Viewing Education Through Valid Assumptions and Beliefs

Consistent with Whitehead's admonitions, the main objectives in this system are defined by Bloom's Taxonomy of Educational Objectives, Cognitive Domain, namely, achievement of the higher order cognitive skills and abilities - analysis, synthesis and critical evaluation. The taxonomy contains six levels of cognition in an ascending order: 1) remembering facts concerning experiences (the lowest level of cognition), 2) translating, interpreting and extrapolating those facts (comprehending), 3) seeking possible applications for what has been comprehended.

This is where much of schooling ends, The results for many are limited retention of facts, failure to see relationships between sets of facts and a scarcity of problem solving abilities. Fortunately, some retain their curiosity and pursue a path toward greater competency as an active learner, perhaps with help of parents, mentors and circumstances that motivate them to take control of their lives.

The next three levels referred to as higher order cognition are uniquely individualized and they require high levels of competency. These processes are not compatible with standardizing learning outcomes: 4) analyzing is the next higher level of cognition which means taking apart or questioning what has been previously applied, viewed from various personal perspectives, 5) synthesizing what had been analyzed is demonstrated by constructing a unique representation or model, and 6) critical and creative evaluation. Evaluation is focused on the nature and completeness of the synthesis, its usefulness in solving problems and its shortcomings and opportunities.

Achieving cognition at the analysis, synthesis and critical evaluation levels requires extensive direct engagement in a learning sequence defined by Robert Gagne as "cumulative learning." Learning that lasts requires fulfillment of this sequence. The initial level of learning begins as stimuli (experiences) followed by automatic responses. Repeating certain stimuli with predictable responses leads to simple associations. These associations are expressed in motor and verbal chains that lead to multiple discrimination, that leads to concept formation.

Concepts are mental images that represent experiences, retained and applied in the interpretation of real life situations; they reflect the number and quality of the discriminating experiences; the more discriminations, the richer the concepts.

Concepts lead to the formulation of simple rules when regularities are recognized and these simple rules become principles and laws resulting from continued investigations and thought. Principles and laws that have been tested and found to be valid, make intelligent problem solving possible. Progressing through this sequence takes time and requires direct learning opportunities to be processed by each learner.

Expectations for cognition at the analysis, synthesis and critical evaluation levels are circumscribed by developmental characteristics that relate to learning. Youngsters' cognitive abilities develop through invariant sequences in stages or phases that are essentially gene driven, influenced by experience for better or worse.

Cognition, according to Jean Piaget, develops in sophistication from a sensory-motor phase, to pre-logical or pre-operational intelligence, to concrete operational or beginning logic, based on direct experiences, and finally, to formal operations that allow logical consideration of abstract, hypothetical ideas, objects, events and processes. The same world is experienced by youngsters at each of these phases or levels of development, but their view of that world, what and how they process their experiences, differs according to their developmental abilities.

Consistent with Piaget's schematic is one developed by Viktor Lowenfeld that describes youngster's expressions of thought and perceptions beginning with random scribbles that lead to controlled scribbles, then per-schematic drawings, to schematic drawings, to dawning realism, realism and finally abstract representation. These phases pertain to language development and moral decision making as well, all consistent with Piaget's phases of cognition.

Facilitating achievement of higher order cognition requires a basic understanding of three interrelated components of mind, described by the psychiatric community, namely, the conscious, pre-conscious and the unconscious dimensions. The pre-conscious is considered the central processing unit of the mind that receives and processes sensory input, spontaneously, inclusively, rapidly, intuitively, and sends ideas to consciousness to be organized with thoughts and language extensions. The unconscious reflects the distillation of past experiences that are manifested in unique attitudes, values and personal orientations that control the pre-conscioius and conscious processes. Learning results from interactions between these three components of mind. Learning that focuses solely on conscious processes, at the exclusion of the pre and unconscious dimensions, perpetuates limited cognitive growth and full utilization of one's intellectual potential.

Achieving high level cognitive objectives requires what Psychiatrist Lawrence Kubie explained that is as relevant today as it was in the nineteen fifties: "...education without self-knowledge can never mean wisdom or maturity; self-knowledge in depth is a process which like education itself is never complete. It is a point on a continuous and never ending journey. Without self-knowledge we can have no adults, only aging children who are armed with words, and paint and clay and atomic weapons, none of which they [fully] understand."

