during this session and spontaneity and creativity encouraged. Quantity of ideas is more important than quality at this point. Allowing time for individuals to spend several minutes on their own brainstorming increases productivity. Teachers and students brainstorm associations that relate to the organizing center in the hub. The association may include questions, topics, people, ideas, and materials that relate to the central topic. As this brainstorming progresses, combining and improving ideas and building upon ideas is desirable.

3. Guiding questions to serve as scope and sequence. The third step of the model addresses associations from the wheel and organizes them. The questions are

cross-disciplinary in nature. An interdisciplinary unit of study means an outline to define what the unit will contain or what it will not contain. Dealing with real time constraints gives the designer the sequence of study and the reason for it.

4. Once the guiding inquiry questions have been formulated, the means for exploring these questions must be developed. Activity design is the essence of the unit of study; it tells us what the student will be doing to examine the interdisciplinary organizing center. One of the guiding principles of effective planning is that teachers are able to encourage critical and creative thinking in their daily lesson plans. In designing the unit educators must be cognizant of the type of questions they are designing. Bloom's Taxonomy (1956) listed as knowledge, comprehension, application, analysis, synthesis, and evaluation may provide a matrix to ensure that questions are being designed from lower to higher order of thinking. Bloom's taxonomy directly correlates from each order of thinking to a broader range of possible instructional strategies to encourage higher order thinking.

Since it is the goal of the interdisciplinary curriculum to reflect a full gamit of instruction possibilities (lectures for projects, learning centers, discussion, research, or design) it may be valuable to ask the following questions as you are designing the unit. Who is the learner? What is the behavior being requested? What is the observable and measurable outcome of the activity? What are the conditions or the stipulations for the activity? What is the evaluative standard or the criteria for an acceptable level of performance in terms of quality, quantity, or time?

In summation, Perkins (1989) in the chapter "Integrating Thinking and Learning Skills Across the Curriculum," asks educators to consider the benefits of the integrated curriculum paraphrased in these four points.

1. The acquisition of vital learning skills would be enhanced by reinforcement

and refinement through a range of applications.

2. Students will be given a far more coherent set of learning experiences. They would know why they were being taught various process skills and would know better how to mobilize themselves to make sense of the curriculum content.

3. Teachers from different departments would have a means of working together toward common goals without sacrificing their own subject matter concerns.

4. Process and content goals would be unified and competition would be diminished between the two.

Aligning the Arts and Core Curriculum

Bringing arts education in line with current research helps develop and promote an interdisciplinary approach. The Michigan State Board of Education's "Model Core of Curriculum Outcomes and Position Statement on Core Curriculum" (1991) in accordance with Section 1278 of Public Act 25, 1990, states its position on cultural and aesthetic awareness and a need for the use of an interdisciplinary instruction:

> Cultural and aesthetic awareness outcomes acknowledge, address, and are sensitive to the human being in all of us. They help to develop tolerance for diversity, innovation, imagination, and the ability to become an increasingly discerning person who makes decisions based on high standards of quality. A core curriculum which effectively integrates these outcomes across curricular areas will help to develop a person attuned to sensory stimuli and who uses that awareness to make better judgements and choices. This individual is one who (1) Shows appreciation of the natural and human created environment by exhibiting habits of conservation, recycling, maintenance, and environmental improvement; (2) Values quality in the performance and products of one's own and other's work; (3) Values the creative contributions of all cultures and ethnic groups; (4) Makes use of cultural and aesthetic opportunities available in the community; (5) Communicates effectively using verbal and non-verbal communication; (6) Exercises individual freedom while exhibiting social responsibility. (p. 68).

In alignment with this position, arts educators believe these cultural and aesthetic outcomes can be achieved through an interdisciplinary approach. This

interdisciplinary instructional model will provide (a) connectedness within the arts and other core curriculum; (b) connectedness with diverse cultural, societal, and cross generational; (c) learning experiences that accept and build on the student's own cultural and societal experiences; (d) developmentally appropriate instruction that accepts diverse learning styles; (e) avenues for individual, collaborative, and whole group learning; (f) an environment for all students to participate in their own learning; and (g) opportunities for the student and teacher to become life long learners.

The interdisciplinary instructional model and approach for the arts has several names: (a) cross curricular, (b) holistic learning, (c) right brain-left brain, (d) whole language (a literature based approach), (e) the thematic approach, (f) magnet schools, (g) integration, and (h) the Multiple Intelligence Theory, to name a few. Though there are broad variations in the approaches, the common and most important thread that binds each concept is the interconnectedness with other core curricula and a less fragmented instructional delivery to the child, making learning relevant to the real world.

A teacher may choose to combine a lesson with only one curriculum or create a total involvement of each of the core curriculums. This theory of education does not negate content based instruction from each discipline. While the art teacher may be well versed in a comprehensive and sequential pattern by which her outcomes should be approached, the art teacher cannot replace other disciplines' outcomes. Each discipline, each core curriculum, must define its own outcomes to adequately approach and facilitate the topic and enrich the experience and create the connectedness between its discipline. The arts must maintain their integrity in the core curriculum and be taught as their own academic discipline as well.

Similarly, the associations are concerned about the practice in some schools of

seeking to teach all of the arts in a single "integrated" course. Such a course may be valid and useful when well designed and well taught, but frequently, such courses consist merely of a succession of mini-courses in the various individual arts often taught by separate teachers, with little or no coordination or synthesis. Again this type of course cannot substitute for a discrete program of high quality instruction in each of the individual arts.

The National Art Education Association in their advisory "The National Arts Accord" (1991) takes this position:

> The arts education associations believe that, when appropriate, instruction in the arts may be used to facilitate and enrich the teaching of other subject matter. In addition, the arts must maintain their integrity in the curriculum and be taught for their own sake as well, rather than serving exclusively as aides to instruction in other disciplines. The use of the arts as an instrument for the teaching of nonartistic content should in no way diminish the time or effort devoted to the teaching of each of the arts as distinct academic disciplines in their own right. (p. 14).

The Need for Change

Current research on learning styles tells educators that theories of the past are under radical change. Approaches used in past decades dictated by bureaucracy of departmentalization and militarization from the industrial revolution have given way to a new society. Society has come from the agricultural to the industrial and now is in a technological revolution. Technology has changed to make all of us specialists in what we do. To work cooperatively in groups to produce an excellent product is a skill that must be taught. Though business and industry are the forerunners in creating problem solvers who take ownership and show pride in their work and their product, education is trying to follow. The same changes must take place in education. The National Commission of Excellence in Education (1983) recommends schools must stop breaking into fragmented activities without continuity. They must return to a whole

range of strategies and variety of environments to produce learning that has been truly processed. The teacher must facilitate this so children learn to be flexible and to work cooperatively and collaboratively so they can operate in the 21st century work place.

Although historically we can afford to boast of our achievements in commerce, industry, science, and technology, now other global powers are matching and surpassing our educational attainments. While the National Commission on Excellence in Education (1983) acknowledges that the educational social system is called upon to solve personal, social, and political ills that other institutions will or cannot resolve, we still remain competitive for international standing. Knowledge, learning, information and skilled intelligence are the new raw materials of the international commerce of the 21st century workplace.

Upon entering the information age, learning will be the ultimate end to the goal of preparing students for the workplace. If one does not possess the levels of skill, literacy and training essential to this new age, the individual will be denied not only material rewards but intellectual, moral, and spiritual actualization so valued in our national life. As a nation that takes pride in its pluralism and individual freedom, we must foster education for all. The National Commission on Excellence in Education (1983) states:

> All, regardless of class and economic status, are entitled to a fair chance and to the tools for developing their individual powers of the mind and spirit to the utmost. This promise means that all children by virtue of their own efforts, competently guided, can hope to attain the mature and informal judgement needed to secure gainful employment, and manage their own lives, thereby serving not only their own interestsbut also the progress of society itself. (p. 8).

A learning society, the commission reports, should promote a set of values and a system of education that adheres to the belief of lifelong learning and that education will not only foster career goals but will add value to the quality of life. The term

minimum requirements should be abandoned and given way to higher standards, and basic literacy should be the starting point and not the goal.

The report recommends higher standards for educators as well as a calendar that supports time for curriculum design and preparation and professional development. Educators should be involved in designing teacher preparation programs and in peer coaching teachers in probationary years. Further, the report challenges educational leaders and administrators to pave the way for reform by looking for leaders that possess vision of where we need to be, persuasion skills, skills to set goals and reach consensus and see the mission of school reform to its end.

Over the eighteen month study of this report to the nation, the National Commission on Excellence in Education (1983) was impressed by the diverse opinions it received regarding the condition of education and by the conflicting views about what should be done to resolve the problems. But in summation, those who truly believe in reform will come to consensus on common goals and on ways to pursue them. As we have seen in the ten years since the commission's report, national and state core curriculum outcomes for broad student achievement are pointing us in the right direction.

The Change Agents

School reform has been aided by two reform agents: William Glasser, who has worked to improve schools for over 30 years, and William Edwards Deming, who has improved industry since the 1950's. Glasser's book The Quality School: Managing School's Without Coercion (1990) aligns with Dr. Deming's model for quality in industry. Deming was revolutionary in teaching the Japanese to achieve high quality at low cost after World War II. Then, after Japan's economy improved

dramatically, U.S. industries quickly tried to implement Deming's methods which were once rejected by our management. Glasser's major points for creating quality schools are fostered by William Deming's management plans, the outcome of which is to dissolve the present system in which just a few students are involved in high quality work and to replace it with a system where all students have and value this experience.

Glasser rejects the stimulus-response theory where behavior is motivated outside ourselves. Coercion from teachers exists to try to get students to work, but it does not create quality or change their behavior. He states that motivation is created within ourselves. If a student perceives the task to be unsatisfying or if he or she perceives the teacher to be unconcerned about his or her needs, no one can make him or her work hard. Educators need to change their focus to be more needs satisfying to the students we teach.

Therefore, the way we lead must change. And one way to change is to use the Deming model, as Glasser did in developing his. Glasser supports these major issues in creating schools with quality and without acceptance of failure. Glasser (1968) in summary supports change in these areas.

1. If the school's primary function is to stimulate student learning, then schools must be organized in such a way that innovation and research are quickly implemented to provide effective change in the students' knowledge, attitude and performance. The student in the product and must constantly be the focus of quality and improvement.

2. Schools must provide an atmosphere in which students are not motivated by coercion but by undoing unnecessary pressure and creating a positive environment for the student.

3. Quality comes not from inspection but from improvement of the process. With instruction workers can be enlisted in this improvement. American schools typically test students using norm-referenced standardized examinations at various stages of schooling. Students who do poorly are enrolled in remedial classes and often become dropouts. In effect, schools pay teachers to allow students' failure and then to remediate later. Quality comes not from standardized mass testing but from improvement of the process. Teachers need to be given an opportunity to help students avoid failure at every stage of schooling.

4. While industry may choose to blame vendors for inferior quality products, educators frequently point to demographic circumstances when justifying the poor performance of students. It is true that disadvantaged young people are difficult to make into successful students. It will certainly cost more in time, money and effort to treat such students with equity, but making such commitments can result in real benefits to the society.

5. In industry management is obligated to continually look for ways to reduce waste and improve quality. In schools educators are too often inclined to organize improvement with specific beginning and ending points instead of consistent assessment of what has been newly implemented. Frequent assessment and adaptation are the keys in improving quality.

6. In industry the job of supervisor is not to tell people what to do or to punish them but to lead. In schools, empowerment of teachers is frequently mentioned as an important goal of the reform movement. By the very nature of their jobs teachers are leaders and should be given more opportunities to lead school district functions in a relevant fashion. Teacher leadership stimulates professional growth in the entire faculty and ensures continuance of worthwhile projects. Administrative leaders should

encourage that kind of staff leadership to emerge.

7. Often staff, departments or units are competing with each other or have goals that conflict. They do not work as a team so they can solve or foresee problems. One department's goals may cause trouble for another. Barriers between staff areas in public schools are serious problems. Different grade levels, academic disciplines, buildings, teaching or support roles all serve to retard good communication.

8. In industry quotas take account only of numbers not of quality or of methods. They are usually a guarantee of inefficiency and high cost. In schools, teachers cover material sometimes overlooking or purposely ignoring the fact that students are not keeping up. Educational quotas are forever increasing as there is more and more to learn. It serves no purpose for teachers to meet their academic quotas if quality of student learning is sacrificed? Educators must learn to pare down the curriculum and be concerned about quality.

