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ABSTRACT

Howard Gardner (1993) identified seven areas of intelligence: verbal/linguistic, logical/mathematical, visual/spatial, musical, bodily/kinesthetic, interpersonal, and intrapersonal. At the elementary school level, he emphasized using an evaluation specialist, a curriculum developer, and a school-community worker to coordinate and harmonize learning activities in the classroom. This essay discusses the organization of the elementary school curriculum, focusing on Gardner's theory of multiple intelligences. The essay also discusses realism as a philosophy of education, focusing on the content areas of science and social studies omitted in Gardner's areas of intelligence. The essay holds that the Seven Cardinal Principles of Education, developed by the Committee on the Reorganization of the National Education Association in 1918, are still relevant and represent worthy goals for pupils to achieve. These principles include health, command of fundamental processes, worthy home membership, vocation, civic education, worthy use of leisure time, and ethical character. The essay criticizes the strong emphasis upon all pupils to achieve a high level in academic areas, and praises the role of vocational education. Contains 13 references. (MDM)

MULTIPLE INTELLIGENCES AND THEIR IMPLEMENTATION IN THE ELEMENTARY SCHOOL

Marlow Ediger, Ph.D.

There have traditionally been many ways to label and determine multiple intelligences. Classroom teachers, for example, have taught different subject matter areas such as the following with each having a separate identity:

1. reading and the language arts, including listening, speaking, reading, literature, and writing.
2. mathematics, including arithmetic, geometry, algebra, statistics, and trigonometry.
3. science, including biology, botany, zoology, chemistry, geology, astronomy, and physics.
4. social studies, including history, geography, political science, anthropology, sociology, and economics.
5. art, including Discipline Based Art Education (DBAE).
6. music, including vocal and instrumental.
7. physical education with its numerous activities such as competitive athletics, exercise, hiking, jogging, intermural sports, golf, tennis, and dance, among others.

The above named curriculum areas are separated into component areas. It appears that multiple intelligences are/were involved in making these divisions due to each academic or curriculum area being separated from the others. There are a few pupils who would do well in all curriculum areas listed. Some achieve well in one or two areas. Then too, it is common knowledge that there are a few pupils who do poorly in all curriculum areas. One reason being that there has been a lack of stimulation and motivation developed for achieving interest and purpose for learning. It is not always the school's fault, by any means, when this interest and purpose is lacking. There are pupils who grow up in exceedingly poor environments making it difficult to achieve at an appropriate level. The teacher, however, must attempt to the best possible to stimulate interest and meaning in each curriculum area. This

is a professional responsibility, regardless of the complexity involved.

Each of the above named curriculum areas has been taught in different ways. Thus in the area of reading, pupils have experienced a strong program of phonics instruction on the primary grade levels together with a basal reader approach in teaching and learning. Or, whole language procedures have been used whereby holism in subject matter read becomes important rather than pupils experiencing an analytical reading program of heavy emphasis being placed upon phonics.

Reading has also been emphasized as "reading across the curriculum." Here, a philosophy of instruction stresses the importance of reading in all academic disciplines mentioned above as well as in the literature curriculum. Thus there have been several ways of organizing the curriculum:

1. the separate subjects curriculum whereby arithmetic is taught as a single academic discipline in ongoing lessons and units of study.

2. the correlated curriculum whereby botany and zoology are taught as being related and not as separate entities.

3. the fused or broadfields curriculum whereby history, geography, political science, anthropology, sociology, and economics are planned and taught as being interrelated in lesson/unit planning as well as in implementing.

4. the integrated curriculum whereby diverse academic disciplines lose their boundaries and borders such as in problem solving approaches in the curriculum. With a problem solving philosophy of instruction, a problem is identified in context, the problem is adequately delimited, an hypothesis or answer to the problem is developed, data from a variety of reference sources is gathered to evaluate the hypothesis, and the hypothesis is revised as necessary.

Which of he above ways of organizing the curriculum should be emphasized by teachers and supervisors? During the 1960s and early 1970s, Dr. Jerome Bruner (1963) from Harvard University came out with a very popular hypotheses in which pupils should learn the structure of knowledge as advocated by college/university academicians in their

academic areas of specialty. Each academic discipline then has its structure separate from other subject matter areas. Arithmetic then has the commutative, associative, distributive, and identity elements properties. These are key ideas in arithmetic that provide a structure of knowledge just as buildings have a structure. Dr. Bruner (1963) recommended that pupils learn that structure just as the college/university mathematician recommends. He was very instrumental in stressing the following belief: Any subject matter can be learned in some intellectually honest form by any child at any stage of development. This statement was very optimistic in terms of what a pupil can learn. I believe if we look at the phrase "in some intellectually honest form," there is much that the teacher can emphasize. Thus the commutative property of addition can be stressed on any grade level in the public schools such as early primary grade pupils learning that 2+3= 3+2. Or, sixth grade pupils may learn that 3,467+ 6,893=6,893+3,467. A variety of methods and materials should be used here to guide meaningful and purposeful experiences.

