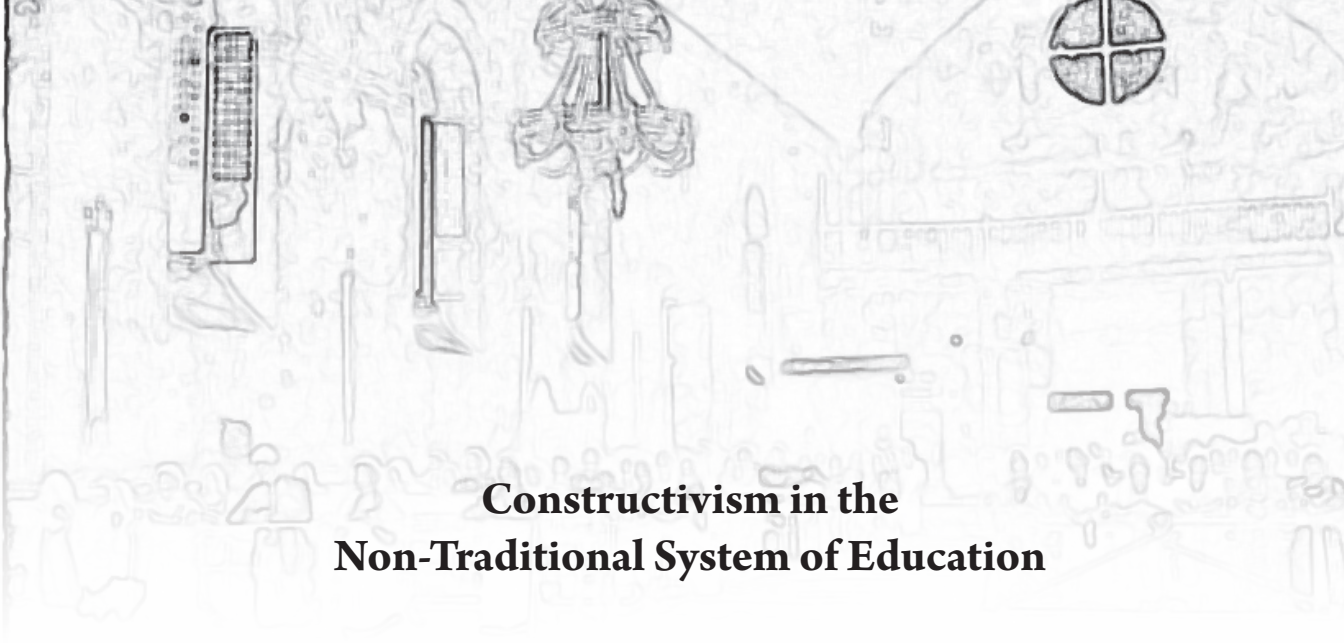

Constructivism in the Non-Traditional System of Education

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Humans can understand only what
they have themselves constructed…
-Giambattista Vico, 18th century

Researches attest that Constructivism is the most efficient alternative to the present practice and notion of education. It maybe the road less traveled but it yields desirable results that cannot be found in the traditional school. Constructivist schools has relied much on the foundational philosophy and psychological researches primarily of John Dewey, Jerome Bruner, Lev Vygotsky and Jean Piaget.

In the Philippines, the non-graded system of Angelicum College in Quezon City is close to practicing constructivism in education, found in its institutional non-traditional philosophy and practice. Constructivist practices in Angelicum College are found in their Twelve-Point basic principles. Though Constructivism as a practice has not yet been popularized and the positive result it offers are not yet readily accepted by many schools, the observations and practices of Angelicum College will justify its reliability.

Keywords: *Constructivism, Objectivist/Behaviorist, Non-graded education, Learner-centered approach, Non-traditional system of education*

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Introduction

Constructivism as viewed by the education researchers and authors is one feasible option in transforming the educational practices at present. The contemporary educational systems in most countries including the Philippines has been confronted by several issues that caused some disturbance in the preservation of the current system and made some practices in education a vulnerable enterprise. Some of the key concerns that need to be addressed by the present system are the following: (1) the fast development of technology and its impact on education; (2) the observation that students seems to be more advanced than their teachers due to their curiosity and long exposure to varied media; (3) the rising costs of education and its questionable quality; (4) the increasing figure of youth-at-risk in remote areas being deprived of education; (5) the inaccessibility to mainstream schooling; (6) the emergence of the alternative learning system (ALS) to address the practical needs of the indigents; (7) the escalating student drop-out rate; and (8) the options for distance learning and home study programs due to busy lifestyles.

The aforementioned concerns necessitate elimination of the conventional views that teachers are the only dispensers of knowledge; that grades are measures of one's learning and academic achievement; that education has to be expensive to be of good quality; that learning happens only within the four walls of the classroom; that academic instruction should focus on teaching rather than learning; that students study out of duty than curiosity and interest; and that poverty is an obstacle to education; then, reinforcement of the education system will be impossible. Therefore, unless one changes his perspective and commitment on how learning should take place, the present condition of education is far from being transformed.

Amidst pressing situations, Angelicum College, a Catholic and Dominican learning institution, manages to offer a non-graded system of education since its foundation in 1972. Aside from fulfilling its mission as a Catholic school, it also sets an institutional core ideology which is: ***To do what is best for the learner*** expressed through their (1) Non-graded system of education; (2) Self-paced/individualized learning; (3) Nurturance of the uniqueness of each learner; and (4) having a Learner-centered education. For thirty-eight years, it has produced and continues to produce successful professionals through a non-traditional system of education.

This paper then intends to present as to how the philosophical foundation of the non-traditional system of education of Angelicum College anchors on the constructivist philosophy of education. Discussion will cover: I. The Constructivists: John Dewey, Jean Piaget, Jerome Bruner and Lev Vygotsky, II. Constructivism and Objectivism Contrasted, and III. The Constructivist Philosophy of Education and the Angelicum College Non-Traditional System of Education.

I. The Constructivists: John Dewey, Jean Piaget, Jerome Bruner and Lev Vygotsky

Literature would attest that there are several thinkers and researchers in the field of philosophy, education, psychology, cybernetics and even psychiatry that contributed to the beginning of constructivist philosophy. However, this paper presents only the four major proponents whose works and researches have directly shaped the contemporary constructivist foundation of education and learning. They are 1. John Dewey (1859-1952), 2. Jean Piaget (1896-1980), 3. Jerome Bruner (1915-), and 4. Lev Vygotsky (1896-1934).

- **John Dewey**

Two of the most essential books of the American pragmatist and educator John Dewey were *Democracy and Education,* published in 1916 and *Experience and Education,* published in 1938. These works have become the cornerstones of his philosophy of education. The role of experience in learning and the social context of students where they learn were the two areas of his focus.

For Dewey, there is no substitute to experience when it comes to learning. Dewey contends that, *Knowledge emerges only from situations in which learners have to draw them out of meaningful experiences* (see *Democracy and Education*, 1916 and *Experience and Education*, 1938). Learning is only possible when concepts and ideas used are situated in one's life. Educational programs must see the over all picture of man whose full existence is in touch with reality. Thus, he gives emphasis on the integration of all subjects in school which for him depicts the whole life experience of a person.

