Authentic Education, the Deeper and Multidisciplinary Perspective of Education, from the Viewpoint of Analytical Psychology

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Received: April 8, 2014 Accepted: May 1, 2014 Online Published: May 9, 2014

doi:10.5430/wje.v4n3p19 URL: http://dx.doi.org/10.5430/wje.v4n3p19

Abstract

In this paper, the authentic education system defined with multidisciplinary perspectives (Watagodakumbura, 2013a, 2013b) is viewed from an additional perspective of analytical psychology. Analytical psychology provides insights into human development and is becoming more and more popular among practicing psychologist in the recent past. In addition to human development frameworks already used in defining the mentioned authentic education system, the new viewpoint from analytical psychology gives further insights into the applicability of the concepts and features presented in describing the said system. The main concepts of analytical psychology such as conscious/unconscious, psychological types, the shadow, the self and archetypes are used in elaborating further on the concepts and features of the authentic education system with multidisciplinary perspectives. Consequently, much broader perspectives of the authentic education system discussed are highlighted in this paper.

Keywords: *authentic education; analytical psychology; gifted education; human development; deep learning; higher-order learning; neurodiversity; visual spatial learners*

1. Introduction

1.1 Authentic Education: Essentially as a Multidisciplinary Undertaking

The notion “authentic education” should be viewed from a multi-disciplinary perspective (Watagodakumbura, 2013a, 2013b). Educationists discuss about deep versus surface learning, critical thinking, Blooms taxonomy, learning-styles and so on and so forth. Psychologists discuss about learning disabilities, special and gifted education, existential depression in gifted adults, emotional and other sensitivities, auditory sequential and visual spatial learners, personality or human development and so on and so forth. Neuroscientists study and discuss about brain structures and how they relate to learning. Computer scientists study about artificial neural networks and try to emulate human brain functions using computers. Investors and businesses compete for human skills as if they receive them from robots, finely programmed in a repetitive, sequential, or non-creative manner, though operating at higher speeds, to maximise their profits. These different perspectives of different stakeholders put the onlookers and learners in a very vague situation, if not a highly confused one. The challenge is to integrate and prioritise all these perspectives to understand and define the term education, or more specifically authentic education, in a sensible and meaningful manner. The task truly has a multidimensional perspective as is the case in most real world problems in a very dynamic and ever changing environment. If we disregard a single dimension from the equation, we are likely get a less optimal or distorted perspective of the issue. In the real world, some of these dimensions are neglected while allowing some others to dominate, not necessarily in the order of how significant each of these perspectives is to the outcome, or sustainable social development. To understand what authentic education is, we need to look at it from each of the aforementioned different perspectives in the least.

The main focus of this paper is to understand authentic education, the deeper and multidisciplinary perspective of education described, from the viewpoint of analytical psychology, an area defined many decades ago by Carl Jung. Consequently, let us put forth some basic description as to what analytical psychology is all about in the next section.

1.2 Analytical Psychology: Main Concepts

Analytical psychology is a sub-stream of the main discipline of psychology founded by the Swiss Psychiatrist and psychotherapist Carl Gustav Jung, in the early twentieth century. Consequently, analytical psychology is also known as Jungian psychology. Jung is a student of the famous Austrian neurologist Sigmund Freud, who became known as the founding father of psychoanalysis. In the last 2-3 decades, Jungian psychology is becoming more and more popular among practitioners of psychology, other philosophers and academics due to its versatility in many areas of applications as well. Some basic concepts used in analytical psychology such as conscious/unconscious, psychological types, the shadow, the self and archetypes are introduced below.

1.2.1 Conscious/Unconscious (Hauke, 2006)

Human psyche is divided into conscious and unconscious parts. Consciousness grows out of the unconscious psyche. Ego is the centre of consciousness. Unconscious is divided further into personal unconscious and collective unconscious. Personal unconscious is acquired through lifetime through personal learning and experience. It occurs through repression, forgotten and sense-impressions that never had sufficient intensity to reach consciousness. On the other hand, collective unconscious is the general, universal part derived through aeons of repetitions of human cultural imagery and experience. These contents have never been conscious and owe their existence to a form of heredity. Further, they are identical in all individuals. That is, they are primordial images or records of the psyche of humankind going back to remotest beginnings. The process referred to as individuation integrates the conscious and unconscious psyches helping individuals to reach humanistically to full potential.