Dr. Bruner also advocated that pupils should acquire information just as the academician does; a pupil achieves objectives by using the same methods as does a mathematician. Each academic area then has its processes and procedures to follow in securing content and subject matter. The approach stressed here would tend to emphasize a separate subjects curriculum. A pupil would then be given opportunities to understand and attach meaning to the content and methods of a single academic discipline as a professional academic would perceive his/her area of specialty. Ediger (1988) wrote the following:

Various educators have emphasized that pupils should achieve key structural ideas as identified by academicians, Social scientists from colleges and universities include historians, geographers, political scientists, anthropologists, sociologists, and economists. The methods that each of these social scientists use should also be used by elementary school children, according to social science educators. Advantages given for using this approach in teaching in the elementary school would be the following:

1. Pupils would be achieving relevant concepts and generalizations.
2. Learners would be using appropriate methods for gathering

data, such as using primary and secondary sources of information as historians do or using and making maps and globes to gather and summarize information as geographers do.

3. Teachers have more security in teaching selected vocabulary terms, main ideas, generalizations, and structural ideas pertaining to each academic discipline. Statements of structural ideas would be available to public school teachers to implement in teaching-learning situations.

Disadvantages inherent in using the structure of knowledge concept in teaching would be the following:

1. Pupils may not be interested nor perceive purpose in gaining these structural ideas.
2. Methods that academicians use in gathering information may not harmonize with the needs and abilities of elementary school pupils.
3. Within each discipline, academicians may not be able to agree upon relevant structural ideas.
4. An adult centered curriculum may be in evidence if pupils are to achieve structural ideas as identified by academicians in their academic area of specialty.

The Theory of Multiple intelligences, developed by Howard Gardner (1993) has certainly had its impact on American education as well as abroad. Here, Dr. Gardner recognizes seven areas of intelligence. these are verbal/linguistic, logical/mathematical, visual/spatial, musical, bodily/kinesthetic, interpersonal, and intrapersonal.

Dr. Gardner further divides intelligence into three component parts. These are

1. Intelligence referring to one's psychological and biological makeup.
2. Domain referring to one's talents, or craft being used in society.
3. Field referring to what the societal arena believes to be important in terms of processes and products.

Dr. Gardner (1993) states that Western culture too frequently stresses the importance of verbal/linguistic and logical/mathematical intelligences when the other five also have much value. Opportunities need to be provided pupils so that all seven intelligences may be

cultivated and used. Individual have strength in using one intelligence more so than the others, but people learn form through each of the seven intelligences, according to Multiple Intelligences Theory. Learning styles of pupils are based on ways of acquiring and achieving which cut across subject matter lines. Learning styles research came from test score results of learners whereas Multiple Intelligences emphasis is based on scientific research and are directly related to separate subject area fields.

Dr. Gardner believes in nurturing and recognizing the importance of the pupil in teaching and learning in order to provide for individual differences in the educational setting. There is a major way that people have of expressing themselves and that way comes form one of the seven multiple intelligences. In early childhood, pupils should have opportunities to express themselves and experience all seven modes in intelligence. Skills should be developed in all seven categories; otherwise learner chances to grow will be hindered. Pupil achievement, development, and growth are necessary in the different areas of Multiple Intelligences. General education is needed in early childhood.

On the elementary school level, Dr. Gardner (1993) advocates using an evaluation specialist, a curriculum developer, and a school community worker to coordinate and harmonize learning activities in the classroom.

The evaluation specialist notices and measures pupil talents. Learning activities based on pupil intelligence need to be appropriate for the individual and the surrounding culture. Teacher observation is necessary here to use information in developing an appropriate curriculum for the individual learner. Tests should not be used to determine individual differences since these are strong on linguistic and/or logical/mathematical. From observations made pertaining to each individual child, the curriculum specialist may recommend subject matter content as well as techniques of teaching that would assist the individual pupil to achieve more optimally. The school/community specialist would study and find activities in the community for pupils. Community organizations may include Scout work, 4H clubs, religious

organizational endeavors, as well as civic and business efforts in providing for pupils in the curriculum. Multiple Intelligence development on the elementary school levels will provide readiness for the secondary school years. Weaknesses in previous development of Multiple Intelligences should be noticed and provided for on the secondary level of instruction. Pupils should have confidence in Multiple Intelligences possessed and use these in school and in society.