Acquiring self-knowledge in depth in today's educational systems is almost never considered a high priority; to the extent that it does exist it is often limited to brief exposure to the language of psychology or sociology. "Self-knowledge is not all there is to wisdom and maturity; but it is an essential ingredient which makes maturity at least possible. Yet it is the one ingredient which is almost totally neglected. This lack is both an index and a cause of the immaturity of our culture." (Kubie)

What is known and can be verified in experience and in the experiences of those who have studied matters in depth include three additional sets of assumptions. Those that reveal the nature of communication and the processes of group deliberations, that lead to team building, represents one of those sets. Groups develop like individuals through an invariant sequence from a phase of dependency, to independence, to interdependence, enabling constructive communication at a consensual validation level. Achieving this level of group maturity greatly enhances communication and a sustained commitment to learning, alone and in groups.

The second set relates to ways of knowing and communicating the meanings derived through the application of the creative processes of academic disciplines. These disciplines are ways of comprehending aspects of life in all its manifestations and ways of communicating those findings. Participants in these disciplines have constructed records of the results of their creativity that are housed in our libraries and data banks. To make meaningful connections with these disciplines young learners need to engage their processes of learning until a grasp of structure is achieved that enables them to become effective consumers of the written records of historians, geographers, mathematicians, artists etc.

Philip Phenix developed a schematic labeled "Realms of Meaning" inclusive of all general education offerings found in the schools and universities of this and other countries. After examining these offerings he categorized them as six realms of meaning. Empirics are all the sciences, including social sciences. Symbolics are languages, including mathematics. Aesthetics includes the arts and architecture. Synoptics includes history, geography and cultural anthropology, among others such as philosophy and religion. Ethics includes issues of morality and Synnoetics includes self-knowledge. The disciplines within each realm contain ways of creating meaning and communicating that meaning through selected media. These creative processes are placed in the hands of learners in this system, in ways appropriate to developmental capabilities.

The final set of assumptions deals with modern systems concepts applied to education. Systems design is a process of learning and systems analysis is a strategy for assessment and evaluation of learning. A system is a set of parts that are formed into a unified whole. Synthesizing the parts of systems results in products that are more that the sum of its parts. The products of synthesis, patterns that transfer to other subjects, become the vehicle for expressing the meaning of many parts, taken together. Having designed the system, the learner is better able to reconstruct the parts at any point in the future and substitute different parts within each system that represents other places and times. Having acquired this level of cognition enables retention of facts, viewed as parts of systems thus reduces perceived complexities to manageable units.

The above underlying assumptions translate into a system of education for today's world. An in-depth study of life's manifestations begins with family history and the local environs, today and in the past. This study is critically important in the early development of competent and compassionate citizens. Engaging the ways of knowing inherent in the disciplines teaches a lifetime strategy for creating meaning in life. Constructing a wholistic view of one's life and community is an outcome that prepares each learner to feel a sense of control over the many events of daily existence. It addresses the root causes of social ills and the concerns of an ever increasing use of virtual reality and opioids as coping strategies when facing what is often perceived as a meaningless existence. With increased meaning in life and in communications with others, mental health is maintained. Individuals learn to live in the present where life occurs, become self-aware and self-sufficient as independent and inter-dependent humans with flexibility in the application of their values.

The process of developing a wholistic vision of the community (a systemic view) requires extensive record keeping. A completed record of experiences contains computer files/folders representing the variable parts being constructed and mastered. Mastery is defined as the ability to: (a) differentiate/conceptualize the parts of the system, (b) create an integration or synthesis among the parts, (c) illustrate synthesis by constructing iconic models that resemble the objects, events or processes they represent, or symbolic models that do not resemble the content but are stated in symbolic language including that of mathematics, or analogies that are either iconic or symbolic using familiar ideas to better understand and represent that which is not readily observable, (d) anticipate the consequences of change in parts of each system, (e) compare and contrast the system with formulations created by others, and (f) modify and utilize the system to interpret and solve problems.

In general, there are six steps in the process each learner must engage when constructing a validated system. (1) Defining/re-defining a listing of parts of any system to be mastered. (2) Accumulating experiences and translating/conceptualizing the parts and inserting the results into computerized records of experiences. (3) Model building by organizing and re-organizing the findings stored in the record. (3) Synthesizing and conducting critical/creative evaluations that are formulated into communications at the levels of achieved mastery. (5) Verifying the synthesis through comparing and contrasting one's findings with those of others. (6) Identifying new systems that grow out of prior constructions.