9. Institute a vigorous program of education and retraining. In industry, both management and the workforce will have to be educated in the new methods including teamwork and statistical techniques. In schools we admittedly are all creatures of habit personally and collectively so it is hard to change unless we are given opportunity to study new approaches and identify ways to implement them. This clearly will take time.

10. In industry it will take special top management teams with a plan of action to carry out the quality mission. Workers can't do it on their own nor can managers. In schools, reform will not become significant until the attitudes are changed and all those who are considered to be a district's key people. That change in attitude must be based on a definite improvement model that is fundamental to improving the way a district's academic program is upgraded, maintained and constantly assessed for

attaining its goals.

In summation of this model for school improvement based on William Deming's theories, William Glasser creates strategies for schools to make change. Glasser (1968) advocates that schools must reorganize managerial structures in such a way that all educators develop a district mission and are consistent in the purpose and function of that mission.

In adopting a philosophy schools must create circumstances in which all educators can participate in a dialogue about professional improvement. Such a dialogue should be systematic and focused on a step by step improvement plan.

The school leadership structure must constantly improve the system so that all educators regularly play viable roles over an extended period of time. This means that modifications must be made to districts' decision-making and action-taking processes, possibly modifications similar to those advocated by proponents of the outcomes based development model. Superficial changes are insufficient. Change must be ingrained into the culture of the organization. The Outcome Based Decision-Making Model empowers educators to make decisions from observations made at the heart of the problem.

The Outcome Based Decision-Making Model

The Outcome Based Decision-Making Model causes teachers to play active leadership roles in all aspects of academic program decision-making. Some roles are policy making at the district level, while others concentrate on subject area, grade level or building level responsibilities. Using the teacher as decision maker is empowerment.

The Outcome Based Decision Making Model focuses on the kindergarten

through twelfth grade unit as being the primary organization. Though current reform strategies emphasize site based management, it is clear that such processes will fragment districts more than they already are. Buildings need good leadership, but that leadership must be directed toward executing programs that result from the rich and dynamic dialogue that occurs between and among the district key players. The model also emphasizes the development and maintenance of a curriculum that is the product of teacher decision-making. Student learning of the essential curriculum should be more a matter of depth and breadth of certainty that mastery has been achieved rather than assumptions that the students understand. There are leaders who say that it is important to remove all excuses for inferior work. Excellence can only occur when excuses for mediocrity are no longer possible. Action for action's sake is just as poor a strategy as not acting at all. As stated before, the use of a logical and sequential model is imperative to maintain successful improvement over the years.

William Deming wanted to change the management model of industry, and William Glasser wants to change the management of schools. Designs for implementing change must go through slow change processes and many cyclical assessments. Adapting or adopting a strategy for one situation may be disastrous in another. Alignment in each model between Glasser and Deming does not necessarily predict success. New philosophies will have to agree that they are not success based in just philosophy, but outcome based in practice.

Outcome Based Education is premised on three concepts: (1) all students can learn and succeed, but not in the same way or on the same day; (2) success breeds success; and (3) schools control the condition of success. In the last decade districts nationwide have implemented this restructuring under different guises, such as mastery learning, Outcome Based Instruction, the Outcomes Driven Developmental

Model, or Outcome Based Education and have shown improvements in student learning

Schools under pressure to show improvement through restructuring curriculum instruction and assessment have adopted the successful philosophy. Spady & Marshall (1991) state the curriculum design is not focused on content, but on what is essential for students to know and to be able to do, and to be like in order to be successful once they are graduated. Its design joins curriculum and assessment with higher order exit outcomes rather than foster subject knowledge in isolation.

Based on future implications for educators, the U.S. Department of Defense Dependent Schools, a task force of parents, teachers, and administrators designed their mission statement and exit outcomes from this assessment. Spady & Marshall (1991) state:

> Based upon an assessment of the future we believe our students will face challenges and opportunities in a world characterized by; World wide economic competition and interdependence which creates ever increasing requirements for job related performance and a need to transcend language, cultural, national, and racial differences....An increasing pluralization and polarization of social, cultural, political, and economic life that demands understanding and that requires innovative approaches to leadership, policy making, resource distributions, and conflict resolution. (p. 71).

Content and structure are sure to follow as emphasis shifts from subject areas, courses and content to higher order life role performances. Spady & Marshall (1991). These future conditions will need visionaries and futurists to structure their restructuring and will need those willing to be collaborative, flexible, and transdisciplinary. The trend is to change from microcurricular design approaches to a more comprehensive approach involving larger scopes of learning from lower to higher order thinking. The movement also encompasses dropping curriculum boundaries and forming interconnectedness for learning to occur in the classrooms that

is more applicable to real life.

The broad student outcomes of "Michigan Essential Goals and Objectives," Michigan State Board of Education (1991), suggest an interdisciplinary approach to educating. This less fragmented approach may see changes in the content of education. Content may range from very specific details to broad, complex concepts and their interrelations. This change may see process ranging from simple cognitive or motor skills to complex higher order skills, such as synthesis and application. Settings may become both the place where the learning occurs, the classroom, and where it is applied, real life demonstration. Teachers must be allowed to write the curriculum to meet the needs of all learners in a more interconnected format so students take ownership and come to self-actualize the applications of learning.

Fact, skill, process, and application must fuse to enable students to see in a broader perspective. Hirsch (1987), writing about his search for cultural literacy for all, believes that children from poor and illiterate homesoften fail not because teachers are incapable of teaching, but because they are compelled to teach a fragmented curriculum based on faulty educational theory. The polar theories of facts versus skills have no basis because the two are inseparable. There is no reason why those who teach content cannot join forces with those who advocate higher order thinking skills.

Facts do not deaden the minds of young children; incoherence does. Our failure to ensure a pattern of shared, vividly taught and socially enabling knowledge should emerge from the instruction.

CHAPTER II

HOW DO WE USE OUR BRAIN

A Holistic Theory

As previously mentioned, the holistic or integrated approach strives to combine fact and skills, content and process, or which may be referred to in the nineties as scope and sequence.

The fragmentation of the faulty educational system may have further been evidenced in the 1960's. In the 1960's scientists first looked at the theory of the right and left hemisphere of the brain and its capacity to be responsible for different functions. These two minds, scientists found, could process information in parallel channels at the same time. Though science has traditionally tried to break things into their respective parts, holistic theory would be understood by synthesizing the interactions between the two ("syn" is the Greek prefix for "together with"). The dynamics of the two brains' functions forms richer relationships, complexities, and novelties. Looking at each brain as a separate function and component would not give a true picture of what the brain is capable of.

The 1960's also brought about the General Systems Theory. Ferguson (1980) suggests that closely related to holism, the General Systems Theory can be defined as a circumstance in which each variable in a system interacts with other variables so thoroughly that cause and effect cannot be separated. This process or theory is practiced by scientists ranging from biophysics of cellular processes to the dynamics of populations and cultures. Its belief is based on an understanding that anything must

not take place in isolation from its true context but must be understood as a whole. Research in brain function's cognitive abilities, therefore, argues for change in teaching instructional methods.

Ferguson (1980) supports the thought that stress in crisis are generators of transformation both personal and cultural, and, as the National Commission on Excellence in Education (1983) evidences, we can either lead ourselves to a breakthrough or to a breakdown of society through our willingness to change. The educators must deny themselves the authoritarian achievement geared, fear inducing, clock watching roles, and be trained in various learning styles and strategies to reach the child. Since science has learned so much about the functions of the brain, so must the teacher respond to new strategies.

The Implications for Learning

Education, as a social system, has traditionally been mandated by society to produce what society wanted, but traditionally education was not at the front line of research and was always slow to change. Ferguson (1980) states:

> As the greatest single social influence during the formative years, schools have been the instruments of our greatest denial, unconscious, conformity and broken connections. Just as allopathic medicine treats symptoms without concern for the whole system, schools break knowledge and experience into subjects relentlessly turning wholes into parts, flowers into petals, history into events, without ever restoring continuity. (p. 282).

Society is in a period of great discontinuity, change, and interdependence of people and events. Ferguson (1980) suggests developing in all students such qualities as self-reliance, initiative, spontaneity, resourcefulness, creativity, responsibility and more. Educators must accept our students as unique and autonomous. A new paradigm for education looks to the nature of learning rather than the product. The

General Systems Theory, Ferguson (1983) states for education would be an integration of the mind and body rather than a compartmentalizing of knowledge; the holistic approach aids the learner in searching for meaningful content, transcending ethnic or national differences by involving the student in their learning. It encourages participation in the process of learning. Ferguson (1980) states:

> Learning after all, is not schools, teachers, literacy, math, grades, and entertainment. It is the process by which we have moved every step of the way since we first breathed; the transformation that occurs in the brain whenever new information is inputted, whenever a new skill is mastered. Learning is kindled into the mind of the individual anything else is merely schooling. (p. 288).

Learning is an interaction with the environment, taking in information, integrating it, using it. The learner is transforming the input, ordering and reordering, creating coherence. In agreement with Ferguson (1980), it is clear that teachers will need to make the paradigm shift if education reform is to succeed.

At a conference for integrating curriculum held in Lansing, Michigan, Taylor (1992) vividly pointed out what educators must be prepared to do to make sure students receive a curriculum in which fragmentation is simply unacceptable and dropping curriculum boundaries is the expectation.

Implications for Teaching: A Paradigm Shift

Taylor (1992) professes that teachers are true enablers of learning only if certain events occur. Otherwise, the true teacher gives way to a closed teacher. A true teacher senses a student's readiness for more complex needs, facilitates their growth, and helps them articulate the right questions. The closed teacher, however, is a power wielder, filling students with information, denying participation, and demanding a correct answer. Taylor (1992) recognizes education and its needs to give way to education for the 21st century. Some major points in the paradigm shifts of education

given in his address to educators, would be:

1. Content, correct information, retention and rote memorization will give way to emphasis on how to learn, how to ask good questions, and being receptive to diverse ideas. Knowing how to access information, to understand what is now known may change.

2. Teachers and students alike must understand that the learning is not a product; it is a destination. Education, as it needs to be, recognizes learning as a process or a true journey.

3. Educators can no longer believe in one style or one strategy to deliver information to children, but we must give way to various learning styles and strategies.

4. Teaching under one strict time clock with fragmented disciplines presented in one environment needs to give way to flexible shifts of time management and a variety of learning experiences. Education mandated into specific time frames and being trained for one purpose must do a paradigm shift to education for life long learners related to all environments.

5. The compartmentalized and fragmented building must find its way to integrate and synthesize knowledge with integrative approaches.

6. Teaching to the appropriate age and activity needs to give way to circles of remediation and enrichment to accommodate all students.

7. Priority on performance must see a shift to priority on the student informing the teacher of what was learned and how. Assessment will become performance based. This is addressed in Chapter IV of this thesis. Testing, logical and linear intelligences will give way to portfolio assessment on performance based outcomes and Outcome Based Education. The focus on knowledge and skills must give way to

what we want students to produce or adapt successfully as adults in the work world.

8. The school setting as it was didn't encourage external experiences in the classroom. Rather, make education realistic with imagery, story telling, journals, thus promoting intrapersonal and interpersonal experiences. Involve community resources, family members and other experts to enrich the learning. While the focus has previously been on teacher performance objectives, the new focus must be on student outcomes. Traditionally the student was the informer. The textbook mandated and sometimes drove the curriculum. The teacher must accept being a life long learner. There must be several ways of using technology and several references, not one sole text. Extracurriculuar experiences such as experts-in-residence and field trips engaging community resources must be encouraged.

9. The traditional school promoted no guessing, no divergent thinking. Educating for the 21st century must bring about the creative process and higher order skills, encouraging the arousal of curiosity and many possible responses to problem solving.

10. Education has traditionally placed emphasis on analytical, linear, and logical left brain experiences. Whole brain education integrates left brain rationality with right brain intuitive processes and must be encouraged. Taylor (1992) advocates teaching in cooperative groups divided by the seven intelligences. The seven intelligences are defined in Chapter III of this document.

11. Schools wanted to label or categorize children into gifted and talented, emotionally impaired. The practice must change to a less restrictive environment and mainstream all children. Education for all, in all possible circumstances.

12. No wrong answers were the traditional norm. Educators must now encourage children to take risks for change and growth experiences.