1.2.2 Psychological Types (Beebe, 2006)

Four functions of consciousness, namely thinking, feeling sensing and intuition are introduced. Thinking and feeling are identified as rational functions and are situated at the opposite poles of one axis while sensing and intuition are identified as irrational functions that are situated at the opposite poles of the other axis. Sensing is the conscious function that registers reality as real. Thinking is the function that defines what we perceive. Feeling is the function that assigns a value to what we have perceived. Intuition is the function that defines the implications and/ or possibilities of the thing that has been perceived empirically. In addition to having an inclination towards one or more of these functions, an individual will also have a more inclined attitude type, so to speak; the two possible attitude types Jung presented are introversion and extroversion. As long as a function is undifferentiated, it cannot be deployed in the conscious manner of a directed mental process. Individuation is the progressive differentiation of the various psychological functions of consciousness.

1.2.3 The Self (Colman, 2006)

The self is the centre of the psyche as well as the totality- sum total of conscious and unconscious contents- of the psyche. Thus, the self represents the psychic wholeness and is the goal towards which the individuation process strives. The individuation process resolves the state of inner conflict and opposition into a union of opposites which brings about wholeness. The self is the supra-ordinate or supra-personal centre of the personality and Jung regards God-images as the symbolic representation of the self.

1.2.4 The Shadow (Casement, 2006)

The shadow is complementary to consciously held attitudes and can be both personal and collective. The personal shadow may be conceived of as the repository of all the aspects of a person that are unacceptable or distasteful (envy, aggression, greed, laziness, jealously, shame) to them. The individuation process starts off by the individuals becoming conscious of their shadow, which can be painful although there is a gain. That is, to acquire self-knowledge one has to tackle the shadow. It is important to embodying the shadow in consciousness; otherwise, if it is repressed and isolated from consciousness, it remains uncorrected and liable to erupt in a moment of unawareness. Further, the inferior conscious function or the least dominant function is equated with the shadow. When the shadow results in neurosis it becomes a necessity for the individual to find a way for the conscious personality and shadow to live together; instead of neurotic dissociation, one needs to struggle with it. Neurosis, according to Jung, is a state of being at war with oneself; what drives individuals to this state is the suspicion of being two people in opposition to each other – the shadow and the ego. Recognition of the shadow leads to humility and genuine fear of what lies in the depths of humanity.

1.2.5 The Archetypes (Stevens, 2006)

Jung maintained that there existed an additional phylogenetic layer (the collective unconscious) which incorporated the entire psychic potential of humankind. That is, human beings are born with the virtual images or archetypes such

as parents, wife, children, birth and death etc. as psychic aptitudes. These images lack in solid content, and hence are unconscious.

2. Psychological and Neurological Dimensions of Authentic Education from the Viewpoints of Analytical Psychology

2.1 Psychological and Neurological Characterisation of Individuals and Learning

Psychologists categorise different learning styles of individuals into two broad types: auditory sequential learning and visual spatial learning (Silverman, 2002). The students with preference to the former learning style are more inclined to have extrovert personalities while the students with preference to the latter learning style are inclined to possess introvert personalities. Visual spatial learners are also identified to obtain results intuitively whereas auditory sequential learners produce results in a step by step manner. In addition, the former type usually sees the big picture, while the latter is more inclined to pay attention to detail. Furthermore, visual special learners are generally categorised as gifted and creative individuals who usually show a very high level of emotional sensitivity. Visual-spatial and auditory-sequential categorisation is commonly used as an identification of giftedness in individuals. When we refer to the psychological types defined in analytical psychology, we can infer that auditory sequential learners are more inclined to have thinking and sensing functions more elaborately while visual spatial learners are more likely to possess feeling and intuition functions predominantly, as discussed further below. When thinking function is understood as getting to define what one senses and feeling as assigning a value to what is sensed and defined, it is not difficult to realise that feeling, as a rational function, has a deeper involvement than the thinking function. That is, when defining something, it can be based purely on what one senses, whether accurate enough or not. That is, the defining task can be carried out with what you already know or sensed in a step by step manner using an analysis process. On the other hand, to assign an accurate value to what one sensed, he or she may have to see the big picture as well as seeing additional relationships, thus involving a synthesis process. Understanding how these characteristics of auditory sequential learners and visual spatial learners map to the features of psychological types defined in analytical psychology help us to relate the two domains to each other.