Furthermore, Dewey points out that:

> Students cannot learn by means of rote memorization; they can only learn by directed living, whereby concrete activities are combined with theory. The obvious implication of this theory is that students must be engaged in meaningful activities that induce them to apply the concepts they are trying to learn (*Democracy and Education*, 1916 and *Experience and Education* 1938).

The inviolable alliance of knowledge and experience makes authentic learning happen. Knowledge without experience makes a dull learner who is not ready to take responsibilities in life. On the other hand, experience without the process of knowledge makes action directionless and most of the time impeded with indecision.

Dewey explains where learning can successfully happen:

> These situations have to be embedded in a social context, such as a classroom, where students can take part in manipulating materials and, thus, forming a community of learners who construct their knowledge together (*Democracy and Education*, 1916 and *Experience and Education* 1938).

Students learn through social interaction. The social aspect of learning is essential for Dewey for it prepares students for democratic living. Being an American educator, the democratic idealism cannot be more evident. He strongly suggests that studies which contribute to the democratic system of society should be supported. The proper balance between the individual and society should be consistently managed. Since an individual grows and learns in school, he must be taught what the society expects of him. There is an essential link between the social aspect of education and the education for democracy in the thought of Dewey. More so, the importance of experience in learning is tied with to the core of democratic citizenship. Thus, for Dewey, "democracy is the ability of human experience to generate aims and methods by which further experience shall grow in ordered richness."

- **Jean Piaget**

The Swiss educational psychologist Jean Piaget's constructivism is premised on his view of the psychological development of children. Within his theory, the basis of learning is discovery: *To understand is to discover, or reconstruct by rediscovery, and such conditions must be complied with if the future individuals are to be formed who are capable of production and creativity and not simply repetition* (see *To Understand is to Invent*, 1973). Learning for Piaget reaches its noble purpose of making individual learners creators not duplicators of existing knowledge.

Children go through stages in which they accept ideas they may later discard as wrong. Understanding therefore, is built up step by step through active participation and involvement (see *To Understand is to Invent*, 1973). Piaget gives emphasis on the step by step process of discovery/rediscovery, construction/reconstruction of knowledge of the active individual learner.

Piaget believes that an individual encountering a new learning situation draws on prior knowledge to make the new experience understandable (Gillani, 2003).

Philips (2000) explains this process by saying that:

> Psychological constructivism relates to a development or learning theory that suggests that individual learners actively construct the meaning around the phenomena and that these constructions are idiosyncratic, depending in part on the learners' background knowledge. The development of meaning may take place within a social group that affords its individual members that opportunity to share and provide warrant for these meanings. If the individuals within the group come to an agreement about the nature and warrant of description of a phenomenon or its relationship to others, these meanings become formal knowledge.

A closer look at Piaget's genetic psychology is needed to arrive at his original thought. Genetic epistemology or theory of cognitive development provides one of the building blocks of constructivist pedagogy. Drawing on biological concepts such as the concept of *equilibrium-disequilibrium*, Piaget attempts to explain how learning and the changes in cognitive structures occur (Fosnot, 1996; Gillani, 2003). From his perspective, intellectual and cognitive development resembles biological act that requires the organism's adaptation to environmental demands (Gillani 2003).

Fosnot (1996) and Gillani (2003) further explain:

> A new event, situation, or learning environment can create contradictions with one's previous understanding; their insufficiency leads to perturbation and a state of disequilibration in the mental schemata, in which the generic events and abstract concepts are stored and organized in terms of their common patterns. To form a state of equilibrium in the cognitive structure, the individual needs to modify or reorganize his or her schemata via adaptation.

Ernst von Glasersfeld, whose thinking has been profoundly influenced by the theories of Piaget, is typically associated with radical constructivism – radical "because it breaks with convention and develops a theory of knowledge in which knowledge does not reflect an objective, ontological reality but exclusively an ordering and organization of a world constituted by our experience" (Glasersfeld, 1984). The genetic psychology of Piaget contributes to the revolutionary understanding of the learning process in the modern times that touches on some epistemological constructs. Although, much of his thoughts challenge some previously held beliefs.

From Piaget's thought, that have influenced radical constructivists such as Glasersfeld, the radical shift of understanding the process of learning has become formidable. They argue that knowledge is not a self-sufficient entity; that knowledge is not directly transmittable from person to person, but rather is individually and

idiosyncratically constructed or discovered. Cognitive or constructivist process consequently emphasizes learner-centered and discovery oriented learning processes (Liu and Matthews, 2005).

- **Jerome Bruner**

According to the American educator Jerome Bruner, learning is a social-process, whereby students construct new concepts based on current knowledge. His philosophy on learning is contained in one of his well-known works in the 1970s when most educators in the United States thought of returning to the constructivist philosophy of learning – it is entitled *Going Beyond the Information Given* published in 1973.

Bruner shares in the book the thought that:

> The student selects information, constructs hypotheses, and makes decisions, with the aim of integrating new experiences into his existing mental constructs. It is cognitive structures that provide meaning and organization to experiences and allow learners to transcend the boundaries of information given. For him learner independence, fostered through encouraging students to discover new principles of their own accord, lies at the heart of effective education. Curriculum should be organized in a spiral manner so that students can build upon what they have already learned.

As a constructivist, he believes that prior knowledge impacts the learning process. In trying to solve novel problems, perceptual or conceptual similarities between existing knowledge and new problem can remind people of what they already know. Driver (1989) declares that this is often one's first approach towards solving novel problems. He adds, "Asking students what they already know about a topic and what puzzles them affords an opportunity to assess children's prior knowledge and the processes by which they will make sense phenomena."

Bruner developed the theory of *scaffolding*, an important concept for social constructivists, which is a process of guiding the learner from what is presently known to what is to be known. This is a developmental idea that changed not only the model of learning by the student but eventually the role of the teacher in the learning process. He explained this in his work saying:

> Scaffolding allows students to perform tasks that would normally be slightly beyond their ability without the assistance and guidance

> from the teacher. Appropriate teacher support can allow students to function at the cutting edge of their individual development (see *Going Beyond the Information Given, 1973*).

The principles that permeate Bruner's theory are the following: (1) instruction must be commensurate with the experiences that make the student willing and able to learn (readiness); (2) instruction must be structured so that it can be easily understood by the student (spiral organization); (3) instruction should be designed to facilitate extrapolation (going beyond the information given) (see *Going Beyond the Information Given*, 1973).

- **Lev Vygotsky**

The Russian psychologist Lev Vygotsky's relevance to constructivism was derived from his theories about language, thought, and their mediation by society. Vygotsky holds the position that:

> The child gradually internalizes external and social activities, including communication, with more competent others. Although social speech is internalized in adulthood (it becomes thinking), Vygotsky contend that it still preserves its intrinsic collaborative character (see *Collected Works of L.S. Vygotsky Vol. 1*).

It can be seen that a central concept in Vygotsky's theoretical system is the role of social collectivity in individual learning and development. The social or realist constructivist tradition is often said to derive from the works of Vygotsky. He is held as the proponent of the central role of the social environment in learning. Learners are believed to be enculturated into their learning community and appropriate knowledge based on their existent understanding, through their interaction with the immediate learning environment (Liu and Matthews, 2005).