Classrooms conducive to restructuring from centers or whole group or cooperative learning must replace the classrooms where one environment predicted all situations.

The paradigm shifts in education Taylor (1992) states will take time and practice to produce real change. Flexibility and novelty of new approaches and strategies will need to be relished instead of abolished. Teachers will need to be open -minded and train themselves in introducing new environments and new delivery systems for learning. They will have to be designers of meaningful curriculum for students, creative and expedient in their response to problem-solving the ills of education.

Goleman, Kaufman & Ray (1992) state that mundane waste leaves little to creativity. Habits are hard to break, but educators can be trained to be innovative. "Psychosclerosis, a hardening of the attitudes," p. 18, or "functional fixedness, trapped in the routine," (p. 18) must be eliminated if we are to promote change in education.

Scientists, through studies of the brain, are examining links between behavior and intelligence, and the implications for educators are many. These studies provide evidence of how the brain works and offer educators a new understanding about how children learn.

Studies of the Brain and Intelligence

Gardner & Hatch (1988) points out that "recovery from a brain injury is primarily a matter of reorganization not regrowth." Currently scientists believe that the brain is made up of regions divided by function, such as language, movement, or sensation, and each brain region has a primary responsibility for a function and at

times even a minor function. Each region is working independently of one another. Gardner & Hatch (1988) say:

> The most widely discussed regional differences are those between the right and the left hemispheres. Careful study of the results of certain brain operations determined that the left hemisphere is normally the dominate site for language and logical thinking, while the right hemisphere is the dominate site for musical and artistic abilities, creativity, and the emotions. (p. 38).

More research has supported the thought that the brain has independent regions with specific functions and this is exemplary for sensation, movement, and language. Gardner & Hatch (1989) say that studies also show that the left hemisphere does not have a monopoly on language any more than the right has one on creativity. Although areas of the left hemisphere are crucial to language production, the right hemisphere is crucial for understanding metaphors, sarcasm, indirect requests, and other nonliteral forms of language use. In drawing, parts of the left hemisphere are called upon to represent details, while areas in the right hemisphere determine the ability to depict the overall contour of an object.

The existence of distinct and relatively independent regions in the brain suggests that there is no single overall ability or general intelligence. Research over the past several decades has led us to conclude that the brain supports at least seven abilities or intelligences. According to Gardner's Theory of Multiple Intelligences, children who do not excel in standard english and math may well be equipped to deal more successfully with athletics or the arts, or they may exhibit a special sensitivity to individuals or show an unusual understanding of their own strengths, fears, or goals.

In contrast to how educators have taught and tested in a logical-linguistic mode believing in one intelligence, Gardner and Hatch's research suggests ways educators might custom fit the delivery system to the child, depending on the child's particular bent or intelligence. By developing intelligence profiles that uncover a child's full

range of abilities and by providing and encouraging a variety of experiences, educators will help children to discover and gain confidence in those areas of intelligence in which they excell.

To arrive at the results found in Frames of Mind, Gardner (1983) studied with his colleagues literature in the following areas: (a) the development of cognitive capacities in normal individuals; (b) the breakdown of cognitive capacities under types of organic pathology; (c) abilities in prodigies, autistic, idiots savants, and learning disabled; (d) intellects of different species; (e) forms of intellect values in different cultures; and (f) the history or evolution of cognitive thinking.

Through findings of commonalities the seven intelligences were formed. The intelligences are the linguistic, the logical and mathematical, the musical, the spatial, the bodily or kinesthetic, the interpersonal, and the intrapersonal intelligence.

Gardner & Hatch (1984) propose that if the Multiple Intelligence Theory is theory or mere framework, it has the potential to reform education. Putting theory into practice will show new forms of assessment designed to test each intelligence without bias to paper and pencil, logical-linguistic tests. The Multiple Intelligence Theory is covered much more in depth in Chapter III.

Understanding Creativity

Understanding creativity may be a stepping stone to unfolding the intelligencies. Goleman, Kaufman, & Ray (1992) write of the anatomy of creative moments, defining "preparation" (p. 18) as immersing into a problem, searching for meaningful information, leaving the mind open to anything that is relevant. Being receptive and open are critical in this phase in keeping a positive viewpoint, denying thoughts that "it will never work," "they'll think we're foolish," or "that's too

obvious." (p. 19). Goleman, Kaufman & Ray (1992) suggest that accepting that frustration is a key, however uncomfortable it is. People who sustain their creativity over a lifetime come to accept periods of anguish and persist beyond it. Persistance must be valued as another key to creativity. Many problems are not solved because people give up prematurely. Creativity requires pushing your rational mind to its limits to the point of the uncomfortable and actualizing frustration at work. Goleman, Kaufman & Ray (1992) state that while the "incubation" (p. 19) is the time frame when a problem is allowed to digest all that's been gathered the mind continues to seek a solution whether or not consciously seeking a solution to it. The unconscious mind has no self-sensory judgements. Ideas are free to recombine with other ideas in novel patterns and unpredictable associations. The unconscious mind is a storehouse of everything that we know. Cognitive scientists that have studied how information flows through the brain say that memory is unconscious before it becomes conscious and that only a very small fraction of what the mind takes in, less than 1%, ever reaches conscious awareness. Goleman, Kaufman, & Ray, (1992). In other words, the unconscious mind is intellectually more potent because it has more data to call upon. The unconscious speaks to us in ways that go beyond words, including deep feelings, rich imagery that constitutes the intelligence of the senses, a felt set of correctiveness or a hunch. Goleman, Kaufman & Ray (1992) call this kind of knowing "intuition" (p. 22), while "illumination" (p. 22), is the breakthrough of an idea or a realization, but it is still not a creative act. It is the moment when the answer is realized. The final stage is translating the insight and transforming it into action. Translating the illumination into reality makes the idea more than just a passing thought; it becomes useful. To be truly creative, an innovation must somehow be correct, useful, valuable, and meaningful. Howard Gardner would deem this as an act

valued by society.

Goleman, Kaufman, & Ray (1992) in an interview with Gardner said, the creative person is "someone who can regularly solve a problem or can come up with something novel that becomes a valued product in a given domain." (p. 27). A domain may be the person's profession or pleasure, and being creative in one domain does not necessarily mean creativity will flow in all parts of that person's life. Gardner denies that a quick test can search for creativity; rather, it is a person's ongoing act of problem-solving and questioning the domain that proves the person's creativity.

Golman, Kaufman, & Ray (1992) suggest that creativity exists when three key elements come together: novelty, appropriateness, and a receptive audience in its field. Furthermore, the authors say the essential ingredient is expertise in a domain, in other words possessing the skills or the knowledge to solve the problem.

The creative person must develop other qualities or skills such as using creative thinking skills in a style that allows you to find new possibilities, envisioning patterns and connections to imagine a diverse range of possibilities, demanding persistence and high standards of themselves, and a willingness to be a risk-taker, to nurture the creative process. Behind these qualities must be a passion to serve as the intrinsic motivation, pushing the urge to do something for sheer pleasure rather than compensation.

Goleman, Kaufman, & Ray (1992) also concluded that creative persons must feel some type of emotional connection to something. From an initial love of doing something comes persistence and passion of risk-taking, making mistakes, and reflecting to learn from them. Shifting from project to project, keeping many ideas ongoing so when one fails another can be brought out is typical of the creative person.

Sometimes the ideas are put into incubation or rest while other ideas flow. The process is cyclical and never-ending until a solution has been reached.

Goleman, Kaufman, & Ray (1992) suggest that anxiety is vital to creative work because it initiates steps essential to problem-solving. When skills and challenges match, creative flow will most likely occur. Too little skill in a given challenge will produce anxiety. Too high a skill will produce boredom.

Unlike any other species on earth, humans must learn and master from scratch almost everything needed to survive. We are not equipped with just reflex and response, but with potential creativity for survival.

Understanding human development, Goleman, Kaufman & Ray (1992) insist, may give insight to the importance of nurturing a child's creativity early in life. From birth to adulthood the brain has many more neurons than in childhood. On the verge of puberty, the brain undergoes a process called pruning, in which millions of neurological connections die while others settle into patterns that will be retained throughout life. One theory holds that those neural pathways used most frequently in childhood will survive pruning more robustly. This suggests that habits set down in childhood have a remarkable significance for the potential in the adult. Goleman, Kaufman & Ray (1992) suggest that creating opportunities for insight reflection, inquisitiveness, and remediation will have definite impact on adulthood if we can nurture the child's willingness and eagerness to problem-solve and to be divergent in thought.

Inhibiting Creativity

Too many times in education, excitement about exploring and learning give way to problems that inhibit creativity. Cerrabile (1992) cites that surveilance or being

watched constantly reduces the risk-taking urge and the creative urge falls away. People who are watched worry about how they are being judged and are not satisfied with their own accomplishments. Rewards do simply nothing more than deprive the child of intrinsic pleasures of creative acitivity. Win, lose situations with one winner and no concentration on rate of progress will produce simply that, one winner. Over-control or telling kids exactly how to do tasks to get a job done never allows for their own intuitive process to be used; restricting choices and telling children what activities to engage in does not allow them to pursue their own curiosity or interest. Pressure is created by expectating performance of skills at a particular time. There should be open-ended time to enjoy and explore an activity and make it their own. Cerrabile (1992).

Goleman, Kaufman, & Ray (1992) make this comparison of child and adult:

> In comparison an adult has an end product in mind in almost any activity and any action that doesn't take him directly to that end seems wasted and therefore frustrating. On the other hand, one of the goals of child-hood comes through actions repeated over and over. That means practicing the small steps along the way, not worrying about getting results. Keeping a child's activities open ended allows a child to do the same thing over and over in a variety of ways and thus perfect whatever it is they are trying to do. Not only does this repetition perfect skills but it allows the child to feel this activity is mine and part of me. In the long run this may be more important for creativity than simple technical mastery. It allows the child to fall in love with the activity. (p. 62).

The Institute of School

Creating opportunities for pleasure and not pressure must be a priority. Gardner (1991) believes natural or intuitive learning that takes place at home in early years is of an entirely different order from school learning required throughout the literate world. Gardner professes that the difficulty students have is in mastering the institution of school, not in learning itself. Schools do little to teach genuine under-

standing or to involve the child in the learning process. While it is reasonable to assume that a student should be able to apply a law of physics or a proof in geometry or a concept in history, the student should also be able to apply this to other conditions. Gardner (1991) states, "If, when the circumstances of testing are slightly altered, the sought-after competence can no longer be documented, then understanding-in any reasonable sense of the term has simply not been achieved." (p. 6).

Students do not learn in the same way because they do not possess the same minds; therefore, they learn, remember, and perform in different ways. While some people will take a primarily linguistic approach, others may assume a more spatial or quantitative approach. In other words, some may learn to manipulate symbols while others may be able to demonstrate knowledge through a hands-on approach.

Gardner recognizes seven human intelligences that all human beings possess. He recognizes that each individuals' intelligences will differ in strength and will vary in the ways they are engaged and combine with other intelligences to complete tasks, solve diverse problems, and gain strength within a particular domain.

Gardner (1991) suggests that difficulties are imposed by schools because people do learn, represent, and utilize knowledge in many different ways. This issue complicates and challenges the educational system that assumes everyone can learn materials in the same way and from one form of assessment. This type of thinking is simply inadequate. Since much of the educational system's delivery rests heavily on linguistic, logistic, and quantitative modes, a shift needs to occur in which information is presented in varying ways, and assessment tied to that serves the individual learner.

CHAPTER III

THE MULTIPLE INTELLIGENCES

The Seven Domains

Gardner (1983), reemphasizes, "Only if we expand and reformulate our view of what counts as a human intellect will we be able to devise more appropriate ways of assessing it and more effective ways of educating it." (p. 4). He believes his theory of multiple intelligences is an idea whose time has come. The multiple intelligence theory challenges the traditional notion of intelligence and argues that seven distinct intelligences exist. These include the widely accepted linguistic, logical, mathematical intelligence which most standardized tests measure. Gardner (1983) also lists musical, spatial, bodily kinesthetic, interpersonal, and intrapersonal intelligences. A description of the intelligences are:

1. Linguistic Intelligence. Linguistic means to think in language. Linguistic intelligence is exhibited by those who love language in any form to excite, please, inform, stimulate, or convince such as poets, lyricists, writers, orators, journalists, or editors. Central to this intelligence are sensitivities to sound, rhythms, and meanings and functions of words.