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A Paradigm Change

Students as Workers
The Product is Knowledge

Process-Facilitated Learning (PFL)

Introduction

America's Past Through the Eyes of Local History is part of a system of education designed to initiate what Whitehead suggested a hundred years ago in his book *Aims of Education and Other Essays*, that is, a continuous progress curriculum that focuses on the study of "life in all its manifestations." He expressed a concern that is particularly relevant today. There is a need to develop an eye for the whole chessboard, for the bearing of one set of ideas on another. He warned us to be wary of "inert ideas", ideas simply taken into the mind and passed back without having placed them in fresh combinations. Inert ideas, he rightly claimed, are not only useless, they are harmful. Fulfillment of the intent of Whitehead's thoughts requires change in how we conduct the education of our youth.

According to Hord, S. et al in Taking Charge of Change (ASCD, 1987), "Change is a process, not an event...change is primarily about individuals and their beliefs and actions, rather than merely about programs, materials, technology or equipment [and facilities] although all of these elements are important." Changing assumptions and beliefs is prerequisite to improving educational structures and practices, and the process that yields lasting change requires time and a personal, emotional commitment.

John Merrow, in his book, *Addicted to Reform*, stated that schools today view teachers as the workers and the students as the product. Consistent with his position, this system of education described herein represents a paradigm shift, a change, where the students become the workers and the product is knowledge.

Essential Elements of Implementation

In order to determine the feasibility and potential impact of this educational system it is essential that the system be fully operational. During this initial phase it must be determined if and whether all components of the system can be implemented and if not why not. A brief listing of essential process components is included below:

To ascertain the effectiveness of a different approach to education, as this approach represents, the system must be fully implemented. To fully implement this system, its component parts must be understood and acted upon consistent with their formulation.

Roles and Responsibilities of Teacher/Facilitators and Learners

1. The learners in this system are to be engaged in inquiry using the methods and materials of the disciplines of history and geography. They initiate their study by examining each of the parts of the local system, one part at a time, like the pieces of a puzzle, and they gradually assemble the parts together to form an image of the whole chessboard that shows the relationships of the parts to each other. Each learner shares his or her independent findings with other learners so that everyone can insert pertinent information into their electronic records using an established protocol.

The teacher/facilitator is like the conductor of an orchestra who coordinates the work of each player in an effort to achieve a common goal. Each member is an important resource in achieving the common goal in this case, the study of the local environs. Learners live in various parts of their township and can provide first hand experiences and observations with all the elements of both history and geography that can be determined at that location. Beginning with ancestral histories that places families on a timeline, for those whose ancestors have lived in this area for many years, they can search out what life was like when they lived here, and will share this information with their fellow classmates. What is learned through this local study transfers to the study of other communities in space and time.

Each learner plays a part in helping the group conceptualize the parts that eventually reveal the whole system. The teacher/facilitator watches and listens, asks questions, makes comments about the performance of each learner, provides time and appropriate criticism, provides materials and supplies, hardware and technical information and points to sources of information pertinent to the study of students' neighborhoods.

2. Learners, whether or not accustomed to independent inquiry, need to buy into the processes of inquiry within the disciplines and accept a role in assisting others in putting together their puzzle with maximum meaning, the results to be inserted into their records of experiences. An "advance organizer" that visually defines the parameters of the common goal, how to go about fulfilling their roles and responsibilities and what the system is designed to do for their benefit, must be thoroughly explored and given a conspicuous position as a continuing reminder about essential components of this inquiry plan.

3. Inquiry begins with an investigation by learners into their ancestral history. This inquiry is done with the help of parents and guardians or other significant adults but is conducted primarily by the students. The teacher/facilitator suggests, listens, encourages, provides sharing opportunities and assists but does not do the research. This offers an important lesson for both the teacher and the learners. The object is to involve the individual learner in significant research and record the findings so that reference to this information can be made at any time in the future, especially as further research begins to reveal the more complex image of life in the larger community, today and at various points in the past.