Further, the additional relationships mentioned above can be linked to the unconscious, in Jungian terms. In addition, the function of intuition relates more to the unconscious; that is we can infer that a highly intuitive person communicates better with his or her own unconscious. Consequently, visual spatial learners could be more inclined to communicate with the unconscious better, more promptly bringing its contents to consciousness. This explains why visual spatial learners are more creative, in general. A positive implication of categorising individuals as auditory-sequential and visual-spatial learners is that it helps us to have only two broad categories, unlike the 16 different combinations we can have when Jung's psychological types, attitudes and dominant and auxiliary functions are considered.

Well-known Polish psychologist Kazimierz Dabrowski (Dabrowski, 1977) referred to gifted personnel or those with high developmental potential as human beings having most prominently emotional, intellectual and imaginational over-excitabilities, meaning high intensities, and providing somewhat unusual responses to external stimuli; the term high developmental potential indicates that these individual have the potential to become highly ethical, empathic and creative human beings, overcoming their high over-excitabilities. In a similar vein, the famous psychologist Abraham Maslow referred to personnel with high development potential as self-actualising individuals; at the highest level, these individuals become highly creative and self-actualised human beings who become aware of reality as is, facing it boldly with much less inhibitions (Maslow, 1968). In analytical psychology, the human development to higher levels is referred to as the process of individuation. In the process of individuation, the person undergoing it is able make more and more contents in the unconscious conscious, gradually. That is the sphere of consciousness is enhanced. In other words, when individuals self-actualise, they make the contents, especially in collective unconscious or what is common to mankind, more conscious and thereby developing the ability see the reality better. From another point of view, we can infer that gifted individuals with overexcitable characteristics are more inclined to bring the contents in the unconscious to consciousness. Maslow also pointed out that most of the human beings do not reach higher levels of development that are inherent to human nature due to lack of conducive social and educational environments (Maslow, 1993). That is, we can infer that the environments we live in do not encourage us to enhance our consciousness by linking the contents from the unconscious; instead, existing social and education systems encourage us to survive using a limited level of consciousness we typically possess.

Psychologists working with gifted children and adults promote special education programs for gifted individuals as the traditional education environments create a negative impact on those individuals and their development. That is,

we can infer that individuals with preference to auditory sequential learning style are more likely to survive positively in a traditional educational environment. With the term traditional educational environment, we mean what we have been doing for over hundreds of years in education. A person knowledgeable in a particular area speaks regularly for a period of time in front of usually a large gathering of students who are later assessed for their competence, typically with a written examination at the end of the study period. The assessments are usually based on the recall of facts as opposed to an individual's ability to analyse and synthesise, the so called higher-order learning parameters. Auditory sequential learners, who are likely to possess sensing and basic thinking functions more predominantly, are likely to prevail better under above traditional teaching-learning environments; the expectation of those environments is a very basic level of sensing and thinking as opposed to a deeper level of engagement, using and enhancing creativity. In addition, those environments do not encourage learners to reach out their unconscious, by directly addressing their shadow, to bring more contents to the conscious. A key feature of this approach is that all the students are expected to engage in an identical manner to the unit, or course, disregarding any diversity within the student cohort as learners. Especially when the class size is large, it becomes very difficult to pay attention on each individual student. From a teaching-learning perspective, we tend to quite dramatically simplify the environment with the assumption that all the students learn in the same way and they all respond to the assessments in the same manner. We usually do not appreciate that students may have different learning styles based on their psychological as well as neurological characteristics and that there would be differences in meeting the assessment requirements. We have enough evidence that some student categories, such as those with preference to visual special learning styles do not do their best in timed tests and multiple choice question tests. These students are usually better abstract thinkers and the said type of assessment would not test their abilities appropriately. Further, as we highlighted earlier, visual spatial learners are more inclined naturally to communicate with the unconscious, in Jungian terms, thus engaging more actively in creating knowledge or new relationships. Consequently, if they do not get an opportunity to do this in the teaching-learning environment, they are likely to produce lacklustre outputs. As a result, the grades awarded to the students are biased heavily on the methodology followed by the specific teacher who conducted the course, and to some extent on the standards and regulations imparted by the governing academic administrative unit, or organisation. The students may have been tested for the ability to merely recall the facts; they may have been tested for application of knowledge; they may have been tested for ability to analyse; they may have been tested for ability to synthesise. But the grades do not differentiate them, whether the testing was more inclined for higher-order learning or lower-order learning. Research psychologists have provided enough evidence to accept that those who are capable of and motivated in recalling facts are not necessarily good in evaluating or synthesising information. What we end up under these circumstances is that the authenticity of student learning is greatly challenged and misinterpreted.