2. Logical and Mathematical Intelligence. This intelligence is the ability to think in large concepts, exhibited by scientists, mathemeticians, and others whose life is governed by reason. They categorize relationships to experiment in an organized and controlled way. They exhibit sensitivities to discerning logical, or numerical patterns, and the ability to handle long chains of reasoning.

3. Musical Intelligence. Musical intelligence is exhibited by persons attracted by sound or who try to produce or perform appealing combinations on their own, transforming melodic information like a composer or a musician. They possess an appreciation for rhythm, pitch, timbre, and expressiveness.

4. Spatial Intelligence. Spatial reasoning is the ability to grasp how things arrange themselves in space. It involves the ability to appreciate visual and spatial relationships and mentally manipulate a form or object to create tension, balance, and composition. For example, sculptors, pilots, navigators, artists, designers, architects, or engineers employ spatial reasoning. They perceive or envision the visual-spatial world accurately and can transform their perceptions.

5. Bodily, or Kinesthetic Intelligence. This is the ability to use your hands or body to solve a problem or fashion a product and is as intellectually challenging as cause and effect relations using fine or gross motor skills. Examples of persons with this type of intelligence are surgeons, craftspersons, athletes, actors, choreographers, or dancers. Common to this intelligence is the ability to control one's body movement and handle objects skillfully.

6. Interpersonal Intelligence. This is the ability to understand other people, what motivates them intrinsically and extrinsically. It is how to work effectively with them, or lead or care for them. It is crucial for surviving and thriving in any human environment. Examples of persons with this intelligence may be nurses, teachers, salesmen, therapists, clergy, or social workers. They possess the capacities to discern and respond appropriately to moods, temperaments, motivations, and desires of other people.

7. Intrapersonal Intelligence. This is the ability to know and understand one's self through an awareness of dreams, ideas, feelings, desires, and of strengths and

weaknesses. People exhibiting this intelligence act on the knowledge appropriate to the situation at hand in a productive fashion. For example, a Bhuddist monk, an intraspective novelist, Sigmund Freud, or Ghandi are people who possess the ability to discern their feelings and draw upon them for guidance.

Gardner (1992) suggests if you are successful in school, you are good in language and logic because that is what is valued and provided by the system. But what are the implications when you leave school for the real world? Much of what people do in life and the way they function together require a creative, wider range of skills. So to provide experiences for all intelligences would be a broader and better preparation for life. Thus, exposure to a wider range of skills is preferrable to that being offered in schools today. Models are already in practice from Gardner's Theory and are mentioned in the following section.

A School in Pursuit of Greater Creativity

An example of this broader perspective is the Goleman, Kaufman, & Ray (1992) study of a school in Italy not far from Milan. The school's name is Reggie Emilia. Its primary focus emphasizes individuality and group effort. The school staff works to engage children's natural curiosity with the social satisfactions of collaborative efforts. Teachers participate in every aspect designing curriculum, developing meaningful units, and creating assessment tied to the project developed around the theme. Careful attention to the first notions of curiosity may spark the theme for a project. Unlike traditional schools, the curriculum is not built around subjects and content. Students may decide on the theme as frequently as teachers do. Teamwork is a main lesson at Reggie Emilia. The teachers in the school believe group work will produce something more than an individual effort and will broaden

perspectives, enriching those involved. Creating the spirit of collaboration is not done at the expense of individuality, but is an extension of what the child uniquely has brought to the situation. Emphasis is as heavily weighed on the process of making or learning as is the end product. Each lesson draws on different ranges of intelligences, providing a broader spectrum for the child to build on.

During the past decade, and since A Nation at Risk, this concept has been applied in classrooms across the United States and has inspired several educational experiments. Gardner's Multiple Intelligence Theory is responsible for initiating much of the curriculum design. Gardner admits that when he wrote Frames of Mind he really thought he was writing it for psychologists and proposing a new conception of intelligence to replace current conceptions. He wasn't prepared for the educational applications.

Multiple Intelligences: The Theory in Practice (1993) is a book firmly grounded in educational experiments based on Professor Gardner's theory of seven different kinds of intelligence. These practical assessments offer many insights into the modern classroom. Gardner criticizes the concept of uniform schooling and promotes a more individual approach to education. He sees part of school reform needing to consider a wide range of human intelligences, and he sees the need for teachers to take a new view of education where individualism is the focus.

The Key School

More evidence of a school providing broader ranges of learning is the Key School in Indianapolis where Gardner's (1989b) views of creativity are essential to their curriculum design. Students must submit an application and then go through selection by a lottery system because of the school's popularity. It differs from

ordinary schools in that children discover those domains where they have natural curiosity and talent and allow time for exploration. Many opportunities to engage in learning are provided. Goleman, Kaufman & Ray (1992) discuss an area called the "flow room" (p. 88) where children without assignment or assessment are allowed to pursue any activity that interests them. Teachers record what activities are engaged in by each child and build on these indicators by developing projects with themes built with emphasis on the intelligence the child naturally navigates to. These may prove to become pursuits in later life.

A pod is a special interest group that the child chooses to be in. The pod group explores a topic along with an adult and children of various ages. The pod always provides experiences in each intelligence. To involve the children to the point of being completely captured by the activity builds the desire to learn and to do more and to rise to a new challenge. Goleman, Kaufman & Ray (1992) point out that every nine week period the theme changes. For example, as "Patterns, Connections, Renaissance Now" (p. 88) illustrates, the child builds a project on the theme and is videotaped presenting and explaining it to classmates. This process is the assessment of growth and development from year to year. The whole is greater than the sum of the parts is an emphasis of the lessons learned in collaboration and teamwork at both schools. Unique to the Key School are activities available that draw on the Seven Intelligences, thereby exploring untapped areas of interest and stressing areas of strength. One of its founding principles is the conviction that each child should have his or her multiple intelligence stimulated each day. Goleman, Kaufman & Ray (1992) insist that the arts play an important role in the school and that students frequently work on projects in groups. Involving students in the meaningful projects "crystalizes the experiences" (p. 90) for children, and then and only then true learning occurs. Gardner fashions his

designs of a school like children's museums.

Goleman, Kaufman, and Ray (1992) studied the Capital Children's Museum. The museum shows process exhibits so that the child can see a product from beginning to end. The director, Ann Lewin, observes that children rarely have the chance to see where things come from or are made in an environment with less in depth experiences but far more instant, television-video information. This illusion creates a misconception for children that things just happen instead of developing an appreciation for the time and energy and what is involved to make a product. Ann Lewin wants to arouse in children that life is a process. It is the patience and ability to work through the long series of steps needed to figure things out. This is a foundation for the child's creative life later on. Goleman, Kaufman, and Ray (1992) state, "More than supplying just the artifacts, educators must provide experiences that give the child the full potential from aesthetic to functional" (p. 74). Children must be connected with and actively engaged in the process of learning.

Implications for Schools for the Future: Education 2000

At a conference sponsored by the Michigan Alliance for the Arts and Western Michigan University, the arts, the basics, and creativity, came into play with creative drama, visual arts, music, and movement. The conference was called "Education 2000: The New ABC'S." Teams of principals, teachers, and administrators gained insight about the innovative movement of magnet schools teaching interdisciplinary curriculum throughout Michigan and the midwest.

Art advocates, Michael Moore, Elliot Eisner, Howard Gardner, and Charles Fowler all gave personal, insightful presentations why the arts could be the facilitator of the new interdisciplinary curriculum model and the vehicle for core curriculum.

Elliot W. Eisner, Professor of Education in Art, Stanford University School of Education, Stanford, California, is considered by many to be America's leading art educator and an active advocate for the arts. His research interests focus on the development of aesthetic intelligence and on the use of critical methods from the arts for studying educational practice. Eisner works closely with the Getty Foundation for the Arts on research in art education. Eisner's keynote address gave the rationale for the interdisciplinary approach for art education. In the speech, "The Role of the Arts in the Invention of the Mind," Eisner (1992a) stated:

> The arts are marginalized in schools and society because of fundamentally flawed beliefs about intelligence and development... True educational reform should be arts inclusive and curriculum provided to students should provide opportunities for students to explore and learn. The arts refine our sensibilities. Once something is classified the examination stops. The arts invite examination and create experiences that are personal.

He further advocated that assessment change from a standardized model to one that reflects the diversities of the intelligence being tested. Elliot Eisner, a long time advocate for the arts, feels educators must decide what really counts in curriculum and to create the conditions consistent with the purpose are of foremost importance. In protesting that schools are cultures for growing minds Eisner (1991b) states:

> Children do come into the world with brains; brains are biological, minds are cultural. Minds are forms of cultural achievement, and the kinds of minds that children come to own depend, in large measure, on the kinds of experiences they are afforded during the course of their lifetimes. (p. 11).

Teachers must transform the learning experiences into areas of satisfaction and genuine engagement. Eisner (1991b) states, "How schools are structured, the kind of values that pervade them, the ways in which roles are defined, and assessments made are part of the living context in which both teachers and students must function" (p. 11). The types of activities children will explore on their own or the types of skills

children draw upon outside the classroom is a true indicator of the knowledge learned. Just as adults, children pursue things for sheer intrinsic pleasure. When children engage in playing with ideas and dealing with problems, they get satisfaction from activities they have chosen. When children learn that the result of doing something is less enjoyable than the activity itself, children learn intrinsic pleasure. Eisner (1991b) states:

> In our schools many children are inadvertently motivated by extrinsic rewards systems that teach them that the important reason for engaging in activity is to secure a reward that typically has little or nothing to do with the activity itself. (p. 14).

He suggests we let children discover the journey or the process of what they do as the reward instead of giving away trivial unrelated motivators. If engagement of the student is a key factor in creating meaningful connections for learning, then we must help students to formulate their own problems and learn to design the tactics and strategies to solve them. Eisner (1991b), in support of designing new curriculum, states:

> Since in the course of life the ability to conceptualize what is problematic and to formulate interesting questions is fundamental in maintaining one's autonomy, it does not seem unreasonable that school should be places in which students should practice such skills. This would require giving children an opportunity to formulate their own aims, to conceptualize their own problems, and to design the ways in which problems might be addressed. (p. 14).

If to be literate, in a broad sense of the word, is to possess the ability to encode or decode in any form used in the culture to define or represent meaning, then we must broaden our educational priorities. Eisner (1991b) believes we must open our minds to multiple forms of literacy: "We need a more generous conception of what it means to know and a wider conception of the sources of human understanding." (p. 15).

Too frequently educators propose that for every question there is a single answer, giving the message of uniformity and singularity. The wonder and the

excitement of learning seen early in school years gives way to the assessment practices employed to seek for knowledge. Fill and drill cannot be mandated for all tasks, but they do not necessarily need to dominate the curriculum (Eisner, 1991b). While it is necessary to reach uniformity in outcome in some subjects, giving way to the expressive ways children see, feel, and imagine must be weighed in the total curriculum. If children are to take ownership of what they are learning, if wonder and imagination are to prevail, then the teacher must create the culture for the curriculum consistent with those goals. Eisner (1991b) discusses the inappropriateness of task-dominating school programs:

> In expressive activities the source of content is not located primarily outside of the child. It is not simply a matter of acquiring those skills that demonstrate the social conventions have been learned, but, rather, helping students reach down into their unique being in order to find content that can be made visible in the public world. We must celebrate expressiveness, diversity, and individualism by balancing curriculums to give all children a connectedness with learning and a shared ownership in the process. Building on the unique qualities a child brings from the home and community by transferring knowledge in whatever form, will be created by purposeful and meaningful curriculum. (p. 16).

Michael Moore is Director of Arts Unlimited, Associate Professor of History, Bowling Green State University, Bowling Green, Ohio, and, Lincoln Center Institute Associate. During his keynote address, Dr. Moore described the Lincoln Center Arts Unlimited program, a program which has worked to make aesthetic perception a year around basic part of classroom learning.

Summarizing his address, Moore (1992) noted that children need to take ownership in what they know and do. They must experience things that are live and not secondhand but curious experiences. Moore is appalled that current schools are teaching to only two of the seven intelligences. He insists we must raise aesthetic experiences in all children by providing tangible experiences for children if we are to

survive as a society.

As educators we must make education first hand and very alive. If it is real for the children, they will make it theirs. Using the interdisciplinary model, art educators and educators of other disciplines can make all curriculums engaging and rich experiences.