Philips (2000) explains the core of social constructivism derived from the works of Vygotsky, thus:

> Social constructivism is a theory that bodies of knowledge or disciplines that have been built up are human constructs, and that the form that the knowledge has taken in these fields have been determined by such things as politics, ideologies, values, the exertion of power and the preservation of status, religious beliefs and economic self-interest. This approach centers on the ways in which power, the economy, and political and social factors affect the ways in which groups of people form understandings and formal

> knowledge about their world. These bodies of knowledge are not considered to be objective representations of the external world.

However, the primacy of the social constructivism in consciousness development should not be read as one-sided since societies have effects on the mental functioning of individuals as passive recipients of external forces. In fact, that the individual personality is shaped by the social environment, points to the fact that the individual draws from society the resource for growth. The society empowers the individual but it can also restrain him. So, the paradox here is, if society, as the birthplace for individual development, can constrain and distort human personality, it can also expand and free it. The change and growth of the society and individuals are closely connected (Liu and Matthew, 2005).

Vygotsky's social constructivism goes further to the social aspect of learning. In his research, he studied the difference between the child's reasoning when working independently versus reasoning when working with a more competent person. He devised the notion *zone of proximal development* (ZPD) to reflect on the potential of the difference. Vygotsky's findings suggested that the learning environments should involve guided interactions that permit children to reflect on inconsistencies and to change their conceptions through communication. Vygotsky's work has been extended in the *situated approach* to learning (see *Collected Works of L.S. Vygotsky*, vol 1. *Problems of General Psychology*). Vygotsky's concept of ZPD enables one to realize that human learning, mental development, and knowledge are all embedded in a particular social and cultural context in which people exist and grow (Kincheloe, 1999).

His concept on *zone of proximal development* (ZPD) has become the basis of modern constructivist practitioner in education for the emphasis on the importance of collaborative and cooperative learning in the classroom or learning stations. Although, Vygotsky's assumption that mental functioning occurs initially on the social plane and only afterward within the child, on the psychological plane (Werstch and Tulviste, 1992). There were two main principles that were highlighted by Slavin (2000) in relation to Vygotsky's:

> Four key principles derived from Vygotsky's ideas have played an important role in modern constructivist thought. Two of them are very important for cooperative learning. First is his emphasis on the social nature of learning. Children he proposed, learn through joint interactions with adults and more capable peers. On cooperative projects children are exposed to their peers' thinking process; this method not only makes the learning outcome available to all students, but also makes other students' thinking process available

> to all. The second key concept is the idea that children learn best the concepts that are in their zone of proximal development. When children are working together, each child is likely to have a peer performing on a given task at slightly higher cognitive level, exactly within the child's zone of proximal development.

Moreover, Heylighen (1993) explains that social constructivism "sees consensus between different subjects as the ultimate criterion to judge knowledge. Truth or reality will be accorded only to those constructions on which most people of a social group agree."

The next part of the paper explores the constructivist philosophy of education and its application to the non-traditional system of education of Angelicum College.

II. Constructivism and Objectivism

First and foremost, constructivism is a theory of learning, not a theory of teaching (Fosnot, 1996; Richardson, 2003). Constructivism in education is understood in contrast to the traditional practice of teaching in an ordinary school called objectivist or behaviorist practice. The philosophy of constructivism evolved from dissatisfaction with traditional Western theories of knowledge (Yilmaz, 2008). Brown and Campione (1994) present constructivist approach as the proposed alternative to the objectivist/behaviorist approach in teaching by citing the reason that:

> A constructivist approach to learning and instruction has been proposed as an alternative to the objectivist model, which is implicit in all behaviorists and some cognitive approach to education. Objectivism sees knowledge as a passive reflection of the external, objective reality. This implies process of "instruction" ensuring that the learner gets correct information.

In such contrast, the traditional school embracing the usual objectivist/behaviorist model treats students as merely passive receptacles of information from the teacher and the textbook. Practice emanates from espoused theory. For a long time, traditional school has embraced the objectivist approach to learning. In his own words, Murphy (1997) describes the situation succinctly:

> How we perceive knowledge and process of coming to know provides the basis for educational practice. If we believe that learners passively receive information then priority in instruction will be on knowledge transmission. If, on the other hand, we believe that learners actively

> construct knowledge in their attempts to make sense of their world, then learning will likely emphasize the development of meaning and understanding. Constructivist generally claim that knowledge is not discovered and that the ideas teachers teach do not correspond to an objective reality.

Constructivism then is a philosophy of learning founded on the premise that, by reflecting on our experiences, we construct our own understanding of the world we live in. Each of us generates our own "rules" and "mental models"- other theorists of knowledge such as Piaget and Bruner would call it "mental schemata"- which we use to make sense of our experiences. Learning, therefore, is simply the process of adjusting our mental models to accommodate new experiences (Brooks and Brooks, 1993). One's perspective of learners/students should also change. Taking into consideration that learning requires students to be active, not passive and to construct their own interpretations of the subject matter. Learning is about understanding and applying concepts, constructing meaning and thinking about ideas; learning is not about accumulating random information, memorizing it in some exam (Gordon, 2009).

Taking it from the point of view of von Glasersfeld's (1995) radical constructivism, he opines that:

> Constructivism proposes that learning is neither a stimulus response phenomenon nor a passive process of receiving knowledge; instead, as an adaptive activity requiring building conceptual structures and self-regulation through reflection and abstraction, learning is active process of knowledge construction influenced by how one interacts with and interprets new ideas and events.

Constructivism has a long and distinguished history, although many different perspectives co-exist within it, portraying learners as independent constructors of their own knowledge, with varying capacity or confidence to rely on their own constructions. However, all views share one central premise: a learner is believed to construct, through reflection, a personal understanding of relevant structures of meaning derived from his or her action in the world (Fenwick, 2001).

Constructed Knowledge and Objective Reality

In contrast to the objectivist notion of objective truth and meaning inherent in objects, independent of any consciousness, constructivism postulates that knowledge cannot exist outside our minds; truth is not absolute; and knowledge is not discovered but constructed by individuals based on experiences (Fosnot, 1996;

Yilmaz, 2008). We have to recognize that knowledge is not "out there," independent of the knower, but knowledge is what we construct for ourselves as we learn (Hein, 1991).

Furthermore, Hein (1991) would point out that:

> We have to concede that learning is not tantamount to understanding the "true" nature of things, nor is it (as Plato suggested) akin to remembering perfect ideas, but rather a personal and social construction of meaning out of the bewildering array of sensations which we have no order or structure besides explanations … which we fabricate for them.

On the other hand, for Murphy (1997), the constructivist view argues that knowledge and reality do not have an objective or absolute value or, at the least, that we have no way of knowing this reality. Glasersfeld (1995) indicates in relation to the concept of reality: "It is made up of the network of things and relationships that we rely on to our living and on which, we believe, others rely on too." The knower interprets and constructs a reality based on his experiences and interactions with his environment. Rather than thinking of truth in terms of a match to reality, von Glasersfeld focuses instead on the notion of viability: "To the constructivist, concepts, models, theories and so on are viable if they prove adequate in the contexts in which they were made."