4. Research into the history of the local environment includes the natural/physical features that exist or existed throughout its development. Man made changes are added as research into the geography of the local region continues. Each learner is a resource for exploring this subject matter. The location of their homes are part of the local region situated on bedrock and potential mineral deposits. Identifying what those might be can be found in sections of the data sources website. It can be seen in some locations as outcroppings, excavations or any other type of exposure. Interviews may reveal expert information. Photographs can provide important evidence to be added to the record along with information drawn from maps and reputable written narratives. The same can be said about possible minerals that have potential value such as clay, limestone etc.

Above the bedrock, surrounding each home, are soil types that have different characteristics related to origin, content, drainage patterns, mineral content and potential for plant growth. These soils can be tested and experimented with regarding drainage, acidic content, composition etc. This information is reinforced through visiting sources found on the website. The findings are placed in the record for safekeeping until they are needed for construction of the complete puzzle being assembled.

Vegetation is associated with soil types and relief features. The relief features are related to bedrock types or in some cases glacial or other deposits. These elements are observed, photographed and reinforced through information from the website and/or other expert sources. The findings are placed in the record to be used later in constructing a synthesis among all the parts.

Various forms of fauna are found in the immediate environment where their habitats are satisfactory for survival. This too can be recorded and reinforced through research using the website sources.

Data concerning weather can be gleaned through local newscasts, visitations from weather reporters and meteorologists and supported by hands on testing of conditions related to rainfall, wind, temperature, air pressure etc. All this information is placed in the record for future use. Climatic conditions and their relationship to weather are explored through data collected by official agencies and made available on the website and in various publications.

Locations in the universe can be gleaned through Google Earth and related sources from NASA and other agencies. Maps are available through the website using Google sources.

As this information is found, its existence experienced and what is considered important is recorded, it is now possible to assemble a synthesizing representation in three dimensions. This can be constructed on paper or through computer software and the results placed in a folder of the record that displays what has been done with the individual experiences, assembled into patterns of relationships. Sharing can be easily accomplished with these renderings of the whole chessboard, showing the bearing of one set of ideas on another.

5 Every community at any point in time has a fabric composed of social and cultural factors and economic activities. Political realities that relate to governance, law and order are also present. Any of these characteristics that occurred in the past are the subject of history. Those that occur in the present are considered through anthropology.

The evidences of history are found in the records like those that were revealed during ancestral investigations. Records, kept in the past, display varying levels of authenticity. Some are considered primary, that is, reliable uninterpreted data that is reasonably accurate, that can be trusted to be accurate until found otherwise. Some are secondary sources that can be relied upon for sound information but others may not be reliable for a variety of reasons. Primary sources are preferred where available and reputable secondary sources are often a valuable source. Non-fiction sources can be exceptionally good or exceptionally bad. Fiction can likewise be useful in providing an accurate image, depending upon the intent of the author.

The study of the history and geography of the local region involves an extensive array of information that must be conceptualized and recorded for future reference, required for constructing a synthesis among all the parts. Without a comprehensive computerized record, the sheer volume of information would be problematic and remembering this information would be nearly impossible. Computer storage makes on- demand record keeping a possibility. The contents of the records are used in making assessments regarding progress and evaluating the outcomes of inquiry.

The storage and accessing system contains six folders: Records of experiences are stored in four universal categories: 1) the natural/physical features that include all the environmental parts, 2) social/cultural characteristics of citizens of the community, now and in the past. 3) economic activities and 4) political structures and practices. 5) A folder labeled Who Am I contains ancestral and other personal data..6) The sixth folder contains the products of analysis, synthesis and critical/creative evaluation.

The Social/cultural factors include religious beliefs and societies, schools and other educational institutions, customs and manners, recreation, arts and architecture, languages, holidays, traditions etc. As each of these factors are investigated through referencing the website, conducting interviews, exploring written accounts and dramatizations, the results of those experiences are placed in each universal category in the record under social/cultural factors. Likewise for the two other categories, economic activities and political realities, separate folders are created.

Economic factors include businesses and industry, agriculture, trade, banking, jobs, markets, investments, technological capabilities, transportation, sources of energy and power, communications capabilities, including broadband, internet, social media, telephone, telegraph, computers etc. There are numerous sources of statistics that include these elements of economic activity. As each is investigated, significant findings are placed in the record to be integrated with social/cultural factors and political realities.