Charles Fowler is the Director of Natural Cultural Resources, Incorporated, in Washington, D.C. Dr. Fowler is a prominent writer-editor for national publications in art education. As a practitioner of several arts with an extensive background of teaching on every level, he has championed the cause of arts education as an essential part of every person's education. His presentation entitled "The Necessity for the Arts" utilized the mediums of music and visual images as messages in explaining why the arts are necessary in our lives and in our schools.

Fowler (1992) insists the arts are necessary in our lives and our schools, in summary, because they: (a) teach divergent rather than convergent thinking; (b) develop craftsmanship; (c) introduce us to perceptions and understandings we could not acquire in any other way; (d) provide us with insight and wisdom, not just information, (e) facilitate human communication within and across cultures; (f) help us define who we are and to articulate our own very special sense of being; (g) characterize their age, distinguishing our relationship to time by showing us as we were yesterday and as we are today; and (h) replenish our spirit by nurturing, consoling, and inspiring it restore our humanity. Fowler advocates developing tolerance for diversity in multi-cultural and cross-generational curriculum by educators developing broader perspectives through their creativity, innovation, and imagination. Only then will we become discerning individuals attuned to quality in performance and product.

Education in the arts is the neglected stepchild of the effort to reform American schools. Since they are often viewed as the frills, public school arts programs constantly live under the threat of the budget ax. Fowler (1992) says that when the six National Education Goals were drafted under the Bush Administration in 1989, the art educators were outraged that there was no mention of the importance of the arts in school. Goal number three lists five academic subjects in which students should be performing at a high level by the year 2000. Arts education was not included. Many advocates now argue that instruction in the arts cultivates creativity, discipline, and team work skills that today's students must have to succeed.

Gardner presented a session on how a psychologist thinks about the arts and creativity. Summarizing points from his presentation, he proposes, "Intelligence is not in the head, it is an interaction between the potentials we have and the opportunities in our own culture." Gardner (1992) hopes defining his theory of multiple intelligences will establish the idea of plurality of intelligences rather than the habit of singular thinking of what smart is.

Equipping every classroom with materials that allow each intelligence to flow, giving the child opportunity and time for exposure and mastery will enhance every classroom. Providing time to dialogue and to reflect on what experiences have occurred will enable a child to process what has been learned. He compared his model of a multiple intelligence classroom to the concept of a children's museum, stating if you want to educate creativity you must model it, practice it, and give it feedback. In summation, Gardner (1992) articulated seven reasons why arts education is basic;

1. The arts help us learn about other cultures.

2. The mind and the brain can do many different things. The mind can do artistic things, and people should be allowed to do them.

3. People have things they want to express, and the arts equip us to do that expressing.

4. Most children in our society learn about work or having a calling through the arts.

5. Arts strike a balance between creativity and discipline, between mastering tradition and going beyond tradition.

6. Arts are a unifying force within a community and across cultures.

7. Arts are universal, culturally specific and are avenues for individual and personal experience. Every culture has the arts; every culture does not have the sciences.

Gardner's closing statement reminded participants that if you are part of the arts in schools, you are making a value statement. To advocate for the arts is a value statement. Therefore, art educators must seek out the alternatives to traditional schooling and begin implementing strategies of schools with theory in practice. The following describes some of those initiatives

Alternatives to Traditional Schools: Harvard Initiatives and Others

Blythe & Gardner (1990) believe that if we omit representing cognitive skills in the areas of curriculum we are in effect short-changing the mind. The Multiple Intelligence Theory of Gardner's suggests some alternatives to traditional curriculum and instruction models:

1. It is imperative that educators address human proclivities other than linguistic and logical mathematical intelligence which has been the sole focus.

2. By recognizing the Multiple Intelligence Theory a shift will have to occur in classrooms. The opportunity to engage in practice is critical to processing the

knowledge.

3. The standardized test looks highly questionable since it only tests linear, logical mathematical intelligence. Each intelligence needs its own assessment in the context in which it was presented.

4. The Multiple Intelligence Theory proposes that there are highly individualized ways in which people learn; therefore, we need to match the delivery system to the learner.

Gardner envisions a multiple intelligence school dedicated to fostering deep understanding in several core disciplines in order to complete tasks that might be faced in a broader community, in other words real world experiences.

Development would be regularly assessed in intelligence-fair means. The school must draw an inspiration from local institutions, museums, and experts to nurture exploration in unfamiliar situations. Students and teachers must collaborate in unconstrained purposeful environment in the spirit of partnerships or apprenticeships. Almost all traditional subject matter takes the form of student projects, exploring the material in depth, addressing problems that confront them in the discipline. Higher order thinking skills run parallel to the seven intelligences. These ideas exemplify what recent research, namely, Harvard's Project Zero, Gardner (1983) states, has deemed necessary to service the Multiple Intelligence Theory in an elementary school, a middle school, and a high school. Gardner (1989b) states Harvard's Project Zero has given birth to many pilot programs for schools wanting to embrace the Multiple Intelligence Theory.

Gardner (1990) proposes that people use at least seven relatively autonomous intellectual capacities each within their own distinctive mode of thinking to approach problems and create products. Blythe & Gardner (1990) describe four areas that have

implications for educators implementing this curriculum:

> 1. Range of abilities addressed. According to MI theory, it is important for education to address other human abilities and talents besides the linguistic and logical-mathematical intelligences which have long been the primary focus of most schools
> 2. Learning environment. By acknowledging the wide variety of valuable-and independent-domains, MI theory calls for an attendant shift in instructional conditions. Typical classroom procedures rely heavily on linguistic and logical-mathematical symbol systems. However, one cannot develop musical intelligence, for example, merely by talking and writing about music. Sustained, hands-on practice with the procedures of such a domain are crucial to acheiving deep knowledge within it. Hence, MI theory places an emphasis on learning in context, particularly via apprenticeships.
> 3. Assessment measures. MI theory challenges the viability of standardized, machine-scored, multiple-choice assessments, which by their very nature appraise students' knowledge through the filter of the linguistic and logical-mathematical intelligences. Each intelligence needs to be assessed directly, in contexts which call it into play.
> 4. Concept of learner. By proposing that each person possesses a dinstinctive combination of intelligences, MI theory emphasizes the highly individualized ways in which people learn. It calls into question the prevailing policy of educating all students in the same subjects with the same methods and materials. To students with high degrees of spatial intelligence, for example, the history of an era might best be introduced through art, architecture, and/or geography. For students with high interpersonal or linguistic intelligences, biographies and dramatic reenactments might prove better vehicles. (p. 33).

Blythe & Gardner (1990) envision (a) fostering students' deep understanding in core discipline; (b) encouraging use of that knowledge to solve problems and complete tasks that they may confront in a real world; and (c) encouraging the unique blend of intelligences in each of the students, assessing their development regularly in intelligence-fair ways. The school would achieve these goals by Blythe & Gardner (1992) modeling the fresh and engaging approach of children's museums. The school creates an atmosphere in which students feel free to explore new experiences and unfamiliar situations. In the spirit of traditional apprenticeships, it promotes students' continuous and monitored efforts on individual projects.

Blythe & Gardner (1992) use descriptors such as "collaborative,

unconstrained, purposeful, untraditional and engaging" (p. 34). A typical day as envisioned at another spinoff of Project Zero Gardner (1989b) states is called Arts PROPEL works towards this kind of learning through projects. Gardner and Hatch (1984) worked collabortively with the Educational Testing Service and the Pittsburgh Public Schools to better understand areas of creativity and the arts that are neglected by standard measures of testing. They have developed a series of domain projects that serve the goals of both curriculum and assessment. The activities are focused on a specific artistic domain. The projects provide study and exercises that help the students focus on a particular art form from the visual arts or the performing arts. Gardner (1989) sees assessment as students working through these projects keeping all drafts, revisions, final products, and observations in a portfolio. Documentation of the students' growth helps clarify goals and makes reflections on the learner as an artist. Student work is assessed by examining the product and plans for subsequent projects. The second half of the school day is an extension of the first, but this time teachers and students move out into the community for further contextual exploring and learning.

Yet another Harvard intiative, Project Spectrum, Blythe & Gardner (1990) suggest creating thematic ties between curriculum and museum exhibits through kits. Organized for a variety of settings -- school, home, community -- the kit encourages the stimulation of an intelligence. The rich materials are designed to engage and stimulate certain intelligences [i.e., Blythe & Gardner (1990) suggest (a) Treasure Hunt game helps to develop children's abilities to make logical inferences, (b) assembly activities involving simple mechanical object stress on motor skills and (c) a story board with a landscape and imaginative figures and objects encourages children's skills in using descriptive language and dialogue. (p. 35).]

Crucial factors in how children are assessed are (a) notes regarding progress with materials, (b) types of activities students engage in or avoid, (c) short essay with the students' intellectual profile inclusive of constructive advice to encourage growth and strengths or weaknesses, (d) observations on how the child carries out tasks in various environments and (e) video documentation of performance based activities. The school engages students in activities in the community but also taps into community volunteers for studying masters of expertise and techniques in their field. Others provide ideas for engaging students in particular projects or helping with assessment and intervening if problems arise.

Older students continue studies as they did as young children, but more contextual learning is encouraged through the use of apprenticeships. Blythe & Gardner (1990) describe the school day as:

> Each student pursues an academic discipline, a physical activity and an art or craft...when their school encompassed numerous exploratory opportunties in the wider community, now the workplace and studios of their various masters become all their richly contextualized extension of the classroom. (p. 36).

It is the hope and expectation of the authors that schools inspired by the Multiple Intelligence Theory will approach teaching in a variety of ways, addressing various intelligences of the student and of the teacher. They also hope that assessment will take place in the context of the learning, in other words, while students are engaged in the actual project or product they are creating. Finally, Blythe & Gardner (1990) hope that students will have a stronger and more fruitful understanding of themselves, their abilities, their approaches to problem solving, and a particular feeling for what type of career and recreation they may be best suited.

Blythe & Gardner (1990) state that "Too often the gulf between educational theory and practice remains unchallenged," (p. 36). In the long run, there is nothing

so practical as good theory, but a theory without the opportunity for real-life implementation will soon fade away.

Project Zero's goal was to collaborate effectively to help restructure schools by embracing partnerships of mutual interests between researchers and educators for the benefit of reaching a child's utmost potential. Other schools are designing curriculums to engage all children's cognitive abilities. Faculty at a St. Louis pre-K-6 school studied Gardner's Multiple Intelligences Theory in order to improve instruction. Hoerr (1992) states the new school serves students age 3 through 6th grade. Its minority enrollment is 24%. Initially, in 1989, only twelve of the thirty-two faculty members united in an effort to incorporate multiple intelligence into their curriculum. Hoerr (1992) states that first members of what was called the Talent Committee read Gardner's Frames of Mind, then broke into two person teams and carried out responsibility for presenting a chapter by brief lecture, a hands on activity, and question-answer-discussion.

Soon other staff became involved by attending a 1990 conference on multiple intelligence. They returned with ideas and enthusiasm to initiate into the curriculum. School-wide themes were introduced to avoid fragmentation, but soon found it to take up too much time and did little to focus on the Multiple Intelligence Theory. Teams broke into grade level teams to continue for the remainder of the year.

The response to the displeasure with themes returned emphasis to the study of the Multiple Intelligence Theory. Staff planning and instruction into what a model of multiple intelligence looks like in the classroom were inserviced at the start of the 1990-1991 school year. The staff worked in teams in-depth with the theory, developing curriculum and units to address each of the Seven Intelligences.

Assessment will need to be designed in line with the new delivery system. The

team continues to investigate performance based assessments such as videotapes, presentations, projects, and portfolios. Hoerr (1992) states, "Because we know that how you measure determines what you measure, and what you measure determines what you value, we must design ways of capturing student progress in all of the intelligences." (p. 68).

Two goals for the future are (1) trying to relate the personal intelligence to the school's committment to racial and socio-economic diversity facing many U.S. schools and (2) studying each intelligence and how to implement before and after school-extended day programs.

The school has transformed from a traditional school to a multiple intelligence school with stumbling blocks along the way. Hoerr (1992) in summation states:

> Aside from the merits of our model and the educational advantages it offers our school and students, the process of reflection and discussion has been enormously beneficial to us. Our faculty is stronger because of the reflection on practice, the dialogue among staff members, and the collegiality that has resulted. Our implementation of Multiple Intelligences has made all of us learners and we have all benefited. We have also reaffirmed our belief that each child has special talents and that it is our job to identify and cultivate them. (p. 276).