According to Molebash (2002) and Terhart (2003), this thought is re-emphasized in the *radical constructivism* introduced by Glasersfeld (1995), which assumes that external reality cannot be known and that the knowing subject constructs all knowledge, ranging from everyday observations to scientific knowledge; knowing thus inevitably reflects the perspective of the observer.

Moreover, radical constructivism uses three technical terms in articulating the construction of knowledge:

> *Endogenous* – individual's knowledge construction based on previous knowledge and experiences. *Exogenous* – the role of environment or social context in knowledge construction; and *dialectical* – the relationship of various types of dynamic interactions between the individual and the environment (Gergen, 1995; Moshman 1992).

Brooks and Brooks (1993) enumerate the five pillars of a constructivist classroom through the following: (1) posing problems of emerging relevance to learners; (2) structuring learning around primary concepts; (3) seeking and valuing students' points of view; (4) adapting curricula to address students' suppositions;

and (5) assessing student learning in the context of teaching.

The table below shows the perspective of Murphy (2007) on the contrast between constructivist and objectivist view on knowledge and learning.

Table 1.
***Contrast between Objectivist and Constructivist views on Knowledge and Learning* (Murphy, 1997)**

Objectivist/Behaviourist View	Constructivist View
Knowledge exists outside of individuals and can be transferred from teachers to students.	Knowledge has personal meaning. It is created by individual students.
Students learn what they hear and what they read. If a teacher explains abstract concepts well, students will learn those concepts.	Learners construct their own knowledge by looking for meaning and order; they interpret what they hear, read, and see based on their previous learning and habits. Students who do not have appropriate backgrounds will be unable to accurately "hear" or "see" what is before them.
Learning is successful when students can repeat what was taught.	Learning is successful when students can demonstrate conceptual understanding.

Learning, Construction of Meaning, and Assessment

In the constructivist approach to education, learning is always associated with meaning. There can be no genuine learning without the discovery or unveiling of meaning. Students are motivated to learn if the tasks set before them are meaningful activities worth their time and effort. Brooks and Brooks (1993) would mention with conviction that, "Learning is a search for meaning. Therefore, learning must start with the issues around, from which students actively try to construct meaning."

Furthermore, the search for meaning in learning makes its assessment an integral part of the whole learning process:

> The purpose of learning is for an individual to construct his or her own meaning not just memorize the "right" answers and

> regurgitate someone else's meaning. Since education is inherently interdisciplinary, the only valuable way to measure learning is to make the assessment part of the learning process, ensuring it provides students with information on the quality of their learning (Brooks and Brooks, 1993).

Therefore, the constructivist practitioners' effort to educate must search for the ultimate strategies in class where learning becomes a meaningful activity ranging from motivation factors up to assessment of learning. The constructivist approach must be combined with hands-on, individualized instruction, the community of scholars, current research techniques and the professional learning environment to create a unique and meaningful classroom experience (Brooks and Brooks, 1993).

Constructivism and Objectivism Contrasted

Aiming to present a contrast between objectivism and constructivism, the author was able to draw the following:

- ***On Instruction***

Objectivism focuses on teaching since much of the ideas come from the teacher or designated textbooks as main source of knowledge and information. Constructivism focuses on learning. It is more important for constructivists to understand how one learns than how the teacher conducts teaching. Students' mode of learning is the basis for any adjustment the teacher has to perform to suit the needs of the students' processes of learning.

- ***Cognitive processes***

Objectivism focuses on the transmission of information; the efficiency of recall through rote memorization. The more accumulated random information the student has, the better he/she is classified as good student. Constructivism does not undermine the need to have accumulated information, as long as they can be integrated into student's processes of constructing/reconstructing ideas or concepts for the emergence of meaning. Constructivism promotes the mental model construction and reconstruction as a continuous schematizing activity of the students.

- ***Learners' behavior in learning***

Objectivism tolerates the passive process of receiving knowledge and information by the students usually provided by the teacher or something read

from the assigned books. On the other hand, constructivism involves the dynamic and adaptive activity requiring building conceptual structures and self-regulation through reflection and abstraction by the students.

- ***On Sources of Learning***

Objectivism sees learning as based from accumulated random information from books, instructors, without much relation to life application and contexts. Constructivism views learning as information and theories acquired based on life experiences and existing knowledge, and applied in real life situation.

- ***On the Instructor***

In objectivism, the authority and adult guide to learning is called a teacher, who focuses on teaching. In constructivism, he/she is called a facilitator who focuses on the role of facilitating the process of learning of students by their construction of knowledge and meaning.

- ***On View on knowledge and reality***

Objectivism sees knowledge as something discovered because it exists outside our mind. The knower sees reality as a reflection of the outside world. Learning is the understanding of the "true" nature of things, a reflection of external reality. On the other hand, constructivism sees knowledge as something that does not exist outside our minds but constructed by individuals based on experiences and existing knowledge. Learning is the personal and social construction of knowledge and meaning.

There may be some schools who would identify their system of education as either traditional or objectivist or purely constructivist. Still there are some who would combine the two according to what aspect of objectivism or constructivism is beneficial to their system. It still depends on the school to weigh according to their perspective which is more advantageous or disadvantageous to their system and practice, which one can lead them to a meaningful practice of learning in their schools.

III. The Constructivist Philosophy of Education and the Non-Traditional System of Education of Angelicum College

The Twelve-Point basic features and tenets of the school's non-graded system are found in the *Angelicum College Learner's Handbook*, 2007 Edition. The following discussions present how constructivism works as basis of Angelicum College's non-traditional system of education.

- **Non-Graded and No Marking System**

  Grade labels are not used (e.g. grade one, two; first year, second year, etc.) to identify boundaries within which it is presumed that typical children of a given age group can and should function academically. The Angelicum system sees a particular subject area level as a continuous whole with a complete set of skills to be learned by the learners without the usual time frame.

  The competitive or comparative evaluation system, through which the products of each child's academic efforts are marked or rated with symbols or words that represent point along a scale of acceptability, is not used. Instead, results of mastery tests are given descriptively, a check (✓) means that the learner has gained ample working knowledge, skills, and values relative to the lesson. (AC *Learner's Handbook, 2007, p. 10)*

The classic book through the partnership of John Goodlad and Robert Anderson entitled *The Nongraded Elementary School* – originally published in 1959, and had been revised and reprinted twice, 1963, 1987 - laid the modern foundation of non-graded education. This seminal scholarly work defined non-graded primary education and arguing for its superiority over graded education (Gaustad, 1992). More than ever, Goodlad and Anderson are convinced that for learning in school to be transformed for the better, it has to take the route of non-graded practice. Carrying that belief for fifty years, Anderson (2000), through one of his recent articles mentioned:

> I see, for example, that there is an amazing theoretical consensus to the effect that the rigid graded structure of schools – with its attendant dependent on tests and textbooks and its reliance on extrinsic motivational devices – must be drastically overhauled.

The contemporary proponents of the non-graded education supporting the original work of Goodlad and Anderson were Barbara Nelson Pavan and Joan Gaustad. They have contributed quite a number of impressive studies and researches on the approach and further development of non-graded education.

Pavan (1991) defines non-graded school as a school that does not use grade-level designations for students or classes. Progress is reported in terms of tasks completed and the manner of learning, not by grades or rating systems. A team of teachers generally works with a team of students who are regrouped frequently according to the task or activities and students' needs or interests.