The author would like to view the categorisation of auditory sequential and visual spatial learners from a different perspective. We see in our vicinity the different types of tasks we perform daily. They can be broadly categorised into tasks of implementation and tasks of integration. The tasks of implementation have to be attended by performing one step at a time, more or less in a routine manner, whereas tasks of integration have to be performed with more contemplative and creative manner, possibly taking more time to see the big picture and also to see things from different perspectives. Personnel who find themselves at ease relatively in attending tasks of implementation can be categorised as implementers while those who find intrinsically at ease relatively in attending tasks of integrations can be called integrators. If we go through the personality traits of auditory sequential and visual spatial learners carefully, it would not be hard to realise that implementers are more likely to fall into the category of auditory sequential learners while integrators are likely to fall into the category of visual special learners. With sensing and basic thinking functions, as defined in analytical psychology, more predominant, auditory sequential learners are more likely respond to implementation type tasks better and promptly. Further, the implementation type tasks may not require one to reach out one's unconscious, in Jungian terms, essentially making an auditory sequential learner more at ease at an implementation type work. At the same time, with feeling and intuitive functions more protruding, visual spatial learners are more inclined to do well in integration type tasks that require deep engagement and more elaborate time. Similarly, integrators can reach out their unconscious more frequently to complete their task of integration. The important fact is that in our environments we have both categories of tasks present and the society needs personnel of more inclined personality traits of integrators as well as implementers. The challenge in the provision of authentic education is to identify these personality traits of individuals accurately and guide them to suitable career paths so they find themselves more at ease intrinsically, or naturally, resulting more integrated and happier human minds, and the society benefiting from more efficient and effective human resources utilisation. If we look around our environment, we see that majority of tasks we engage in daily are of implementation type and comparatively smaller percentage is of the type integration. This fact aligns well with the research findings that, in

general, two thirds of the personnel are of auditory sequential type learners while the other one third is of the visual spatial type learners. It is important to understand that there is no hard-line demarcation between auditory sequential and visual spatial learning styles, or between implementer and integrator work categories, or between extroverted and introverted personality types. It is that, an individual would possess more personality traits of one type than the other. In other words, it is not a strict two state or ON/OFF type categorisation; rather it can be seen as a continuous scale where an individual may lie anywhere on it. We can also infer that there is more likelihood that an integrator type personality gets trapped in an implementation type task, or career, resulting a struggle or unhappy work environment for the individual. This is despite the fact that visual spatial learners or integrator type personalities possessing advanced abstract thinking and spatial capabilities.

2.2 Negative Images Pertaining to Gifted Individuals

We do also have significant research findings that visual spatial learners, or gifted learners, as they are commonly categorised, are more likely to develop negative images of them themselves as well as of the society at large when their requirements and preferences are not met for a prolonged period of time. These situations even extend to cause them psychological problems, sometimes leading to existential depression in some individuals during certain stages of their lives. (Webb, 2008) According to the research findings, it is also possible that due to their heightened sensitivity, they demonstrate frustrated behaviours at times. Kazimierz Dabrowski (Dabrowski, 1972) even refers to individuals of these traits as “psychoneurotic” and identified the underlying process of psychoneuroses as a path to higher level of human development. Dabrowski has highlighted (Dabrowski, 1970) this phenomenon of psychoneuroses as the Theory of Positive Disintegration (TPD) in which he identified individuals with high developmental potential need to disintegrate from lower levels of development before re-integrating at higher levels of development. In analytical psychology, how an individual deals with his or her shadow resembles a psychoneurosis process. The shadow represents one’s inferior function or negative attributes in general. According to Jung, an individual will have to deal directly with one’s negative aspects or functions one is weak at in order for them to develop humanistically or engage in the individuation process. This is a challenging task that may lead the individual to a psychoneurosis state. However, without dealing with the shadow directly or embodying it in consciousness, an individual cannot develop humanistically or engage in the process of individuation. We can now relate why Dabrowski said that the process of psychoneuroses is essential for human development in to higher levels. Looking at this from another point of view, auditory sequential learners will have to develop more of their visual spatial skills while visual spatial learners will have to concentrate on enhancing their auditory sequential skills as the shadow or inferior function of the respective group. However, when visual special learners try to develop more common auditory sequential skills or get in terms of everyday realism as addressing a shadow phenomenon, this can be seen as a major and more prominent maladjustment by society. Some scholars have also raised the issue of misdiagnosing gifted individuals as having disorders or learning disabilities in significant numbers (Webb, 2005; Silverman, 2004); these incidents could occur, most probably, due to misjudgement of gifted individuals’ highly intense and unusual reactions to some social situations. The issue the author is trying to highlight here is that whether we can, as educators and parents, identify and address the issues and requirements of these sensitive and gifted personnel. These personalities are more likely to demonstrate psychological imbalances or deviate from standard behaviour compared to the personnel of other personalities. Ideally, the education system needs to address the needs of different personality types in identifying their strengths and fostering them as means of developing authentic personalities. When these authentic personalities are actualised, any mismatch between who they are really and what is common or seen in the environment is minimised. They also learn to be more resilient of any discrepancy that may occur.