This restructuring of the school began as a small effort gradually enlarging the circle of responsible individuals. Their broadmindedness brought about cultural change and continuity with the support of staff, parents, and community. Schools prepared for the future will establish themselves to streamline design a child's curriculum for success in their future.

At elementary levels an entire public school in downtown Indianapolis was designed by Patricia Bolanos and her colleagues. The Key School offers special classes in enrichment acitivities to address areas of student's strengths and weaknesses. Themes permeate the projects developed throughout the year, as previously mentioned by Goleman, Kaufman & Ray (1992). The Key School in

Indianapolis has an assessment team of teachers and parents documenting how a child carries out tasks or projects in a classroom, at home, or on a field trip. A specialized team of researchers form Harvard's Project Zero is developing criteria by which the projects can be assessed. Considerations are (a) project conceptualization, (b) technical qualities of the project, (c) originality and (d) evidence of cooperative effort. Gardner & Hatch (1989) see these changes in curriculum making radical changes in assessment. The singular view of linguistic and logical intelligence assessments will change to performance-based observations. Project Spectrum serves as an excellent example.

LEAP: Learning Through an Expanded Arts Program

The arts have been central to many components of gifted and talented programs as enrichment and expansions of the discipline. Due to the Arts success in enriching the gifted and talented and due to the system's failure to reach the economically disadvantaged children with traditional methods, LEAP, learning through an expanded arts program, has been stimulated with materials and hands-on materials with art and music to help students learn in academic disciplines.

Dean and Gross (1992) note that LEAP was assigned to improving the quality of education in a five borough New York City area. It has been in service as a non-profit making organization since 1980 serving over 400,000 students. Eighty-five consultants worked with students, kindergarten through eighth grade, performing below the 15th percentile in reading and below the 9th percentile in math.

By linking art and music directly to a basic skill the academic assignment was less threatening. The fear of shame or failure was diminished. Dean and Gross (1992) state:

> First, the materials and projects are intrinsically interesting to students and make learning an exciting experience. Second, the sense of accomplishment that comes from a completion of a creative task helps students develop self-confidence and self-esteem...Many of these students have failed in school because they do not learn in traditional ways. Active learning in a variety of modalities has proved successful with this population. (p. 614).

The defining quality apparent in LEAP is that the basic skill desired by traditional schooling is taught in an untraditional format, in other words, without words and plans to transfer learning to the written form of expression.

Language concepts like searching for the main idea, sequencing (understanding the narrative structure), characters, and personalities and scenes would all be transformed from hands-on activities with story boards, puppets and murals. Dean & Gross (1992) state that math concepts are developed by several LEAP initiatives, "fraction quilts" (p. 616), provide a visual way to learn a difficult math concept. The physical experience of folding and cutting the paper and writing the fraction on each piece ingrains the experience. Giving students previously cut squares does not provide the same comprehension. The pieces of squares are arranged into a quilt with patterning while students place an equation that describes the pattern, and the learning is processed.

Other basic skills are paired with music, dance, and theatre to build more transfer of the new knowledge. The LEAP team have accepted these low performing students need untraditional delivery systems because they do not learn in traditionally accepted ways. Dean & Gross (1992) note these improvements in performance:

> According to evaluations of students scoring below the 15th percentile in reading, 78.5% improved in sequencing and 77% improved in determining the main idea, 77% improved their ability to analyse character and 79% increased their vocabulary. (p. 618).

In assessing the LEAP program the response between teachers and students alike seems to be remarkably successful. Teachers felt students had developed a better

understanding of the subject matter and teachers felt confident that they would repeat projects on their own. They also noted that students strengthened their problem solving skills and their creative thinking skills. They gained self-discipline and had a more positive attitude toward school.

CHAPTER IV

ASSESSMENT

Performance Based Assessment Versus Traditional Assessment

Project Spectrum

Project Spectrum is research that builds educational bridges by seeking out and creating the thematic ties between curricula and museum exhibits through the use of kits to stimulate a large range of intelligences to be used in the school or other environments. Project Spectrum began its approach to assessment in 1984 at Harvard and Tufts Universities. Gardner & Hatch (1984) state that contrary to the traditional approach of assessment, PROJECT SPECTRUM carries a narrow view of scholastic readiness and rather encourages a developmentally appropriate alternative based on the multiple intelligence view of the mind.

Project Spectrum, another Gardner initiative, is a long term research effort focusing on preschoolers. Various learning areas are set up in a preschool classroom, and the students are given opportunities to explore all of the materials. Teachers and researchers can observe the students throughout the year to see the profile of intelligence at work and at play.

Children are surrounded by exciting and engaging materials that use the range of the intelligences. Theme related kits promote exploration in early elementary but with older students are tied closely to the traditional goals to promote literacy, attitudes and skills. Children encounter the basics of reading, writing, and calculating in the context of themes and materials in which they have demonstrated interest and emerging

expertise. Project Spectrum has been used for age groups from four to eight for diagnosis and classification for teaching. It has been used on a variety of students from average, gifted and talented, handicap, at risk for compensory purposes or enrichment.

The theory behind Project Spectrum is (a) an analysis of student strengths, (b) conceited effort to relate the strengths to meaningful adult roles, (c) the creation of curricular materials and learning centers that develops and fosters those strengths, and (d) the development of assessment procedures that can provide reliable information about and give recommendations for a student's profile at any given time in his development. Krechevsky (1991) states:

> Spectrum is based on the assumption that every child has the potential to develop strength in one or several content areas and that it is the responsibility of the educational system to discover and nurture these proclivities. Rather than building around a test, the Spectrum approach is centered on a wide range of rich activities; assessment comes about as part-and parcel of a child's involvement over time in these activites. (p. 44).

Krechevsky (1991) explains that tasks in the Spectrum classroom range from structured and targeted tasks to less structured tasks. In the logical-linear domain students might work with number concepts in a highly task oriented environment where use of number concepts, counting skills, and use of strategy are easily measured and observed. On the other hand, in Interpersonal or Intrapersonal Intelligence a child may be measured on the ability to observe and analyze the social events in his or her classroom.

The learning environment Krechevsky (1991) states is equipped with rich and engaging materials. Some activities are focused in centers to work on a particular intelligence. The activity does not stop at the initial exploration of materials but offers follow up activities for students to build on.

Documentation varies from score sheets, observation check lists, portfolios, and tape recordings. In Project Spectrum Krechevsky (1991) finds certain strategies to be the unique and successful reasons for this authentic assessment. Teachers are constantly collecting data and making observations while the child engages in the activity. Spectrum integrates tasks and student's skills. An engaging activity and an applied, meaningful task combine curriculum and assessment, thus joining assessment and curriculum.

Imbedding assessment in meaningful real world activities, Spectrum engages children in roles of what adults do (i.e., salesperson, naturalist, dancer, or a social worker). Rather than repeat sentences or words the child may be engaged in a story board acitivity that provides a descriptive account of what they did as a particular real world character using their linguistic skills. Rather than identify shapes and label, a child discerns how to take apart and re-assemble a real machine building meaningful connections for the child. This may later indicate what the child may be drawn to as an adult. Using materials that are intelligence fair, simple means to look for more than the typical standardized tests do by testing only language and logic. Instead the child physically engages in a performance based observation that measures direct engagement with materials such as machines, instruments, tools, or dance.

Emphasizing children's strengths gives Spectrum teachers a chance to construct a curriculum design for the child's education. Krechevsky (1991) says the program nurtures experiences in areas of strength as well as finds a vehicle to work on areas of weakness. A child weak in language ability but strong in visual-spatial problem solving ability may be asked to dialogue or story tell about their interaction with assembling or disassembling a machine. The learning style preference refers to how a child may approach an activity or problem solving situation. It may include

persistance, attention to detail, and confidence. Krechevsky (1991) recognizes that in some children the same style will transfer to all domains. In others the style will shift to be content specific to that particular domain. This information can be used in designing educational interventions.

A Spectrum profile is a compiled combination of short writings of non-technical prose of the child's participation in each project. The report is inclusive of strengths important to themselves and their relationships to peer groupings that have been observed by teachers. Rather than ranking the child a parent is given suggested activities for parents to work on while at home or in the community.

Krechevsky (1991) recognizes that researchers and educators alike are adapting this program because the approach recognizes individual differences in cognition and learning style.

> Because the approach takes individual differences seriously, it enables teachers to accommodate diverse populations and to individualize their curriculums. Moreover, because of its provision of many ways to demonstrate excellence, including ways that go beyond conventional scholastic success, Spectrum may be particularly suited for at-risk children. (p. 47).

Preliminary results from similar projects report heightened motivation, students appreciating the opportunity to reflect on their personal growth and development, and most importantly, early recognition of students both young and old capable of a range of talents who were earlier considered possible at risk students.

Gardner & Hatch (1989) recognize that the study of the multiintelligence assessment will be more complex than first envisioned and that there is little, if any, precedent for developing measurements that go beyond logical and linguistical criteria. Gardner & Hatch (1989) still feel that "the goal of detecting distinctive human strengths and using them as a basis for engagement in learning, may prove to be worthwhile, irrespective of the scientific fate of the theory." (p. 239).

Through these in depth observations that incorporate parents and citizens from the community the child will have a richer spectrum with more experiences to draw upon.

Learning Through Apprenticeships

Gardner & Blythe (1990) state that the restructuring of schools will need supportive parents and communities to take charge of such an undertaking. Neighborhood organizations and institutions, concerned adults from all walks of life and broad minded educators will help our communities achieve viable schools for the future.

Goleman, Kaufman, & Ray (1992) interviewed Gardner about apprenticeships. He advocated returning to an apprenticeship system when the child is older with someone who is already a master at what the child has shown interest in. After identifying what inclinations a child has, a slow process of exploration and building competence may develop into expertise. Goleman, Kaufman, & Ray (1992) quote Gardner saying:

> Long before we had schools, kids would learn by a craft by being with adults in a shop, or a farm, and being told what to do to help out. If people who have expertise would share openly with children it would link generations with a kind of communal glue that is fast vanishing. Like in the days of crafts and guilds a master would hang out a sign like a loom or a telescope letting children in the neighborhood know what skills were possessed by what adults and who would teach them about it. Obviously not many opportunities exist for this in current society. (p. 79).

With video documentation of the student's interactions with rich and engaging projects, activities, personal observations and preferences helps review the child's strengths and weaknesses. This information together with the assessment team and child's input will help choose apprenticeships to pursue within school and the

community for later in life.

The community has a higher profile in the Key School. Valued members volunteer expertise in crafts or occupations. The apprenticeships chosen are studied intensively with master teachers. The apprenticeships are one academic discipline, one physical activity, or an act or craft. The workplace and studio of experts becomes an extension of the classroom. The traditional school must engage their community resources to provide connectedness with real life experiences. The restructuring of school must look to these examples to ensure viable schools for the future.

In such careful assessment an educator can carefully plan strategies for individualized plans to build on students' strengths for later apprenticeships and weaknesses for more immediate attentions. Such plans are formed by goal setting. Putting theory into practice Ellison (1992) sets goals for students by using the Multiple Intelligence Theory.

Goal Setting Student Performances Through the Multiple Intelligence Theory

Ellison (1992) has developed and used goal setting in assessing each child and matching projects to all Seven Intelligences. Before beginning the process of goal setting, Ellison first educated parents in the theory of Multiple Intelligences. Parents, she perceived, had an increased respect for their child's abilities now that they held the status of intelligence. Ellison (1992) remarks:

> The child who excelled at drawing was now valued as demonstrating Visual-Spatial Intelligence. The child who made friends easily and worked well in groups became respected for her Interpersonal Intelligence. The intelligence label validated the importance of the skill. (p. 69).

In the first phase of goal setting during the September conferences, parents and students are encouraged to say what they feel is important to accomplish during the

school year. Goals of the teacher are to listen and to ask relevant questions. Ellison (1992) may ask parents and students: "What are you good at?" "What is important in your child's life?" "What are their strengths, weaknesses, frustrations?" Ellison pursues the parents' ability to know their child best. Ellison (1992) states, "Parents are the resident experts on their children. They know a child's history and a way of approaching the world: "I learn a lot by listening to what is said- and unsaid." (p. 70).

Practice and familiarization with goal setting focuses student and teacher energy on the skills needed to complete a task. Ellison (1992) has designed a form to clarify and simplify the goal setting process to include each of the Seven Intelligences as they might be observed in a school setting.