Looking at it from the constructivist practice, Brooks and Brooks (1993) would add:

> Constructivism call for the elimination of grades and standardized testing. Instead, assessment becomes part of the learning process so that students play a larger role in judging their own progress.

For Pavan (1991), students are active participants in their learning and in the collection of documentation to be used for assessment and evaluation. The continuous progress of pupils is reflected in their growth of knowledge, skills and understanding, and not by a movement through predetermined sequence of curriculum levels. Thus, the novelty of the practice focuses on neither the elimination of grades or marking system nor on predetermined curriculum sequence by practicing constructivist approach to education, which is expressed also in these words:

> The outcomes of such education will inevitably be unique since learners construct their own meanings and solve their own problems. Such educational outcomes for many reasons will not be adequately measured by standardized/criterion-referenced testing or grades (Herman, 1995).

Reflecting on the practices of non-graded education, according to Gaustad (1992), children move from easier to more difficult materials at their own varying rates of speed, making continuous progress rather than being promoted once a year. Curriculum and teaching practices are appropriate, and an integrated curriculum seeks to foster children's physical, social, and emotional growth along with their intellectual growth.

- **Self-Paced Learning**

> Learners are enabled through flexible arrangements to progress at their own best pace and in appropriately varied ways. Instruction, learning opportunities, and movement within the curriculum are individualized to correspond with individual needs, interests, and abilities. (AC *Learner's Handbook, 2007, p. 9*)

The cognitive paradigm of constructivism has been instrumental in shifting the locus of responsibility for learning from the teacher to the learner who is no longer seen as passive or powerless (Long, 2000). Constructivist approach to education shows sensitivity to the learner's capacity and ability for learning as well as the learner's learning situation which by nature cannot be exactly the same with other

fellow learners. This is a serious task for educators, especially when one is mindful of the big assumption of the traditional objectivist/behaviorist approach to education. Gaustad (1992) elaborates that:

> Graded education assumes that students who are the same age are at basically the same level of cognitive development, can be taught in the same way, and will progress at the same rate. Intellectual development is assumed to be the goal, and the division of curriculum into discrete skills and subjects to be the most effective organization. Research has discredited all these assumptions.

Students actually vary in their rates of intellectual development just as they do in physical development. They often progress at different rates in different areas of achievement and may alternately spurt ahead and hit plateaus rather than moving at a steady pace (Gaustad, 1992; Pavan, 1991). Applying this to non-graded schooling which espouses the constructivist approach to education, students are allowed to progress from one skill level or concept to the next whenever they are ready. Children do not pass or fail individual grades, but rather they progress through the grades at their own individual rate. Thus, students are given the flexibility to move at pace that fosters optimal and continuous learning instead of being promoted once a year. The implication for teachers and educators is that they can now introduce creative teaching practices that are in line with the pupil's realities (Gaustad, 1992; Goodlad and Anderson, 1987).

This non-uniformity and non-parallel learning process of each student compared with one another in a classroom, known as self-paced approach, is described by Fosnot (1996) as:

> A self-regulatory process of struggling with the conflict between existing personal models of the world and discrepant new insights, constructing new representations and models of reality as human meaning-making venture with culturally developed tools and symbols, and further negotiating such meaning through cooperative social activity, discourse, and debate.

Educators therefore, should set a flexible timetable for the academic progress of each unique child. The assessment of students is holistic and individualized. Evaluation is continuous, comprehensive, and diagnostic (Gaustad, 1992).

- **Individualized Learning**

> The system is non graded in such a way that learners can, individually, move through the content that is the curriculum at his own pace commensurate with his/her own abilities, interests, and needs. Individualized learning can occur when the curriculum, the materials and activities are organized for self-pacing through self-learning materials/modules. (AC *Learner's Handbook, 2007, p. 9*)

It was mentioned earlier that constructivism emphasizes learning not teaching; encourages learner autonomy and personal involvement in learning; looks to learners as incumbent of significant roles and as agents exercising will and purpose; fosters learners' natural curiosity; and also takes account of learners' affect, in terms of their beliefs, attitudes and motivation (Hein, 1991). By providing opportunities for independent thinking, constructivism allows students to take responsibility for their own learning, by framing questions and then analyzing them. Reaching beyond factual information, learners are induced to establish connections between ideas and thus to predict, justify, and defend their ideas (Brooks and Brooks, 1993).

Constructivist approach's perception of each student as individual learner can be seen as:

> A constructivist orientation of learning is unique because at its heart lies the individual learner *in toto*, rather than dimly perceived "apparitions" of her or his essence. Constructivism is a modern version of human anatomy, in the sense that it is based on, and provides insights into, brain mechanism, mental structures, and willingness to learn (Thanasoulas, 2000).

Constructivist teaching affords learners meaningful, concrete experiences in which they can look for patterns, construct their own questions, and structure their own models, concepts, and strategies (Fosnot, 1996). Thus, individualized learning set by the constructivist approach would strongly suggest learning models and strategies that are experiential, self-directed, discovery-based, inquiry-based, problem-based, and reflective practice (Gillani, 2003; Slavin, 2000). Generally, these models reflect constructivist pedagogy as the creation of classroom environments, activities, and methods. These are grounded in a constructivist theory of learning, with goals that focus on individual student's development of deep understandings of the subject matter and the advancement of interest and habits of mind that aid in future learning (Richardson, 2003).

- **The Teacher as Facilitator of Learning**

> The teacher's main focus is on the student's learning rather than teacher's teaching. The teacher aids the children's development and diagnoses problem areas. He/she suggests alternative plans of actions, provides resource materials, and gives encouragement, support or prodding as the teacher assumes an unparalleled importance in learning, considering the purpose of education which is the total development of the person (immediate) and his eternal salvation (ultimate). (AC *Learner's Handbook, 2007, p. 11*)

Employing the constructivist approach to learning does not only mean discarding the traditional objectivist approach to learning and all its implications but it also means changing one's perception that the teacher is the most authoritative figure inside the classroom. The student is viewed as an individual who is active in constructing new knowledge and understanding, while the teacher is seen as a facilitator rather than a "dictator" of learning (Long, 2000). From teacher to facilitator is not only a *nomenclature*-shift. The role or task goes along with it. In von Glasersfeld (1995) constructivist conception of learning, the teachers play the role of a "midwife in the birth of understanding" as opposed to being "mechanics of knowledge transfer."

Brooks and Brooks (1993) extrapolate on that further by saying that:

> The teacher's role in a constructivist classroom is not so much to lecture but to act as an expert learner who can guide students into adopting cognitive strategies such as self-testing, articulating understanding, asking probing questions, and reflection.

The role of the teacher is not to dispense knowledge but to provide students with opportunities and incentives to build it up (von Glasersfeld, 1995). Teachers are "guides" and learners as "sense-makers" (Mayer, 1996). They are coordinators, facilitators, resource advisors, tutors or coaches (Gergen, 1995).

These roles can be summarized into two important functions that say:

> The role of the authority figure has two important components. The first is to introduce new ideas or cultural tools where necessary and to provide the support and guidance for students to make sense of these for themselves. The other is to listen and diagnose that ways in which the instructional activities are being interpreted to inform further action. Teaching from this perspective is also a learning process for the teachers (Driver, Aasoko, Leach, Mortimer, Scott, 1994).