Pupils need to understand personal profiles on Multiple Intelligence and use these to learn content in a particular curriculum area. Awareness of their skills in Multiple Intelligences, individual pupils may then relate approaches in learning that are preferred to acquire new skills in including verbal/linguistic, among each of the others. Dr. Gardner (1993) has as a definition for intelligence "the ability to solve problems, or to fashion products, that are valued in one or more cultural or community settings." Heredity as well as cultural influences are important in Multiple Intelligence. Tests should not be used in determining Multiple Intelligences, but rather contextual situations should be emphasized. Thus with observations made of pupils in context, the observers may determine which Intelligence is inherent. Teachers need to observe pupils in school in a variety of situations to determine what Intelligence the learner emphasizes. Individual pupils have different strengths and interests.The traditional Intelligences such as verbal/linguistics as well as logical/mathematics need to be in evidence; however, other ways of revealing knowledge and skills also need to be stressed, such as music and art.

An unusual feature of Multiple Intelligences as identified by Dr. Gardner is that science and social studies as content areas have been omitted. We live in a world of science with its technology and innovations. If we view the field of medicine and medical practices, the change have been tremendous and have greatly improved human life endeavors. For example, the use of lasers has made surgery obsolete in numerous cases. No doubt, continuous progress will be made in eliminating many kinds of surgery. Surgery made recovery a lengthy process, as compared to the use of laser beams. There are people who

say we need to return to an earlier time with its quality values and honesty. I am one who believes this Golden Age never existed. I do not believe there was a time when people were more honest than now. There is a song that says "Grandpa tell me about the good old days when people were honest and right was right and wrong was wrong." I do not believe that there was such a time of nostalgia. When I ask people if they would also like to go back to the good old days of medical practices, they shy away from wanting the "Golden Age." There are, of course, many ills that need correcting in medical practices today such as the results of using chemotherapy in treating cancer. Chemotherapy has its consequences of nausea and vomiting, even for several days after a patient receives the needed injections. My late mother in 1939 had a massive stroke at age fifty which left her as a vegetable for twenty-two years, after which she died. Mother could not walk, speak, follow conversation, or read during these twenty-two years. I have not heard of a similar case in the last thirty-five years. There is much that is done today to assist stroke victims in rehabilitation. Then too, there are so many places where one can go to obtain free blood pressure readings. There is much knowledge available as to the symptoms of oncoming strokes. Many prescription drugs are available to reduce blood pressure readings to a satisfactory point and have people live normal, happy lives. The Golden Age of medical practices did not exist. We need to move forward and identify problems and work toward improvement in the world of science.

There are many pupils who love science intrinsically and have a philosophy of realism to view the world objectively. A very old school of thought and still modern in philosophy is realism. Realists believe the world can be known in whole or in part as it truly is. Realism can be contrasted with the following philosophical schools of thought:

1. experimentalism whereby one can only know experiences and not know the world as it truly is.

2. idealism whereby one can know ideas about the real world but not know it as it truly is.

3. existentialism whereby truth resides with the observer; all of

knowledge is subjective and the individual makes his/her own moral truth.

Realism as a philosophy of education emphasizes the methods of science. Objectivity is stressed in that all can come up with the same results in knowledge of the real world. In using the methods of science to acquire information, facts, concepts, and generalizations, objective results are obtained regardless of who the observer is. Ediger (1995) wrote the following:

Realism emphasizes a world, in existence, independent of observers.The objective world, natural and social phenomena exist and is. The real world is not dependent upon any observer being present. The independent world can be known in whole or in part as it truly is. Thus, any observer may receive a replica of the natural and social environment, rather than ideas only, from these phenomena.

Accuracy in describing the real world is a must. Numerically, this can be done. The independent universe might then be described with the use of numbers. Accurate description is possible with assigned numbers. The amount of each element and compound present can be described numerically. Mind being like a blank sheet at birth receives subject matter directly from reality. Philosophy in realism becomes scientific. The methods of science are important to the realist. Objectivity is a key concept of realism in securing subject matter knowledge. Subjective ideas have no place in the scheme of things, according to realists. Emotions and feelings are left out. A true statement is one that corresponds with objects, items, and matter being described. Factual information, not opinions, are desired. Reality is not created, but may need to be changed as new discoveries are made.