3. Pedagogical Dimensions of Authentic Education from the Viewpoints of Analytical Psychology

3.1 Deep versus Surface Learning

Education researchers have identified and revealed that learning can take place in the form of deep-learning, surface learning or strategic learning (Biggs, 2003; Entwistle, 1998). In general, we expect all students to follow a deep-learning path in which students maximise the effectiveness of learning outcomes. From a traditional perspective, education suggested passing facts from a knowledgeable person to a mass gathering. This was specifically true when information technologies and other related technologies of printing and publishing were not as developed as now and even mere facts were difficult to disseminate. So the general competition was to access facts or information rather than understanding or digesting them thoroughly. Assessment, in return, was also based on testing the ability to recall facts through pure memorisation. These situations, in general, encouraged the learners to follow a surface

learning approach in the teaching-learning process. This trend continued for years, possibly hundreds in number, and we still have some significant trails in a very large number of environments. We as educators, tend to follow the practices we have widely seen as students, despite large scale training provided on the contemporary pedagogical principles and practices. We as academic experts of a disciplinary area tend to believe that if we learned and became experts following certain teaching-learning practices, what is wrong, or defective, with those practices; the same practices can be blindly inflicted on the next generation learners. If you have become an expert and are highly successful in your career, you hardly reflect and see how fortunate you are that prevailing conditions and circumstances suited you to be triumphant; there could be many who were not so fortunate, despite being highly capable in many other ways that were not counted. Haven't we been the opportunists, in a society of survival of the fittest, the law of the jungle? Sometime we are hugely pre-meditated that we even do not realise the point that we could improve our practices considerably to address some pressing issues. In pursuit of authentic education, we need to get some deeply held but quite challenged notions addressed straight in the light of enlightening findings in pedagogy and related disciplines such as psychology. Surface learning only helps learners to possibly achieve and develop some very basic level of knowledge and skill, which are not penetrating enough to build strong authentic personalities as required by the modern society to address some of its pressing needs. Such practices have highly detrimental impact on those who have natural inclination to engage deeply, as demonstrated by gifted and creative personnel with high developmental potential. Historical work pioneered by Leta Hollingworth provides evidence that the issues we raise existed for decades, if not for centuries. Educators face a great challenge in guiding learners in a deep learning path as promoted by education researchers as a prime necessity. The challenge is not only of finding new methodologies to implement a deep learning framework, but also of shedding some long standing practices widely employed in a different era when the circumstances were considerably different. Failure to implement a proper and well thought out deep learning framework may prompt learners to follow a strategic learning path in which they are purely guided by assessment and obtaining merely high grades. If the assessments fail to capture a deep learning focus, it is difficult to guide learners to deep-learning, as they naturally get guided by assessment criteria (Biggs 2003; Ramsden, 2003). It is not uncommon to come across some courses in which learning and assessment do not converge, confusing the learners, especially those who fall into gifted category and look for more purposeful directions, on what to emulate.

From the view point of analytical psychology, deep learning involves using the functions of feeling and intuition essentially, not merely the functions of sensing and basic thinking. When we encourage and make appropriate instructions for our learners to use feeling and intuition functions, the learners are essentially made to communicate with their unconscious, in Jungian terms; in this way, the learners can engage in creating new knowledge, by reaching out to the unconscious and relating its contents to the conscious. In other words, merely focusing on the functions of sensing and basic thinking, we will not get our learners much far; instead will only guide them at a superficial level to a limited level of understanding. Further, by giving more focus to feeling and intuition functions, we give a fairer chance to visual spatial learners in the cohort as well.