One can see that, the activities are student-centered and students are encouraged to ask their own questions, carry out their own experiments, make their own analogies, and come to their own conclusion (Brooks and Brooks, 1993). However, the active involvement of students in the facilitation of learning is not meant to imply that a teacher is a passive participant in the learning process. The teacher has a responsibility to engage in the "role of student" through active listening to the students' views, and learn from them as well as guiding the educational experience (Herman, 1995).

It takes much effort for the teacher to do all these constructivist functions as facilitator of learning. This perhaps is one of the reasons why the non-graded education which espouses the principles of the constructivist approach has been observed to be ineffective in most cases. The learning curve of the teacher to become a facilitator of learning is quite steep and cumbersome. What makes the teachers' role as facilitator of learning a monumental task is a fact that says:

> Becoming a constructivist teacher may prove a difficult transformation, however, since most instructors have been prepared for teaching in the traditional, objectivist manner. It requires a paradigm shift as well as willing abandonment of familiar perspectives and practices and the adoption of new ones (Brooks and Brooks, 1993).

A paradigm shift in practice and perception on learning plus a serious preparation of teachers to become facilitators of learning, undoubtedly contribute to the success of transformative learning in the classroom. This could only happen with the presence of a competent constructivist teacher who facilitates the learning events in the classroom (Gaustad, 1992; Pavan, 1991).

- **Home-School-Community Collaboration**
  (*as basis for experiential/contextual learning*)

  This focuses on the relationship of the learner with the active role the school, parents, and society in the learning process. Learning starts at home, complemented in school, verified in society and perfected in life. Since all are concerned with the same person, collaboration is a must to give consistent, unified, and relevant information (AC *Learner's Handbook, 2007, p. 13*).

The home, the school, and the community are the *loci* for learning. Their interrelationships provide a wide array of experiences for the student. They provide the context and environment for learning. As von Glasersfeld (1995) mentions:

> Knowledge, its nature and how we come to know, are essential considerations for constructivist. It is a theory of knowledge with roots in philosophy, psychology and cybernetics. In the constructivist perspective, knowledge is constructed by the individual through his interactions with his environment.

Learning is contextual. We do not learn isolated facts and theories in some abstract ethereal land of the mind separate from the rest of our lives. We learn in relationship with what else we know, what we believe in, our prejudices, and our fears. We cannot divorce learning from our lives (Hein, 1991; Glasersfeld). The school and the learning it provides should be aware of the close link between the home, the school, and the community, that provide first-hand experiences. In the constructivist theory, context is accorded significance, as it renders situations and events meaningful and relevant. It provides the learners with opportunity to construct new knowledge from authentic experience (Hein).

As learners, each one brings past experiences and beliefs, as well as their cultural histories and world views, into the process of learning (Kamii, Manning and Manning, 1991; Yilmaz, 2008). With basis from the outside world, schemes and models to understand the world where they live are in their mind. These serve as bases of the on going learning processes as new knowledge and experience are successively being encountered. Thus, in order to teach well, we must understand the mental models that students use to perceive the world and the assumptions they make to support those models (Brooks and Brooks, 1993). In other words, it could mean that:

> Learning is the result of individual mental construction, whereby the learner learns by dint of matching new against given information and establishing meaningful connections, rather than by internalizing mere factoids to regurgitated later on (Thanasoulas, 2000).

As an example, a learner's understanding of an idea or phenomenon – interpretations that fit their experiences and expectations – may not exactly find a matching scientific explanations. It could mean that, a student can distinguish science taught in the classroom from its real world explanations. Scientific thinking shows that adults hold non-conventional or non-normative scientific explanations even if they have learned science in school. The foundational structures of their real life experiences and the context of their learning supersede the formal scientific knowledge learnt in school. Such a scenario leads one to what Driver (1989) concludes that:

> Information not connected with a learner's prior experiences will be quickly forgotten. In short, the learner must actively construct new information into his or her existing mental framework for meaningful learning to occur.

This is the theory behind constructivism. By creating a personal interpretation of external ideas and experiences, constructivism allows students the ability to understand how ideas can relate with each other and with the pre-existing knowledge. It is a process that can only transpire through the intricate relationship of the home, school and community where the context and environment for learning is given importance (Drapikowski, cited in Thanasoulas, 2000).

- **Open Classroom and Collaborative/Cooperative Learning**

> The open classroom system of education focuses on the place where the learner is, as he learns and its impact on the learning process. this system believes that the learner can learn wherever he/she is. A particular place however, has a decisive influence on a particular learner. The classroom is a very important place for learning. It is in the classroom that the teacher sets the mood for learning. But learning is not confined to it. Learning could also happen in the next room, in the playground, in the library, under the trees, anywhere. The whole school then becomes a learning center. This center extends beyond the limits of the school compound. The whole world, where the learner moves, eventually becomes a learning center.
>
> Collaborative/cooperative learning is a type of learning based on the notion that learners can learn from each other by coordinating/networking efforts in a format that promotes the exchange of ideas and dialogue. (AC *Learner's Handbook, 2007, p. 12*)

Constructivist learning highly values open classroom and collaborative learning. The classroom as a learning community aims to encourage students to learn together, to appreciate and capitalize on distributed expertise and to articulate the kinds of cognitive processes needed for learning (Bielaczyc and Collins, 1999). This gives value in the community of scholars and not just a scholar of one. Students should learn from one another and not just rely on the teacher for all information. This brings a multitude of experiences to the classroom exposing students to a variety of opinions, options, philosophies, and methodologies (Brooks and Brooks, 1993).

The community of learners should be the venue for dialogue and exchange of ideas among learners. Dialogue within a community engenders further thinking. The

classroom should be a community of discourse engaged in activity, reflection, and conversation. Learners rather than teachers are responsible for defending, proving, justifying, and communicating their ideas to the classroom community. Ideas are accepted as truth only as they make some sense to the community and thus rise to the level of "taken-as-shared" (Fosnot, 1996; Gordon 2009).

This is close to the idea of Dewey as echoed by Bielaczyc and Collins (1999) who say:

> Reflections arise because of the appearance of incompatible factors within an empirical situation. Then opposed responses are provoked which cannot be taken simultaneously in overt action. To say this in another way, cognitive conflict or puzzlement is the stimulus for learning and it determines the organization and nature of what is being learned. Negotiations can also occur between individuals in a classroom. This process involves discussion and listening, making sense of the points of views of others, and comparing personal meanings to the theories of peers.

Gordon (2009) quotes Paulo Freire ([1970] 1994) who says that, "Knowledge is attained when people come together to exchange ideas, articulate their problems from their own perspectives, and construct meanings that make sense to them." Thus, an awareness of the social construction of knowledge suggests a pedagogical emphasis on discussion, collaboration, negotiation and shared meanings (Driver, Aasoko, Leach, Mortimer, Scott, 1994).