Ellison (1992) observes the following for goal setting:

1. Intrapersonal Intelligence is the capacity for understanding the self. Students' focus on their feelings, confidence, responsiblity and ability to manage themselves. These goals are critical for school success. Children who want to learn how to relax, remember, show pride in their work, or ask questions when students don't understand would be examples of the Intrapersonal Intelligence.

2. Interpersonal Intelligence is the ability to understand others. Goals set by children might be making new friends, working well in cooperative groups, solving problems between one another before they become a bigger problem. Designs that are implemented by the teacher would be plans for cross-age mentoring with younger children or peer tutoring within the classroom. This may be evidence of goal setting in the Interpersonal Intelligence.

3. Linguistic Intelligence may have goals of a child wanting to be able to read a chapter book by the end of the year or attend to proofreading or to become speed proficient at cursive writing.

4. Logical-Mathematical goals may have students wanting to reach proficiency in long division or with fractions or negative numbers.

5. Visual-Spatial goals aim for achievement in geometry and art. While one child may want to make three-dimensional constructions, another may want to draw houses in perspective or work with proportions in drawing anatomy.

6. Bodily-Kinesthetic goals may be as concrete as earning the Presidential Physical Fitness Award or planning an exercise program.

7. The Musical Intelligence often involves practicing an instrument. Students might set a goal to practice a defined number of minutes per day; others may want to learn more songs or become proficient in other instruments.

These simple goals, developmentally and chronologically appropriate, emphasize to parents and students their active role in custom fitting their education.

Ellison (1992) states that the month of February "reaffirms, refocuses, and celebrates." (p. 71). Goal statements are redirected because the teacher has a better understanding of the student's ability and learning style. Goal setting and descriptive evidence of the types of Multiple Intelligence are constantly reinforced by naming which intelligence students are using during certain activities.

In journals students rewrite and reaffirm their goals since some have been achieved and some not. They imagine what might happen if they succeed in their goals. The goal setting form becomes a key in assessment along with other documentation. Ellison (1992) explains how assessment looks in her classsroom:

> Our documentation of student growth includes portfolios, collections of significant student work, students' successes, comments, and photographs of presentations, plays, and three-dimensional creations. The portfolios contains students' self-evaluation as well as learning style assessments. Drawing, writing, and summative computer printouts on math computational skills are also included. Parents are invited to Achievement Days to examine the portfolios. Not only do parents and children thoroughly enjoy this personal focus time but parents also get to

see how goal setting has affected their children's education. (p. 72).

Assessment becomes the vehicle for driving the curriculum, and in turn, curriculum drives the assessment. This cyclical pattern of designing assessment to match performance customizes the delivery of instruction to the child. The benefits of individual goal setting outweighs the time and the effort. Ellison (1992) feels that goal setting and matching individual-centered activities enables the educator to recognize student differences and strategically plan for their diverse needs. The goal of individualized instruction for each child is the main focus. Goals are met and reset as achievement occurs assessing whenever teacher or student may deem necessary.

Ellison in theory and practice reaffirms the need for other forms of assessment to be revised to meet the theory of seven intelligences. While it is clear that no test will be a panacea for all, no test could be entirely appropriate but could gather measurement of different types to tell us about the whole picture of intelligence. If one believes that intelligence is whatever I.Q. tests measure, then one fails to see the whole person, leaving out the psychological makeup of the individual and the individual's possible true potential.

Intelligence tests used in schools currently, such as California Achievement Test, Stanford-Binet and the most recently designed Wechsler Intelligence Scale for Children are designed to measure individual, verbal and performance scales. The verbal scale may measure verbal comprehension, application of verbal skills, verbal abilities, and processing of verbal information. The performance scale may measure perceptual organization, ability to think in visual images, the ability to interpret visual material, and the ability to think in abstract concepts and relationships.

All tests mentioned are known for their excellent reliability and validity and are widely used to place students in programs suited for particular needs such as learning disability or emotion-mental impaired. The tests are also used to compare

performances between teachers, departments, schools, districts, and even state to state. The test measures concepts and is used for diagnosing and placement of children. This is a serious responsibility of one test because the intelligence test does not reflect the whole person. Personality and motivational factors are left out in the sole use of an intelligence test if it is to be used as the only form of assessment. Worthen & Spandel (1991) list these criticisms:

1. Standardized achievement tests do not promote student learning. They do not reflect what goes on in classroom. They do nothing to enhance the learning process, diagnose learning problems, or provide students with rapid feedback. They do, however, provide a general performance information in content areas like math and reading. They do not, nor are they meant to, pick up the nuances of performance that characterise the full range of a students skill, ability and learning style.

2. Standardized achievement and aptitude tests are poor predictors of individual students performance. They may accurately predict future performances of groups but they are often inaccurate predictors of individual performance. What this means is that a standardized test measures a particular concept but is limited in scope.

3. The content of standardized achievement tests is often mismatched with the content emphasized in a schools' curriculum and classroom. Standardized tests make no pretence of fitting precisely and equally well into all classrooms. Specific content of the units and instruction that has been emphasized over the year may be skimmed over or left out all together. Standardized tests dictate or restrict what is taught. On the other extreme, standardized tests dominate school curriculums and result in teaching to the test, which unfortunately provides the perfect situation for the test driving the curriculum.

4. Standardized achievement and aptitude tests categorize and label students in

ways that cause damage to individuals. The tests are not infallible and students can and do change. Students can also be misclassified. Even if the test is accurate, categorization of students carries a negative connotation and may cause more harm than any gain. Whether the information is appropriate and sufficient for the decision at hand and whether there is any supportive evidence must be considered.

5. Standardized achievement and aptitude measures are racially, culturally, and socially biased. This is a serious accusation pointed at both norm-referenced and minimum competency tests that they are biased against ethnic and cultural minority children. Critics claim they favor economically and socially advantaged children over their counterparts from lower socio-economic families. Even well intentioned uses of tests can disadvantage those unfamiliar with the concepts and langauge of the majority culture producing the tests. The predictable result is cultural and social biased failure of the test to reflect or take into account the full range of students cultural and social background.

6. Standardized achievement and aptitude tests measure only limited and superficial student knowledge and behaviors. Test critics and supporters alike agree that tests only sample what is being tested and at times what is being measured may be trivial or irrelevant.

Educators must stretch to the limit abilities to be creative in test design and teach ourselves to develop tests that reflect critical content and encourage students to think. Worthen and Spandel (1992) warn to keep in mind that no matter how much any test may tell us, there is always so much more to be known. Questions that might be asked instead: Is the improvement in test scores the result of improved teaching and learning? Or do they reflect a meager curriculum with students being drilled and killed on expected test content? There is much to be said for the criticisms that include the

narrowness of the test content that concentrates principally on basic skills in reading, language, and math; the mismatch between test content and curriculum and instruction; the overemphasis on routine and discreet skills with the neglect of complex thinking and problem solving; and the limited relevance of multiple choice formats to either classroom or real-world learning.

Howard Gardner's theory of seven frames or domains of the mind believes that tests have good predictive value while in school but not for what happens beyond. Ellison's (1984) interview of Gardner indicated what Gardner feels might be a more fair assessment:

1. A test of core ability would test for the accuracy of a given skill.

2. A developmental test would allow children to explore into a process and invent a product through the use of exciting materials.

3. A experience in the community, to be recreated or intrepreted by a child, would rate on a multiple intelligence scale what a child naturally engages in.

4. An incidental learning test would measure what a child picks up or perceives without any prompting.

The practicality of what's needed will involve time in hours of monitoring, but it should be compared to the social value of an individual's talents and the difference it may make for the individual and the society. Old cognitive theory and assessment is slowly giving way to a more pluralistic form of the same. Gardner also tells Ellison (1984):

> I'm essentially trying to knock language and logic off its pedestal. Nothing would make me happier than if society were to stop measuring people in terms of some unitary dimension called intelligence. Instead, I would like us to think in terms of intellectual strengths. I'd like to get rid of numbers entirely and simply say that an individual is, let's say, relatively stronger in language than in logic, even though he or she may well be above the norm in both because after all, the norm is irrelevant. If you manage to change the way people talk about things, parents and

> teachers may begin to think and talk about intellectual proclivities rather than how smart a child is and if we begin to accept these new terms, we can stop labelling one another as smart or dumb. (p. 22).

Ellison (1984) states much of Gardner's work during the past ten years has focused on changing the approach to testing in schools. He proposes changing the college admissions process to emphasize a portfolio approach instead of standardized tests. Students would submit a collection of their academic work for evaluation. Remarkably, Gardner would like to see testing become part of the learning process rather than a separate system.

Portfolio Assessment

If the new forms of performance based assessment are to be used for purposes of accountability, critics will claim that such activities as projects, and such instruments as portfolios, are inherently appropriate for schools or student accountability purposes; others respect them in principal but feel they are too costly, or too subjective to be used in a wide context; still others maintain that they are feasible. Gardner & Hatch (1984) suggest that projects and portfolios be rated on a manageable number of dimensions. Projects in the elementary school can be in terms of how well they (a) conceptualized, (b) presented, (c) accuracy, and (d) originality. Other dimensions that would be appropriate for assessment but are not considered evaluative might be how much the project reveals about the person who carried out the project, to what extent they have developed cooperatively, and how engaged a student has been in the project. Portfolios can be assessed in terms of a manageable number of dimensions. Gardner & Hatch (1984) state that it is crucial to observe how well the student has again (a) conceptualized the project; (b) how it relates to, builds time, and represents progress beyond earlier projects; (c) how well concepts have been integrated; and (d) to what extent assessment has been taken from the student.

From Novice to Inventor

It is possible to create dimensions or scales when rating for assessment portfolios for projects by using the scale of a novice or the features of an expert. If these characteristics of the dimension can be described and a range of examples given to the person doing the assessment, the more readily the agreement can be reached on how to assess a student's project or portfolio.

At the conference "New Concepts of Learning, New Concepts of Schools," Linda MacRae-Campbell (1993) gives evidence of the functional design where assessment of the Multiple Intelligences is designed to move from the stance of novice to the highest stance of inventor. Campbell (1993) summarizes the levels:

1. The Novice. The novice learns about the intelligence theory through sensorimotor exploration of the environment and interaction with others, observing, imitating, interacting, and experimentating with the knowledge, tools, and skills.

2. The Apprentice. The apprentice first sees relationships between symbols and objects or events they represent. From exposure to role models or through formal instruction, the apprentice learns the symbol system, concepts, skills, and disciplinary body of knowledge of the intelligence.

3. The Practitioner. The practitioner develops proficiency in the intelligence's symbol system. The practitioner understands the concepts, skills, and principles of the intelligence's discipline and applies such knowledge in numerous contexts and new situations. They redefine skills and knowledge through formalized instruction as well as through self-critique, and they know how to learn additional skills.

4. The Expert. The expert demonstrates a mastery of the concepts and practices of the intelligence in professional and/or avocational activities. The expert may be viewed as a specialist enhancing skills through interaction with other

specialists, through self-critique and intuition.

5. The Inventor. The inventor invents new forms of communication through the intelligence, identifies new aspects of the intelligence, or creates additional work. The inventor actually moves human knowledge forward.

These five standards (1) Novice, (2) Apprentice, (3) Practitioner, (4) Expert, and (5) Inventor are put on the matrix graphic scale juxtaposed beside each of Gardner's Seven Intelligences. The boxes created cross over the dimension of expertise to the intelligences and provide an area where the assessor can note observations made on each project or involvement of the child.

Implications for Assessment in Education

These changes in assessment must, however, align with current trends in education and must be in alignment with what is taught. Herman, Aschbacher, and Winters (1992) write about linking assessment and instruction in alignment with school improvement:

> New visions of effective curriculum, instruction, and learning demand new attention to systematic assessment. No longer is learning thought to be a one way transmission from teacher to students with the teacher as lecturer and the students as passive recepticals. Rather, meaningful instruction engages students actively in the learning process. Good teachers draw on and synthesize discipline-based knowledge, knowledge of student learning, and knowledge of child development. They use a variety of instructional strategies, from direct instruction to coaching, to involve their students in meaningful activities-discussion, group process, hands-on process, and to achieve specific learning goals. Good teachers constantly assess how their students are doing, gather evidence of problems and progess, and adjust their instructional plans accordingly. (p. 12).