3.2 Teacher Centred versus Student Centred Learning

Education researchers also encourage a paradigm shift from a teacher-centred to student-centred or learner-centred practices of teaching-learning (Ramsden, 2003). In a teacher-centred approach, a knowledgeable person possibly addresses a large gathering of students almost in a one-way communication manner. The teacher is at the centre of attention in the teaching-learning process and educational environment. The students become passive listeners. In pedagogy, the term didactic teaching is used to reflect this situation. The students would possible try to memorise and jot-down what the teacher said hurriedly so that this information can later be used for answering assessment question. Getting and providing feedback on student learning, as to what degree or depth the students learned in a two-way communication manner, does not take place in this situation. In contrast, in student-centred learning, the centre of attention is the student in a teaching-learning environment. What is important is how well the students learned in the process and this feedback is of immense value. The communication essentially takes place in a two-way manner. Ideally, the class size is relatively smaller so that bi-directional communication is possible. Students question the material presented whenever necessary and engage more actively in the teaching-learning process. In pedagogy, this scenario is referred to as a dialectic teaching-learning process. As we can see, the dialectic approach has a deeper and critical focus to learning, while the didactic approach is more likely to produce a surface approach to learning. We can also see student-centred learning from another important point of view as well. That is, it is possible that individual students get more attention from the teacher to possibly get individual feedback and individual issues addressed. Also, the teacher gets to know students individually based on the discussions they engage in, thus getting to know their personality traits. This learner-centred approach accommodates for a more

authentic learning experience for each student, and at the same time, it caters for a more authentic evaluation of individual students.

Viewing from an analytical psychology view, using a student centred approach we are able to address the fact that learners can possess different psychological types or different dominant functions. For example, learners can be using sensing and basic thinking functions predominantly or in the other extreme, feeling and intuition functions predominantly. Consequently, our responsibility, as educators, would be to help learners to identify their inferior functions so that they can direct more emphasis on them while at the same time encouraging their dominant functions. In this way, we encourage learners to self-identify themselves better so that they can use their focus more appropriately. As Jung identified, individuals cannot progress in the individuation process unless they deal directly with the shadow or inferior functions. Consequently, a student centred approach should ideally lead individuals to self-identify their strengths and weaknesses. On the other hand, what happens in a teacher centred approach is that all learners will try hard to adjust to the strengths of the teachers sacrificing whatever the strengths learners possess.

3.3 Constructivist Theory of Learning

In pedagogy, one of the learning theories discussed popularly and widely is constructivist theory of learning. According to constructivist theory, learners individually make meaning from what they learn. They align new learning with their existing knowledge and create personally new knowledge altogether. It contrasts from merely memorising facts, or surface learning; it is a process of constructing knowledge by active engagement. Every learner brings unique experience to the teaching-learning arena, and based on that, creates unique, authentic meaning from new learning. Thus, this theory of constructivism has authentic roots to education embedded in it. Since the leaner is engaged in creating new knowledge, he/she is not only deeply involved in the teaching-learning process, but also targets higher-order learning in the form of information synthesis, as highlighted in Bloom's taxonomy. If, we as educators can put constructivist theory into practice in the teaching-learning process, the individual learners are likely to receive a highly authentic, unique, educational experience.

By looking at constructivist theory of learning from an analytical psychology viewpoint, we can see that feeling and intuition functions are essentially involved in the process. As a result, learners get the opportunity to reach out their unconscious with the newly introduced content and link them to existing knowledge or the conscious, in Jungian terms. As a result, the constructivist theory of learning, when practiced, helps learners to engage in an individuation process leading to a higher level of human development. Further, a constructivist theory of learning provides an opportunity for visual spatial learners, who are more inclined to tap the unconscious, to thrive better.