In the ideal situation, the teacher can learn from students while at the same time students can learn from the teacher and other students. Such a learning environment epitomizes certain aspects of the cooperative learning strategies which are currently popular and promotes mutual respect and healthy relationships in the classroom (Herman, 1995). In such case, the bigger the classroom becomes by extending its four walls to many learners and the needed adjustment on the curriculum, the more possibility of confluence of ideas and point of views for collaborative learning take place. This is what Lampert (1996) would describe as, "A constructively oriented curriculum presents an emerging agenda based on what children know, what they are puzzled by, and the teacher's learning goals. Thus, an important part of constructivist-oriented curriculum should be the negotiation of meaning."

This is an exercise where a place of learning becomes a symbol to what Fosnot (1996) would define as:

> The classroom becomes a micro-society in which learners jointly engage in activity, discourse, and reflection. Teachers facilitate

> and guide rather than dictate autocratically. Autonomy, mutual reciprocity of social relations, and empowerment characterize a constructively conducted classroom.

The reality of collaborative learning invites the school to open its doors for students to get more involved in real and more authentic learning that provide meaningful ideas and understandings that represent their world.

- **Process Oriented Learning**

> The process is more important than the product. The skills of learning to think and to learn, especially inquiry, evaluation, synthesis and application are stressed. Learning, which is the "work" of the child, is intended to be not only challenging but also pleasurable. (AC *Learner's Handbook, 2007, p. 11*)

In the constructivist classroom, learning emphasizes the process – how one arrives at a particular answer is what matters – and not the product. The teacher also recognizes the pivotal importance of discourse (Yilmaz, 2008). Herman (1995) would say, "It is not that end products are unimportant, but rather that mastery of the processes of learning and conceptualizing will lead to greater transfer of learning in other situations."

Learning is an active process that requires change in the learner. This is achieved through the activities the learner engages in, including the consequences of those activities, and through reflection. People only deeply understand what they have constructed (Murphy, 1997; Herman, 1995). Learning is not the result of development; learning is development. It requires invention and self-organization on the learner's part. Teachers should thus allow learners to raise their own questions, generate their own hypotheses and models as possibilities, and test them for viability (Fosnot, 1996). To explain it further, Murphy (1997) expresses it this way:

> In this paradigm, learning emphasizes the process and not the product. How one arrives at a particular answer, and not the retrieval of an "objectively true solution" is what is important. Learning is a process of constructing meaningful representations, of making sense of one's experiential world. In this process, students' errors are seen in a positive light and as a means of gaining insight into how they are organizing their experiential world.

How one learns and negotiates the process of arriving at meaningful conclusions which would eventually become integrated to one's existing mental

construct is given emphasis in a classroom that focuses on a process-oriented approach to learning. Teachers as facilitators of learning, should therefore, be trained to be able to utilize a variety of approaches to effectively and efficiently process the multi-faceted students' learning.

- **Positive Motivation**

> [Facilitators and school staff genuinely seek the welfare of the learners. They listen with empathy, to let the learners get to the problem and the solution at their own pace and time. Fear is counterproductive in school as it is in the workplace. Fear is destructive of the school culture and everything good that is intended to take place within it. (AC *Learner's Handbook, 2007, p. 12*)]

The school and teachers are agents of learning where learners can find support, be appreciated, encouraged, and find positive affirmation on their endeavor. Interaction in schools between students and teachers should be a venue for positive enrichment and fulfillment for learners. For teachers, it is important to become involved with students activities to establish a bridge of relationship between teachers and students. By forming relationships with students outside the classroom through organizations and other student-related-activities, teachers and students become more intimate. More so, the teacher masters the uniqueness, individual traits, and characters of the learners (Brooks and Brooks, 1993).

Teachers must truly believe that all learners posses the ability to learn, can find their own best ways to learn and think, and can learn things that hold meaning for them (Herman, 1995). Situating this thought in a non-graded school that embraces constructivist approach to learning it can be said that:

> Non-gradedness is defined in terms of respect for, and optimism about individual differences. It calls for the provision of a pleasurable, challenging, and rewarding learning atmosphere where there are maximum opportunities for productive interaction between learners and teachers (Gaustad, 1992).

Taking into account students' concepts, misconceptions, modes of thinking, and responses, teachers accordingly shift their teaching methods or content when needed. By asking thoughtful and open-ended questions, constructivist teachers also encourage students to elaborate on their initial responses through such interactive methods as discussion, debate, and dialogue (Brooks and Brooks, 1993). Constructivist teachers challenge students for example, to justify and defend their positions so that they can change their conceptual frameworks like beliefs, assumptions, and conceptions (von Glasersfeld, 1995).

The teachers' kind and understanding treatment on students and the warm atmosphere of the school's social environment reinforce students' positive motivation to learn. Difficult tasks turn easy and learning becomes fun, meaningful and useful.

- **Nurturing the Uniqueness of Each Learner**

> [Individual differences among learners have binding implications in their learning activities. Hence, it is important for a learning facilitator to know each individual learner. He has to know them in terms of ability, interests, degree of responsibility and pace of learning among other things. Knowing all these makes it easier for the learning facilitator (LF) to understand the learner better, attend accordingly to their needs: what learning task to offer each one of them, what motivational techniques to use, etc. This means: 1) More time spent with individual learners for diagnosing their difficulties, giving help, and monitoring their progress; 2) More opportunities to interact with learners on higher intellectual levels concerned; 3) More time required for preparing, gathering, and organizing materials for learners' use. (AC *Learner's Handbook, 2007, p. 20*)]

The appropriateness of individual treatment for each student is very much part of the constructivist practice. Each child is a unique person with distinct pattern and timing of growth, as well as individual personality, learning, style, and family background. Both the curriculum and adults' interaction with children should be responsive to individual differences (Bredenkamp, 1987; Brooks and Brooks, 1993). This is part of human nature that educators should learn to accept – no two learners are exactly the same in more ways than one.

Thus, for instructional purposes, children must be viewed as unique individuals with different patterns of growth and learning abilities. Unfortunately, our present system of education still attempts to lock all students into inflexible learning environments (Gutierrez and Slavin, 1992; Bredenkamp, 1987; von Glasersfeld, 1995). Because meaning, knowledge, conceptual structures are constructed differently by each individual, teachers should be cognizant that students may view curricula, textbooks, didactic props, and micro worlds differently than they do (Yilmaz, 2008).

Adjusting learning approaches because of one's respect for the uniqueness of learners may mean also something to what Richardson (2003) says, that:

> The teacher should recognize and respect students' backgrounds, beliefs, assumptions, and prior knowledge; provide abundant

> opportunities for group dialogue aimed at fostering shared understanding of the topic under study; establish a learning environment that encourages students to examine, change and even challenge their existing beliefs and understanding through meaningful, stimulating, interesting and relevant instructional tasks.

Such view and practice is applied in a non-graded classroom and school, because the non-graded school is designed to implement a theory of continuous pupil progress. Since differences among children are great and since these differences cannot be substantially modified, school structure must facilitate the continuous educational progress of each pupil (Gaustad, 1992; Pavan, 1991). Some pupils, therefore, will require a longer period of time than others for achieving certain learning and attaining certain developmental levels. Part of nurturing and accepting their uniqueness is for teachers not to attempt to transfer conceptual knowledge to students through words; instead, they should be concerned with how learners understand the process of knowing and how they justify their beliefs (Glasersfeld, 1995; Richardson, 2003).