This implies for educators new demands on teachers' professional skills, requiring them to integrate knowledge of intended goals, learning processes, curriculum content, and assessment. The process of learning is to know something,

not just passively receiving information, but interpreting it and incorporating it into one's prior knowledge, just as Campbell (1993) describes the difference from novice to inventor. Understanding that it's not just important to know how to perform, but when to perform and how to adapt that performance to a new situation is a key to linking goals and processes of learning.

Real life thinking often involves meaningful processes of decision making and problem solving, collaborating with others, using the available tools. Educators must focus students in complex, holistic thinking needed to meet the challenges outside the classroom using real-world events. Herman, Aschbacher, and Winters (1992) state in support of the interdisciplinary currciulum the following:

> A thinking curriculum does not isolate skills and facts rather it includes the wholistic performance of meaningful, complex tasks in increasingly challenging environments. Materials and content are structured so that students gradually regulate their own learning. This approach ensures that learning motivates students and encourages in them a sense of efficacy and competence. (p. 18).

Interdisciplinary curriculum enhances connections of curriculums and reduces the fragmentation and isolation of skills and facts. Through teaching the seven intelligences, the educator integrates fact, skill, process, and product.

CHAPTER V

CONCLUSION

Crystalizing the Experience

The Case for Multiple Intelligences

It is important that the experiences and knowledge a student brings to school is taken into account when designing new curriculum. The educator must expand and refine this prior knowledge by connecting it to new learning, making curriculum content relevant to important issues and tasks in the students' lives. If students can make connections between school learning and real-life issues, the likelihood that they will seek and value the perspectives of others might increase. Gardner (1993) writes that we as educators have fallen into what he calls the "correct answer compromise." (p. 4). In other words, students are given the information, they take the tests, and everyone agrees that if they say the correct response it will be counted as understanding. Actually, that understanding is superficial. Gardner feels that much knowledge when learned in one situation or setting cannot be applied in a different setting. They know the fact and skill but cannot apply it to the situation. Gardner (1993) states that:

> The challenge of education is, on the one hand, to preserve the imagination and the questioning in the theoretical stance of the five year old, but on the other hand-gradually but decisively to replace those ideas that are not well founded with theories, ideas, conceptions, stories, which are more accurate. (p. 5).

Gardner (1993) feels that if you have enough exposure to expert knowledge, you will develop skills and know when or when not to use them. He advocates that teachers and parents think of themselves as masters to challenge their apprentice.

Gardner (1993) in support of apprenticeships states:

> In an apprenticeship you see a young person hanging around a very knowledgeable adult-an expert, someone who really knows what he or she is doing-watching that person day after day, as he uses knowledge. The master challenges his apprentice at the level the apprentice can handle. He doesn't give her something she could do six months ago; he doesn't give her tasks that are too difficult. He's always collaborating the challenge for about where the student is. (p. 6).

Museums, Gardner (1993) feels, are a child-enhancing place to learn. Children are fascinated in a very different type of environment. For teachers it broadens the notions of what kids are like and what they can do. Using the example of the Capital Children's Museum in Washington, D. C. and the Exploritorium in San Francisco, Gardner cites that authentic learning is taking place because there are actual experiments leading people to draw conclusions about what they're seeing. People on staff are put in place to explain things or engage children in discussion about the meaning of things people have discovered in the sciences or arts. Gardner (1993) states:

> If you've encountered an idea in your own way, you have connected with it and it is now part ofyour own experience so kids may have learned something at the Children's Museum or at the Exploritorium and then bring them home or to school and use the concept or understand their full potential in another setting. (p. 7).

Far too many times educators are driven by the textbook, the test, or state mandates requiring that they cover everything. It would be better to teach less but have it process fully into the child so that when they leave they carry that information with them fully ingrained in their memory. Gardner (1993) protests that:

> The greatest enemy of understanding is coverage. As long as you are determined to cover everything, you actually insure that most kids are not going to understand. You've got to take enough time to get kids deeply involved in something so they can think about it in lots of different ways and apply it-not just at school, but at home, and on the street, and so on. (p. 7).

Advocating for the Arts

Hanna (1992) advocates the belief that the arts are related to other aspects of life, influential to society and politicians, and have the power to engage and empower other domains of knowledge. Hanna's (1992) research data gives support to the rationale for infusing the arts into other disciplines.

> In Sampson County, North Carolina standardized test scores went up two years in a row. The only thing that had changed in that county during those two years was the introduction of arts education. Another indicator of the positive impact of arts education comes from the National Center for Education Statistics. The grade-point averages of secondary students who concentrate in the arts (defined as having earned more than three credits in any combination of courses in dance, dramatic arts, design, and graphic and commercial arts, crafts, fine arts, music, or creative writing) are generally higher than those of the student body as a whole. A study of effective disegregated schools, using statistical data from 200 southern high schools, found that the arts contributed to desegregation, positive self-esteem, and academic achievement. More cross-racial interaction occurred in performing and visual arts classes than in any others. Schools with an additional teacher in the arts posted scores for the self-esteem of male students that range between 5 and 10% higher than schools without the additional teacher. The 1987, 1988, and 1989 profiles of high school students compiled by the College Board reveal that students who take arts courses tend to have higher scores on the Scholastic Aptitude Test (SAT) then those who do not. Moreover, the more arts courses takes generally speaking, the higher his or her SAT scores. (p. 607).

Students downplayed classes in which teachers lectured about material and, in contrast, enjoyed classes they were actively involved in. By exploring ideas and feelings they received a sense of power and control and enjoyed a pleasure and success in the arts. Parrin (1993) recognizes that the student artists learn by doing. Students must have the opportunity to practice and engage with materials until they have reached a sense of satisfaction. Time for production and reflection are imperative in the learning process Parrin (1993) states:

> Artists take risks and learn from mistakes. The mistakes, the parts not yet well executed, tell the artist where they need to work rather than indicating failure. Working toward mastery of an art form is a life long process, not something completed on graduation day. Artists know how well and often they practice has a direct on the impact on the

> outcome. They understand that good process is important to a fine product. Artists work for themselves, as well as against an external standard of excellence. Having chosen an artistic pursuit, the student artists feels a level of personal investment not always found in the classroom. Other characteristics gained from the arts are thinking creatively, acting on one's belief, good judgement and developing self-esteem. (p. 18).

Advocating for teaching the interdisciplinary curriculum, combining those who teach thinking and those who seek to teach content must find the balance between the two. Educators who want students to learn to be independent thinkers certainly do not want to drive out content oriented instruction. The question is not whether we should focus on process or content, but on how to relate content and process for the creation of meaningful learning.

Advocating for an Arts Inclusive Interdisciplinary Approach

"The Core Curriculum" Michigan State Board of Education (1991) states that students will successfully progress through school. The most basic tool of every learning encounter in the arts is perceptual development (i.e., seeing better and hearing better). Whether looking at master works or her own art work, a student visually examines the piece and discusses it in minute detail. Whether listening to himself practice his instrument or listening to a fine performing musician in concert, a student critically listens for correct pitch, rhythm, and musical accuracy. The arts teach students to see and listen more intently, and to produce valuable tools for successfully progressing through school.

The Core Curriculum states that students should grow towards effective, satisfying lives. Basic to any effective, satisfying life are the abilities to create and appreciate beauty. The creation could be as simple as a thoughtfully landscaped yard, or as complex as designing one's own home. The beauty could be as simple as the colors and shapes and lines of a sunset or as complicated as the time spent in galleries

and streets and concert halls in Vienna. Where better to develop the quality tools for an effective and satisfying life than in arts education?

The Core Curriculum states that student's will become thoughtful participants. Careful thought is the students constant companion in every artistic endeavor. From the time children begin to sing or paint or dance or "play-act," they analyze their creations, figure out how to make them better, and try again. Unless adults criticize and dampen their spirits, children bring higher order thinking into action when they analyze how to better be the character they are pretending to be. They synthesize what they have learned about movement as they plan and evaluate their character, like thoughtful participants.

The Core Curriculum says students will be effective in the global and multicultural society. Human beings understand their own roots and their own cultural heritages, first through their senses. They develop an understanding or a feeling for a culture through what they see and hear and taste and intuitively sense. Children first experience their own cultural heritage through songs, stories, and art work. Schools extend that experience and knowledge of the global and multi-cultural society. In aligning with Core Curriculum, art is like a foreign language; art is a language that can be learned and understood. It is a form of communication that one can learn to read and speak through study and practice. Reading art means understanding a visual statement. When art seems abstract or meaningless, it is only that this language is yet to be understood.

Like English, art has an established vocabulary and grammar. These fundamentals of composition are the basis for appreciating and producing works of art. All creativity must be channelled through these rules of construction in order to make a clear statement, to comprehend how art is put together is to be visually literate.

Like science, art is based on a natural order and relationship of elements. These elements have unique properties and can be explored in projects and exercises that reveal individual characteristics, how these qualities can be manipulated, and how these elements can work together. Through experimentation, one can discover the nature and potential of art.

Like mathematics, art possesses certain principles that are logical, time-proven and constant guidelines to pictoral organization. An effective composition requires thought, planning, and order. All parts must be considered towards the whole. Concepts such as linear perspective, tessalations, and patterning are specific examples of how art is as analytical as it is emotional.

Like social studies, art promotes an awareness and understanding of people and cultures. Art reflects the ideas and ideals of societies, governments, and religions. Art shares with us ancient societies and how they have been influenced by geography, war, and commerce. Art can help us understand past civilizations and define our identity for future generations. Art is a visual record of people and their world.

Like music, art is based on the refinement of one of our senses. As music relates to how one listens and hears, art focuses on perceiving and on visual sensitivity. In both areas, the perception of subtletly is essential to grasping variation and innovation. In music and in art, the greatest accomplishments are those in which subtlety and sensitivity are balanced with skills and creativity.

Like physical education, art can require a sort of visual toning, an exercising of one's eyes earnestly and regularly. With consciousness and practice, one's abilities can be recognized, developed, and mastered. Through perseverance, a faithful routine can lead to significant accomplishment.

In combining art with other disciplines, students will develop skills by

manipulating and perfecting the materials they work with. They will perceive information in a fresh way. They will heighten their awareness, their ability to associate, and their ability to discern between related and non-related topics. They will learn to actively express themselves by creating or fashioning a product and creating a more in depth understanding of the process by engaging both with their hands and with their minds in the process. They will learn to evaluate by analyzing, valuing, and showing appreciation for not only their own development but the development of others.

New research on learning has implications for teaching practices. Knowing that knowledge or intelligence can come in forms of skills, acts, concepts, or principles is only part of a solution. However, taking a child from that child's point of understanding to the connection with new knowledge will have a major impact on what the child will learn and is a crucial step in the learning process. In creating sound connections of prior knowledge to social and cultural experiences will be more profound.

Learning is an active process of knowledge construction and sense making by the students; and knowledge is a cultural artifact of human beings who produce it, share it, and transform it as individuals and as groups. Knowledge is distributed among members of a group, and then distributed knowledge is greater than the knowledge possessed by any single member. Simply, two heads are better than one.

Creating assignments that revolve around tangible circumstances creates more meaning for a child. It is an authentic task, because it is part of the culture or community. The actual social nature of a classroom is already conducive to students in dialogue and collaboration and in reflection. A teacher can set up an atmosphere where students talk about the problem, rehearse terminology and concepts, or challenge or

defend the principles. This shift could be the norm rather than the exception to the rule if true learning is to occur. Rather than the task of individual mastery of facts and terminology of a given material, the task shifts to the collaborative efforts, making the task a wider base of knowledge and more concrete through shared experiences.

Further Studies

This thesis does not suggest that all traditional schooling is bad, nor does it contradict that there is a time for drill and practice. It furthermore does not suggest that all standardized tests are worthless. Instead, it is the hope that this thesis will foster a balance of old and new practices. It calls on educator's insights to decide when performance based observation assessment styles fit the learning task and when not. This thesis respects each discipline in its own regard, but encourages larger visions of its use into other disciplines.

This thesis raises several questions. Can a balance be achieved between traditionally accepted methods of instruction and assessment and the new theories of intelligence and performance based assessments to inform student, parent, teacher, district, state and Nation of student performance? Can educators move from microcurricular design approaches to more comprehensive approaches? Can educators drop curriculum boundaries and come out of isolation to show students the relevant interconnectedness between school and real-world? Can educators take fact, skills, and application, and fuse that knowledge into a broader perspective on a higher order of thinking? Is balance the only acceptable answer?

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