3.4 Bloom's Taxonomy and Higher-Order Learning

Bloom's taxonomy is another commonly used measure to evaluate whether deep learning is focused in an educational environment. According to Bloom's taxonomy, higher-order learning takes place when learners engage in synthesis and evaluation of material. When they engage only in memorisation and comprehension, it is said that lower-order learning takes place. In the middle of these two extremes, we have analysis and application of knowledge. In analysis, we break down a larger component into smaller components to study in detail, as that happens in divide and conquer. In synthesis, an opposite task of analysis is performed, generalising or forming a new idea, putting together a number of existing ones. In evaluation, we tend to see something from a number of different points of view, or a multidimensional perspective, to make an overall judgment. Especially in synthesis and evaluation, we observe learners use their creativity, as the term is usually used. The term creativity is usually used to specify that something new or innovative is formed; it could be a piece of art, a piece of writing, a lyric, or in general an idea, thought, generalisation or perspective being put forth in a physical format. The important point to note here is that in Bloom's taxonomy, creativity is a given the prominence as it should correctly be. Creativity is something we see elaborately in human species; it becomes a good yardstick to measure human ability, or learning. It is important on what end of the spectrum the educators are pushing the learners through. This is of immense significance when applied to assessment. When assessment focuses on testing higher-order learning as that happens in synthesis and evaluation, learners are directed towards engaging deeply and critically in the learning process. Directing assessment, or teaching-learning framework, purely towards the lower end of Bloom's spectrum – memorisation and comprehension – would not guide learners to achieve their best in their learning. Not it just deprives learners of achieving their best, but also makes some highly creative and capable learners less motivated, or demoralised in engagement in the learning process.

Reaching from an analytical psychology viewpoint, we can infer that higher-order learning activities of synthesis and evaluation essentially involve using feeling and intuition functions. As a result, when higher order learning is targeted and encouraged, learners get the opportunity to tap the unconscious, in Jungian terms, so that its contents

can be brought to consciousness. On the other hand, if lower end of the Blooms spectrum is targeted with a focus on activities such as sensing and basic thinking, we would not allow learners to reach out the unconscious, thus denying them of the opportunity to engage in an individuation process.

3.5 Generic Learning Attributes as Part of Assessment Metrics

When we, as educators, focus on providing authentic education, how we assess our learners is a very important aspect that needs serious consideration. A large portion of learners get guided purely by the assessment criteria, and possibly only a small fraction pursues studies for the purpose of intrinsic motivation. As a result, it is of paramount importance that we understand and define learning objectives well, purposefully and clearly and align assessment criteria accordingly. In this regard, contrary to widely used contemporary practices, the author suggests that it is more appropriate that we assess learners' general learning attributes such as problem solving abilities, analytical or logical thinking skills, reflective or critical thinking abilities, abilities to generalise or synthesis, abilities to express or communicate clearly of one's standpoint, abilities to evaluate looking from different perspectives and so on and so forth. We deviate here from testing and allocating grades for a particular course, unit or subject area specific knowledge or facts; instead we suggest evaluating a generalised set of skills or attributes, representing higher-order learning and are meaningful irrespective of the area of study. More importantly, these generalised set of skills can be coherently linked to an individual's personality traits, suggesting that these evaluations yield more authentic value and meaning. For example, in an undergraduate degree program of three years duration, we usually teach over twenty individual courses; a course or study area specific information tends not to retain in memory if not constantly refreshed or practiced. However, if an authentic approach to learning is pursued, it is more likely that, a generalised set of learning attributes or skills, as referred to earlier, would be developed and enhanced, possibly with more lasting memories. If we, as educators, give emphasis to these generic learning attributes throughout a study program, over a number of years, it is likely that learners would undergo a more authentic experience, continuously improving some useful generic skills, thus improving retention capacities of some specific learning material as well. If a certain learner desires to gain more specific knowledge and skills in a selected study area, he or she can quite easily and quickly achieve it, if the related generic learning attributes or skills are already well grasped.

When we consider from an analytical psychology point of view, the generic attributes we referred to can be in the form of functions in the conscious domain such as sensing, thinking feeling and intuition. That is, we can assess learners on how well they progressed in improving on these functions or psychological types. It is worth noting here that in order for an individual to engage in an individuation process or develop humanistically, he or she will have to essentially improve on all the functions including the inferior functions or the shadow attribute, in Jungian terms.