McCombs and Whisler (1997) present five premises of the learner-centered model that focus on the positive motivation of learners by nurturing their uniqueness:

- Learners are distinct and unique. Their distinctiveness and uniqueness must be attended to and taken into account if learners are to engage in and take responsibility for their own learning.

- Learners' unique differences include their emotional states of mind, learning rates, learning styles, stages of development, abilities, talents, feelings of efficacy, and other academic and nonacademic attributes and needs. These must be taken into account if all learners are to be provided with the necessary challenges and opportunities for learning and self development.

- Learning is constructive process that occurs best when what is being learned is relevant and meaningful to the learner and when the learner is actively engaged in creating his or her own knowledge and understanding by connecting what is being learned with prior knowledge and experience.

- Learning occurs best in a positive environment, one that contains positive interpersonal relationships and interactions, that contains comfort and order, and in which the learner feels appreciated, acknowledged, respected, and validated.

- Learning is a fundamentally natural process; learners are naturally curious and basically interested in learning about and mastering their world. Although negative thoughts and feelings sometime interfere with this natural inclination and must be dealt with, the learner does not require "fixing."

- **Learner-Centered Approach**

One of the best educational practices of the constructivist approach to learning at present is the learner-centered model. This is an attempt to improve the perspective in learning, educational strategies, and education in general. Much literature has been written about this approach as response to the call to reform education especially in the United States. One of the leading literature in this field is the co-authored opus of Barbara McCombs and Jo Sue Whisler's, *The Learner-Centered Classroom and School* initially published in 1997. It provides a comprehensive understanding on the learner-centered approach applied in a classroom and school. McCombs and Whisler (1997) define learner-centered approach to learning as:

> …an empirically informed philosophical perspective that begins with a focus on knowing and understanding each learner. That is, this perspective begins with the full comprehension of how the learner understands his or her world and approaches the process of learning inside and outside the classroom.

Constructivism takes an interdisciplinary perspective, inasmuch as it draws upon a diversity of psychological, sociological, philosophical, and critical educational theories. In view of this, constructivism is an over arching theory that does not intend to demolish but to reconstruct past and present teaching and learning theories, its concern lying in shedding light on the learner as an important agent in the learning process, rather than in wresting the power from the teacher (Thanasoulas, 2000). Learner-centered teachers see each student as unique and capable of learning individual. They have a perspective that includes knowing the learner in promoting, understanding basic principles defining learners and learning, and honoring and accepting the learner's point of view (McCombs and Whisler, 1997). The learner-centered model following the constructivist approach to learning can be said, thus:

> The accent is on the learner rather than the teacher. It is the learner who interacts with his or her environment and thus gains an understanding of its features and characteristics. The learner constructs his own conceptualizations and finds his own solutions to the problems, mastering autonomy and independence (Thanasoulas, 2000).

The constructivist learning environment encourages thoughtful reflection on the learning experience which is grounded in meaningful and authentic learning tasks. Collaboration in a student-centered learning environment is encouraged and methods of alternative assessment are utilized to measure learning. It is thus, important to define and help teachers become more aware of those beliefs and assumptions about learners, learning, and teaching. This is to ensure the consistency of an instructional orientation toward the learner's needs capacities, and perspectives and toward learning as a process of personally constructing meaning. These are the beliefs and assumptions that lead to practices that are respectful, empowering, and facilitative of learning (Brooks and Brooks, 1993; McCombs and Whisler, 1997).

- **Learning Centered on Big Ideas**

The role of the teacher in constructivist classrooms is to organize information around big ideas that engage the students' interest, to assist students in developing new insights, and to connect them with their previous learning (Brooks and Brooks, 1993).

Howard Gardner (1999) supports the idea above when he mentions that:

> In constructivist classroom, the curriculum is generally a process of digging deeper and deeper into big ideas, rather than presenting a breath of coverage. And as students pursue questions, they derive new and more complex questions to be investigated. Building useful knowledge structures requires effortful and purposeful activity over and extended period.

As learners struggle to make meanings, they undertake progressive structural shifts in perspectives – in a sense, "big ideas." These learner-constructed, central organizing ideas can be generalized across experiences, and they often require undoing or reorganizing earlier conceptions. This process continues throughout development (Fosnot, 1996). Thus, the teacher who serves as a facilitator of learning should be mindful of the learners' building-up of knowledge and refrain from presenting multitude of concepts and facts that are devoid of coherence and could impede the learners' progressive mental scheming that could lead to confusion and irrelevance (Brooks and Brooks, 1993; Thanasoulas, 2000).

- **Learning Centered on Problem-Solving**

Constructivism calls for the elimination of a standardized curriculum. Instead, it promotes using curricula that are customized to the students' prior knowledge. Also, it emphasizes hands-on problem solving (Brooks and Brooks, 1993; Thanasoulas, 2000).

Dewey (cited in Brown and Campione, 1994) believes that the human thought is practical problem solving, which proceeds by testing rival hypothesis. These problem-solving experiences occur in social context, such as a classroom, where students join together in manipulating materials and observing outcomes. Applying this to the constructivist approach, Brown and Campione (1994) would add that:

> The basic idea of constructivism is that problem solving is at the heart of learning, thinking and development. As people solve problems and discover the consequences of their actions through reflecting on past and immediate experiences – they construct their own understanding.

Learners are given more latitude in becoming effective problem solvers. They are exposed to identifying and evaluating problems, as well as deciphering ways in which to transfer their learning to these problems (Thanasoulas, 2000). If a student is able to perform in a problem solving situation, meaningful learning should then occur because he has constructed an interpretation of how things work using pre-existing structures (Drapikowski, cited in Thanasoulas, 2000).

Previous and existing knowledge and experiences are tools ready for the learner's disposal to solve problems that are not far from his practical and real life situation. This can be true whether the learner finds himself/herself alone manipulating his/her materials for learning or is situated socially with fellow learners in searching and finding solutions to problems related to their learning. Thus, the classroom or learning station should be inundated with learning materials for problem solving drills, and the teachers loaded with problem solving teaching strategies, to sharpen learners' problem solving skills (Brooks and Brooks, 1993).

Conclusion

Can constructivist practice happen in the classroom and finally help us in transforming our notion and practice of learning supposed to be found in our present educational systems? Reflecting on this question, one can be reminded of the words of Kit Chiu (1995) when he said, "A basic premise to educational reforms starts with the view of studying student learning and understanding…Changes in educational reform lead to changes in the way teachers teach and students learn."

For constructivism to happen in the overall process of learning, there are several premises that need to be taken into consideration: 1.) Change of view and belief about learning can lead to change of practice in teaching and learning. 2.) Commitment to change and reform the way learning should and must transpire is not an option but

the only choice. Nothing much succeeds without commitment to what one believes. 3.) Preparation for all stakeholders to carry on the constructivist practice in learning is a must with the emphasis on the teachers as facilitators of learning.

Angelicum College does not boast of being a constructivist learning institution but based from its philosophy and practice, it can assure educators that change of paradigm in learning is possible. It maybe difficult but it is a promising job for all educators. We cannot expect much education authorities for educational reforms but we can count on teachers to be the vital part on the creation and development of learning improvements and reforms.

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