Bertrand Russell (1942) was a leading realist in philosophy and in being quoted by Wahlquist wrote the following:

The first characteristic of the new philosophy is that it abandons the claim to a special philosophic method or a particular brand of knowledge to be obtained by its means. It regards philosophy as essentially one with science, differing from the special sciences merely by the generality of its problems, and by the fact that it is concerned with the formation of hypothesis where empirical evidence is still lacking. It conceives that all knowledge is scientific knowledge, to be ascertained and proved by the methods of science. It does not aim, as previous philosophy has usually done, at statements about the universe as a whole, nor at the construction of a comprehensive system. It aims only at clarifying the fundamental ideas of the sciences, and synthesizing the different

sciences into a single comprehensive view of that fragment of the world that science has succeeded in exploring.

Certainly, Multiple Intelligences should include the world of science and its methods in obtaining and appraising content or subject matter.

A second traditional curriculum area which Dr. Howard Gardner omitted are the social sciences, also called the social studies for public school pupils. The academic areas of history, geography, political science, anthropology, sociology, and economics have had a long sequence of being taught in the public schools. History is usually considered to be the most important social science/humanities area taught. It is doubtful if it is more valuable for pupils than the other previously listed social science areas. Why? History and its contents are so often written from a nationalistic and traditionally patriotic point of view. The writer of history tends not to perceive the weaknesses in his/her own nation when dealing in world affairs and also in domestic situations. I would like to see more of history written from an objective point of view, as advocated by realists. Atkinson and Maleska (1965) wrote the following:

The rising spirit of nationalism set forces into motion that began by replacing Latin with vernacular languages. Folk tales and literature received new emphasis. The American Revolution brought with it a realization that if people were to rule themselves, they had first to learn how to exercise their newly found liberties. For this they required an education to free from blind dependence upon their leaders.The fact that declaration gained an important place in the common schools during our early national period indicated the eagerness of the people to use their schools to prepare themselves for active participation in democratic processes.

But a more significant result of the spirit of nationalism was the inclusion of history and civics in the curriculum of the elementary schools. Later, along with geography, the whole area came to be known as social studies. Finally, educators borrowed a page form the Athenians and added such subjects as music and calisthenics to promote cultural interest and physical fitness.

However, these nationalistic and political ideals were slow in creating a truly effective educational system— there was much more talk than action. Even in the twentieth century the average elementary school was in session fewer that six months each year, and three/fourths

of the instructional time was being spent in formal subjects that were usually taught in a very mechanical manner. Little that was done in school bore any true relationship to the needs of the society in which the pupil was living.

The teaching of history and geography in the school curriculum has a long history in the United States. These two areas of the curriculum were already taught in Colonial times, from 1750 on. Certainly, one of the multiple intelligences would need to be the social studies, perhaps history and geography in particular. However, any individual is a product of his/her culture (anthropology and sociology); we also are economic beings in that we buy goods and services for daily sustenance, as well as live in and under a specific form of government (political science).

I believe that the Seven Cardinal Principles of Education, developed by the Committee on the Reorganization of the National Education Association in 1918 listed a fairly well balanced set of objective for pupils to achieve; these included the following;

1. health
2. command of fundamental processes (basic subject matter knowledge)
3. worthy home membership
4. vocation
5. civic education
6. worthy use of leisure time
7. ethical character (Drake 1955).

The above named objectives for pupil achievement represent that which has relevancy and indicates what is important for pupils to attain. There is balance among the categories here in emphasizing goals in health instruction, subject matter knowledge, membership in the home setting, vocational education, citizenship, education for leisure time use, and ethical behavior. Could it be that objectives such as these also represent diverse intelligences?

What Does It Take to be Intelligent?

There are people who when in the public school years were labeled as being slow in learning and not having much to offer later in society. Perhaps, these pupils eventually behaved as if they cannot be successful and cannot achieve adequately. In the video The Bells of St. Marys, Bing Crosby plays the role of a nonchalant headmaster of a parochial school. His ideas on education are quite different from those of teachers in the school, especially those of a teacher played by Ingrid Bergman. The latter is interested in tradition and upholding standards for achievement. We should all be interested in upholding high standards of achievement. But, sometimes, these standards get in the way of assisting pupils to do well in school. The headmaster, played by Bing Crosby, favored flexible standards and the bending of rules in certain situations. At the end of the school year, one pupil did not quite measure up to the exact per cent of achievement in test scores to warrant promotion. The needed per cent to pass was traditional and had been upheld for sometime in the parochial school. The headmaster wanted to pass the pupil to the next grade level whereas the teacher, played by Ingrid Bergman, believed strongly that standards are standards and should not be lowered. The headmaster told of Elmer Hathaway who as a pupil was a dreamer who came late to school many times and did not have his mind on school work. Later, Elmer Hathaway became a very wealthy, successful man and offered a job to any unemployed person who had been in his graduating class.