4. Neuroscience Dimensions of Authentic Education from the Viewpoints of Analytical Psychology

4.1 Growth of Dendrites throughout Lifespan

Studies from neuroscience reveal that when deep learning takes place through enrichment, brain cells or neurons, or more specifically receptive parts called dendrites, grow physically to make more communication connections among them; dendrites receives inputs from other nerve cells and are very responsive to these inputs, increasing in number and length in use while decreasing in disuse. This growth of dendrites takes place within the cerebral cortex of the brain that deals with higher-order cognitive processing. From an analytical psychology point of view, deep learning and enrichment take place when feeling and intuition functions are in focus, as discussed earlier as well. As a result, for effective learning to take place by means of growth of neural networks, we need to essentially activate learners feeling and intuition functions. Also note that these are the functions that tap the unconscious, thus bringing its contents to consciousness. That is, by enhancing one's conscious sphere through the development of denser neural networks, he or she engages in a process of individuation. Another important point is the growth of these dendrites could happen throughout the life span, not restricted to any age limit (Diamond, 1996; Diamond, 2001). Thus, as educators, it is very important for us to provide enriching, deep learning environments for our learners, irrespective of any age restrictions; they have capacities to be benefited from conducive environments. The significance of widely discussed concept of lifelong learning needs highlighting here; human beings have the capacities to be benefited from enriched continued learning that result in growth of dendrites of nerve cells. In other words, even if one engages in some routine work to earn a living, for example, only focuses on sensing and basic thinking functions in Jungian terms, he or she may attend to some challenging learning activities continuously for personal growth. Advances in imaging techniques have helped visualising the physical structures and operations of the brain; functional magnetic resonance imaging (fMRI) is such a technique used. Such technologies lead to the significant finding that learning has physical meaning to it, not just a concept or matter of committing information logically to

memory. When more and more deep and enriched learning takes place, a denser network of cells is created in the brain.

The above concept can also be viewed from another pedagogical point as well. Kolb's experiential cycle is a widely used explanation on how effective learning takes place (Zull, 2002; Healey and Jenkins, 2000). Kolb's cycle has four stages, namely concrete experience stage, reflective observation stage, abstract conceptualisations stage and active experimentation stage. All four stages play important roles in accomplishing learning. Kolb's theory explains how different parts of the brain function together to affect effective learning. Looking from an analytical psychology point of view, we can infer that feeling and intuition functions relate closely to abstract conceptualisation and reflective observation stages of the Kolb's cycle while sensing and basic thinking functions relate to concrete experience and active experimentation stages. When we realise that all stages of Kolb's experiential cycle are important in effective, complete learning, we can understand that all conscious functions sensing, thinking, feeling and intuition play an important role in learning. That is, as Jung highlighted, without developing all these functional areas adequately, an individual cannot engage in a process of individuation, towards higher levels of human development. In other words, auditory sequential learners need to pay more attention on improving on feeling and intuition functions while visual spatial learners need to pay emphasis on sensing and thinking functions when we target the individuation process. The respective functions mentioned here are the shadow areas or the inferior functions that need to be directly addressed for each category.

5. Conclusion

The main contribution of this paper is the presentation of how the mentioned features of an authentic education system can be understood from an analytical psychology viewpoint. The main learner classification types of auditory sequential and visual spatial types can be identified as possessing mainly sensing/thinking and feeling/intuition psychological types or conscious functions respectively. Feeling and intuition functions are essential when deep learning, higher-order learning and constructivist theory are emphasised. Further, they are the functions that tap the unconscious, in Jungian terms, and thus relate the contents from the unconscious to the conscious. This task of enhancing the conscious sphere is important in the process of individuation that leads to higher levels of human development, similar to the process of self-actualisation. When deep learning or enrichment is achieved through the involvement in feeling and intuition functions, it helps learners to develop denser neural networks throughout the life span. The psychoneurosis process Dabrowski referred as essential to human development into higher levels can be understood, in Jungian terms, as the union of opposites that takes place when the shadow or the inferior functions are directly addressed to embody them in the conscious. Similar to the four stages of the Kolb's experiential learning cycle, all four psychological types or conscious functions in analytical psychology are important in both complete learning as well as individuation or self-actualisation process. The generic learning attributes that are suggested in an authentic learning framework can be composed of the different conscious functions such as sensing, thinking, feeling and intuition as defined in analytical psychology.

In summary, the significance of this study is that we can identify a relatively clear mapping of the main features of an authentic education system into the key characteristics of analytical psychology. In other words, the use different human development platforms, namely the Theory of Positive Disintegration (TPD) of Kazimierz Dabrowski and Self-actualisation Theory of Abraham Maslow, in defining the authentic education system with multidisciplinary perspectives is further supported and unified through the key concepts of analytical or Jungian psychology.

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