Political structures and processes exist in every community that deal with matters of citizen rights and responsibilities. Such matters as the constitution, bill of rights, laws and courts at the local, state and national levels maintain a society based on law that is intended to provide justice for all persons. Boundaries are set and maintained under laws. Representatives in government are voted upon during elections. Voters have rights that have changed over time. The justice system involves the local, state and national levels under courts of jurisdiction. Much of this information is available on the sources website that can be supplemented by linked sources that deal with political matters at all three levels. The information gathered is placed in the record under the political category.

For any point in time, whether in the present or distant past, there are political realities that can be revealed through research and the findings can be recorded for future use.

The four universal categories represent the parts of the whole community and they need to be integrated to reveal and sustain their full meaning. A separate folder will house the synthesis that is made by each learner that displays an image of the local community to be validated and shared by others.

Consider the intellectual power that develops through an in-depth study of what exists in the learner's backyard. The natural/physical features and manmade changes are displayed within their unique patterns of relationships. The bedrock and the minerals are found to be related to the relief features, related to the soils, the water and drainage occurrences, the flora and fauna, the weather and climate, its relative location and the modifications that have occurred over time, shaped by nature and man.

Add to the natural/physical features the ancestral history of families, the community wide social/cultural factors, the economic and the political, for selected periods in time, the patterns for the local setting are thus revealed in all their splendor and detail. If the events during the construction of these patterns are recorded with computerized storage and retrieval mechanisms, available for immediate access anytime in the future, the probability for continuous and lasting applications of critical and creative processes and effective problem solving abilities can be assured.

Patterns found among the universal variables within the local setting transfer to an understanding of the unique patterns that exist at every other location across the world, and perhaps beyond. Once the systemic model is established and validated in the local setting, the patterns that exist in other places and times can be similarly constructed by changing the parts that reflect comparative differences and similarities. The frame of reference established in a local study enables this to occur.

Since a system is a set of interrelated parts that form a pattern of the whole, viewing these patterns from a systems point of view reveals the substantive elements of essential curricular offerings, the methods and materials for constructing or designing systems, and strategies for evaluating the results of the design process. The bits and pieces are assembled forming a system that is expressed in language and shared with others. This process reduces complexities to manageable units that provide learners with a valid sense of control over their lives in this seemingly overwhelming complex world of the twenty-first century.

Why is an in-depth study of the local setting, its past, present and projected future, so important? Essential elements in constructing meaning from experiences require firsthand participation in purposeful inquiry. The opportunity to engage purposeful, firsthand inquiry can be accommodated through the study of the immediate, real-life surroundings using the creative methods and special materials of the academic disciplines. Not only is the need for firsthand experiences with these disciplines accommodated in a local study, but conclusions reached through their study can be personally validated.

Engaging the creative processes of disciplines, like history, geography and the sciences, develop: 1) lasting higher order thinking processes, 2) reliable retention and reconstruction of memories from the past, and 3) effective problem solving skills and abilities. An in-depth study of the local area offers an opportunity to learn how to create knowledge that transfers to the study of other places and times, including the history of our country, world and universe, and prepares students to connect with the learning of experts in those fields. Furthermore, recognizing the dynamic relationships between the essential elements found within the local setting teaches about changing environmental patterns with regard for potential detrimental consequences.

Change in one part of any system affects the other parts and their relationships, for better or worse.

Realizing the interdependence of all the factors involved in these analyses will make a positive contribution to the preservation of our planet and democratic way of life. Furthermore, this activity will prepare learners to provide the evidences of learning that are required by the State's Standards for Social Studies.

One learns to read by reading, one learns to write by writing. Learners best develop the important reading and writing skills by doing them for a purpose that is relevant to elements of their personal lives. The study of ancestors and the local community, positioned as part of the larger picture that involves other townships, the county, state, the nation and the world offers rich opportunities to develop these skills to a high level. In this system, learners are asked to read and analyze statistics, narratives, symbols etc. on a daily basis and write about what those experiences have meant to them. Further they are being asked to organize, construct and maintain a detailed record of those experiences and what was done with them that is available with a computer command. Surely, this activity will bode well for raising the expectations for meeting the State's Standards for Language Arts.

Additionally, studying community life as it exists or existed is investigated through science and mathematics, selected in context for a purpose. In this system of education, these disciplines are called upon to determine and interpret the facts required for construction of meaning about the elements of life in all its manifestations. Internalizing the creative processes of these disciplines is among the advantages of this system, with outcomes undeniably important.