To the viewer of the Bells of St. Marys, it appears that the successful person as an adult had not experienced a curriculum that met personal needs and interests. Elmer Hathaway might not have had ways to reveal his achievement in school. This is true of many pupils today.

There is a very strong emphasis upon all pupils achieving at a high level in the academics. I gather the academics refers to courses such as

history, geography, literature and language, science, and mathematics. I do not believe art, music, and physical education are included in the academics, for most writers. And vocational education is not worthy of any attention, according to advocates of a strong academic approach in determining the curriculum. The question arises, "Will a curriculum of the academics be valuable to and for many pupils?" I believe not. Why? There are so many fields of endeavor in the world of work that the academics may not be too important for many at the work place. I believe educators minimize practical and utilitarian learning opportunities making the non-academic person appear to be inferior to other lines of endeavor and work.

It appears that I have much more need for non-academic people as I do for the academically inclined even though I am a university professor. Let me explain my thinking. I had a leak in the sink and so decided to fix it myself in order to "save money." I bought a pipe wrench and gaskets to seal the leak. After having completed the work, the sink leaked worse than before. So I called a plumber who did a good job of fixing the leak. How much cheaper it would have been to have hired him initially to complete the task!

When a car battery gives out or a car does not start, a mechanic or repair person is wanted. Our house was recently shingled, the work was done by a professional carpenter. We put a carpet into our house and a carpet installer did an excellent job of installing. Our basement in the house leaked, so we had a carpenter, a plumber, and a concrete repair person come out to attempt to take care of the leaks. This was done, in part, with some problems remaining of a very difficult task and that is to take care of a leaky basement.

It often seems as if professors of academics do not wish to discuss their expertise of knowledge except in and during class time devoted to teaching what is listed in the university catalog. They may talk about what is taught if asked to do so at the Rotary Club or at the Kiwanis Club. I hardly notice a time when public/parochial school pupils talks about what has been learned in the academic world. I have noticed professors who would much more talk about the garden they have planted and how

the tomatoes are doing than about the academic areas taught. And yet, I crave talking about the different academic areas taught by professors. On my own I read history, geography, sociology, biology, physics, and geology university level textbooks. My area of expertise is curriculum, supervision of instruction and of student teachers. I am not interested in actors and actresses as well as television personalities. I have a hard time understanding why the salaries of these entertainers are so high and their homes owned are so mansion-like in appearance. One entertainer had two indoor swimming pools, one for herself and the other for her husband since they differed on the needed temperature reading for water in the swimming pool. I have difficulties in accepting the concepts that good carpenters, plumbers, and automobile mechanics are paid so little for their services. These are people we depend upon for our livelihood. And we should not forget farmers who provide us with ample food and fiber which many/most nations do not have. What am I saying here?

Vocational education should not be abandoned in our schools. Individuals who work after high school graduation do provide us with what is needed to live well. There are different learning styles and diverse interests in finding what our life's work should be. I grew up in a General Conference Mennonite community where farming was prized highly in the world of work, in fact, it was placed at the apex in terms of value and importance. Good farmers are needed to conserve soil and the environment as well as provide us with what is needed in terms of food products and fiber to make clothes and other items. Many of us are well fed people and can go out into the fields of work with adequate nutrition in the US. I have been in many areas outside of the US where poverty is in evidence. When working with Palestinian refugees on the West Bank of the Jordan for two years, I became very familiar with hunger and poverty. The effects of hunger and poverty make for low achievement. low motivation, and low energy levels. I, among my tasks of teaching, whitewashed homes and caves of refugees in Bethany. I also assisted with clothing distributions for the Mennonite Central Committee in Palestinian refugee camps near Jericho. Farming and

agriculture are vital areas in society. With all that I have said here, I believe vocational education and the practical, utilitarian facets of society to be of utmost importance. The entertainers and television personalities with their huge salaries do not contribute to society as much as carpenters, educators, plumbers, automobile mechanics, farmers, and those who provide food, clothing, and shelter. By emphasizing application of what has been learned by pupils, perhaps, a more useful curriculum is an end result.

How then do rural pupils with a farm background show intelligence? My brother who makes all of his income from farming still has a large chest of drawers he made in a vocational agriculture class in high school. Each neatly made drawer has on the outside listed what is contained therein, such as washers, bolts, taps, and small gaskets. The drawers still are snug in their holders and the chest appears very neat in appearance, made fifty-two years ago. My brother also made a case to hold wrenches of different sizes. Which wrench goes where? The size of the wrench that goes into the proper place is painted inside the case. Like the chest of drawers, the holding case for wrenches still looks neat in appearance. I will just mention the cedar chest he made in a high school industrial arts class which is still a pride to look at. What grades did my brother receive in the "academics" for his day? I will just say they were low. What kind of intelligence did he possess? His intelligence was very high in knowledge of agriculture and in wood working design with quality products.

I have a cousin, now semiretired, that had his own construction company. In high school mathematics, his grades were low. But when it came to putting in estimates for building of high schools, churches, and houses, his knowledge and use of mathematics must have been excellent indeed! High intelligence did not lie in abstract history, geography, mathematics, literature, and science but in the utilitarian and the functional which was the building of beautiful structures.

Pertaining to futurism in vocational educations, Ediger (1994) wrote the following:

A curriculum of futurism in vocational education must be given

adequate consideration. A clear vision of the future is necessary. What might be in a vocational education curriculum stressing the concept of futurism? The writer suggests the following:

1. much emphasis being placed upon research results.
2. new theories of instruction.
3. theory providing a basis for decision-making.
4. objectives in school harmonizing with goals of a quality workplace.
5. balance among understandings, skills, and attitudinal objectives within teaching-learning situations.
6. varied learning opportunities to provide for individual differences.
7. effective diagnostic and remediation procedures.
8. improved evaluation procedures to evaluate learner progress.
9. higher levels of training and education required of instructors in vocational education.
10. quality programs of inservice education for instructors.

Present day inservice education programs for vocational education instructors should be varied and diverse. These include:

1. attendance at professional meetings and conventions.
2. attempts at improving the curriculum through personal methods and approaches.
3. completion of research projects.
4. enrollment in independent studies offered at a college or university.
5. video-tape models for inservice education.
6. planned series of meetings with other instructors to improve the curriculum.
7. opportunities to interact and discuss problems with other vocational education instructors.
8. inservice education through team teaching.
9. paid sabbaticals to further study vocational education on college/university campuses.
10. utilization of materials at a local professional library emphasizing vocational education.

Futurism in vocational education will stress a quality curriculum to assist each student to attain optimally.

The above enumerated items pertaining to vocational education are guidelines that pertain to emphasizing any curriculum area, including the academic arenas.

I have often wondered about interpersonal relations, emphasized

by Dr. Howard Gardner, as one of the Intelligences. None of my first cousins have been/are divorced. Does this stress interpersonal relations or stamina? If it is stamina, is that an Intelligence? I have twenty-seven first cousins. The offspring of these first cousins have not been quite as fortunate in successful marriages, but the divorce rate is about three per cent. Culture is a powerful factor in determining human behavior and any statistical figure needs to be studied in context. One has only to study Old Order Amish culture to realize how powerful culture is in shaping human behavior (Ediger, 1996).

Encouraging Diversity in Objectives and Outcomes

There certainly are multiple outcomes that can be expected of learners. Pupils differ from each other in many ways. How can teachers provide for the diversity present in any classroom? Sternberg (1997) is another leading advocate of encouraging and fostering diversity among pupils. Sternberg indicates what can be done to encourage memory, analysis, creativity, and practicality – four area of revealing what has been learned:

Language arts

Memory Remember what a gerund is or what the name of Tom Sawyer's aunt was.
Analysis Compare the functions of a gerund to that of a participle, or compare the personality of Tom Sawyer to that of Huckleberry Finn.
Creativity Invent a sentence that effectively uses a gerund , or write a very short story with Tom Sawyer as a character.
Practicality Find gerunds in newspapers or magazine articles and describe how they are used , or say what general lesson about persuasion can be learned from Tom Sawyer's way of persuading his friends to whitewash Aunt Polly's fence.

Mathematics

Memory Remember the mathematical formula (Distance = Rate X Time).
Analysis Solve a mathematical word problem (using the D = RT formula).
Creativity Create your own mathematical word problem using the D=RT formula.
Practicality Show how to use the D=RT formula to estimate driving time form one city to another near you.

Social Studies

Memory Remember a list of factors that led to the US Civil War.
Analysis Compare, contrast, and evaluate the arguments of those who

supported slavery versus those who opposed it.
Creativity Write a page of a journal from the viewpoint of a soldier fighting for one or the other side during the Civil War.
Practicality Discuss the applicability of lessons form the Civil War to countries today that have strong internal divisions, such as the former Yugoslavia.

Science

Memory Name the main types of bacteria
Analysis Analyze the means the immune system uses to fight bacterial infections.
Creativity Suggest ways of coping with the increasing immunity bacteria are showing to antibiotic drugs.
Practicality Suggest three steps that individuals might take to reduce the likelihood of bacterial infection.

Sternberg (1997) states that "When we expand the range of abilities we test for, we also expand the range of students we identify as smart."

Educators have been writing and speaking about individual differences among learners for a long period of time. The differences among pupils are great so that each pupil needs a specially designed curriculum and yet at the same time it is necessary for learners to be able to work together with others harmoniously. Those educators who advocate teaching the academics largely or only are leaving out a large segment of the human population. There will be those who will be doing very important kinds of work in the work place that are definitely not academic in nature, such as in the vocational arenas. As a student in high school, I took three years of vocational agriculture and one year of industrial arts. Was this a waste of time for myself who became a university professor? Definitely not. With vocational agriculture classes and its inherent Future Farmers of America (FFA) organization, I learned many skills and attitudes that carried on to other lines of work and endeavor. For example, I was Vice-President and then President of the local FFA chapter. I also received the rank of State Farmer in FFA which is open to two per cent of the membership of a state only. What did FFA and vocational agriculture assist me to do in high school and later on in life?

1. I felt motivated to achieve at an optimal rate and set high goals.

2. I felt responsible for my own life and did not claim to "inherit this mess" One of our recent presidents always stated that he had inherited this mess as if not being responsible for what transpired.

3. I later on received my Doctorate in Education from the University of Denver and have taught for a total of forty years.

4. I have had accepted for publication over 2,000 journal articles in education for publication on six continents.

5. I believe that there are attitudes in an organization such as FFA that cut across all jobs and occupations in the work place. I also believe that vocational education has its place in a practical, utilitarian curriculum. We need to give all individuals a chance to succeed and to do well as worthwhile members in society.

The vocational should not be separated form the academic in terms of worth in the school curriculum. Pupils should be able to show what has been learned in vocational courses which truly indicates what has been achieved. It might not be possible for pupils to reveal achievement if it has to be shown in academic learnings only. The vocations are so necessary in society as revealed by the goods and services all of us need to live a quality life or even to survive at a minimal level. I also believe the practical curriculum can be integrated with the academic arena so that pupils receive a balanced perspective of the world scene.

McCarthy (1987 and 1996) emphasizes the 4MAT learning styles in providing for learners in the classroom. She identifies four types of pupils, basically, in a classroom:

1. the highly creative pupil with a feeling and reflecting style of learning. These pupils ask many questions in ongoing lessons and like brainstorming methods of instruction.

2. the analytic pupil who is well organized in classifying and analyzing details. These learners engage reflectively in step by step learning in a highly sequential way. They tend to have difficulties with open ended tasks.

3. problem solvers in thinking who are doers and like concrete situations, basically not reading activities to obtain information.

4. learners who like to work cooperatively as well as independently on open ended tasks in which inductive learning is stressed using kinesthetic/auditory/visual materials. First hand experiences are important to these pupils in teaching and learning. Learners in this category do not like formal, rigid schedules.

In the above four named types of pupils, a natural cycle sequentially of feeling, reflecting, thinking, and acting or doing occurs.

In Closing

There are unanswered questions pertaining to multiple intelligences of pupils. In the traditional division of content areas in the curriculum, the following are listed: reading and the language arts, mathematics, science, social studies, art, music, and physical education. These divisions have been used for a long time and appear on most report cards when pupil progress is being reported to parents.

The above named traditional curriculum areas have, in time, been organized in terms of separate subjects, correlated, fused or broadfields, and integrated/interdisciplinary approaches.

Dr. Jerome Bruner in the 1960s and early 1970s received much attention for his work on the structure of academic disciplines. Each academic discipline has a structure or framework which identifies it separately from other academic disciplines. Pupils were to learn the structure of these disciplines as academicians in their academic areas of specialty do. Learners were also to use the methods of acquiring information as each academician does in his/her area of specialty. Dr. Bruner emphasized a strong academic curriculum with inductive learning for pupils.

In many ways, diverse philosophies of education suggest different ways of teaching pupils in the curriculum:

1. realism advocates the methods of science and mathematics be used with its objectivity and measurability of pupil learning.

2. idealists believe in an idea centered curriculum in which history and the social sciences as well as literature provide exemplars. Ideas acquired by pupils tend to be broad such as concepts, generalizations,

universals, and main ideas. Rational thinking is salient to idealism as a philosophy of education.

3. experimentalists believe that one can know experiences only in a rapidly changing world. With change, problems arise which need identification and needed solutions. Problem solving becomes the number one objective in the curriculum.

4. existentialists advocate a world of individualism in which the feelings of the pupil are paramount. There are feelings of anxiety through the making of vital choices and being accountable for choices made. Each person makes his/her own world in a completely subjective world.

The Seven Cardinal Principles of Education have stood the test of time in terms of providing objectives stressing areas of living. Theses seven areas of living are not styles of learning, but they do emphasize what is salient in life to learn. I would not minimize these areas due to their being introduced in 1918. I think there will be a continual debate in time and place as to what is important for pupils to learn. Life in society does change continually and rather rapidly.

I have frequently brought in the values of vocational education for pupils. I do not believe that the continual emphasis upon the academics for all pupils is a valid argument. Pupils differ from each other in many ways and the learning styles approach is attempting to determine under which conditions and situations pupils can learn best. Vocational education tends to deal with the concrete and the practical. I have observed many pupils that are orientated toward desiring to learn from the concrete and the real rather than the abstract and the classical.

Dr. Howard Gardner advocates pupils showing in diverse ways what has been learned, not through abstract methods of testing only or largely. Pupils have unique intelligences and need to have opportunities to reveal learnings acquired in numerous and diverse ways.

Sternberg has provided us with a classification system of learning styles which makes it possible for pupils to learn from diverse sources and approaches and reveal what has been leaned in numerous ways. Teachers here need to think of Sternberg's categories of memory,

analysis, creativity, and the practical when providing instruction to pupils. These categories are different one from the other and do provide guidance in teaching regardless of the subject matter area taught.

McCarthy's 4MAT approach also has a sequence attached in teaching pupils which cuts across different subject matter areas. Regardless of subject matter area or academic discipline being considered, this sequence is feeling, reflecting, thinking, and acting or doing. Teachers need to observe if in their teaching they stress the previously named sequence. Whichever model is followed in whole or in part needs to be evaluated continuously with a view to changing to something better in guiding more optimal pupil achievement. Ediger (1997) wrote:

Careful selection of objectives is needed so that pupils achieve that which is vital and relevant. Objectives should reflect knowledge, skills, and attitudes. They can be stated as general or behaviorally stated objectives. There are pros and cons for either kind of objective. The important point is to state worthwhile objectives that stress higher levels of cognition such as critical and creative thinking as well as problem solving. Objectives for each learner should be challenging and yet achievable.

Educators disagree on what is truly important in the school curriculum. To indicate what is vitally important in the curriculum, Miel (1996) wrote:

First, I would emphasize experiences that would develop group membership skills. As learners are given opportunities to plan such matters as the best use of time together, how to take care of their classroom, what will be appropriate in some new situation, and what studies in service projects they wish to undertake, they will be learning discussion skills. They will find out how to play both leadership and followership roles in turn. They will learn not to settle for a simple majority but listen first to minority and majority opinion, gather the best ideas, and weave them into a useful consensus. Second, we must help learners extend their life-space by bringing new persons into it. Face to face or, if necessary, vicarious contacts can help students become aware of persons different from themselves in race, religion, socioeconomic status, language and nationality. The intent here is to help learners develop good feelings toward an interesting member of their group or others with whom they may have contact and — if possible— foster respect and caring relations with them.

Third, people in a democracy are often called upon to be problem solvers. They should gain experience in locating problems that require attention, taking steps to find solutions to a problem for group attack, and promising solutions to action.

These brief suggestions regarding the necessary content of a curriculum for democratic social learning make evident the importance of the group setting that educational institutions provide. The many kinds of human relationships that teachers encourage in such settings will make all the difference in developing student's social learnings based on creative uses of information, emphasizing democratic behaviors, and leading in active and warm hearted citizenship.

What is being emphasized presently in teaching and learning should come under intense scrutiny and assessment so that objectives, learning opportunities, learning styles, and appraisal procedures guide pupils to learn as much as possible on an individual and cooperative endeavor basis.

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