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CONSTRUCTIVISM: THE ROOTS OF MILITARY PEDAGOGY?

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Abstract

This concept paper originates from a bigger documentation, and it attempts to examine the importance of constructivism in building intellectual leaders of characters in Malaysia. It analyses the history and evolution of constructivism. Various theories of learning have been considered but constructivism is imperative as it provides strong theoretical as well as pedagogical links to various methods to teaching and learning. Due to the nature of this paper, it adopts content analysis as its methodological approach. It is found that constructivism offers learning and training principles that suit a military learning environment, referred to by scholars in European countries as military pedagogy. This is because all criteria that are critical for building 'the guardians' of a nation, who must be intellectual leaders of characters, such as meaningful classroom engagement, higher order thinking skills, and collaboration, derive from constructivism.

Keywords

Cognitive Constructivism, Constructivism, Military Pedagogy, Pedagogy, Social Constructivism

1. Introduction

Pedagogy becomes the key to successful teaching and learning processes. It evolves according to the changing needs of society as well as massive uses of technology. Most educators blend their pedagogies accordingly. Pedagogies can be based on various learning theories. This concept paper originates from a bigger documentation, and it attempts to examine the importance of constructivism in building intellectual leaders of characters in Malaysia. This paper examines how constructivism evolves in educational settings. Various models of learning have been considered but constructivism is imperative as it provides strong theoretical as well as pedagogical links to various methods to teaching and learning. Due to the nature of this paper, it adopts content analysis as its methodological approach. It is found that constructivism offers learning and training principles that suit a military learning environment, referred to by scholars in European countries as military pedagogy. This is because all criteria that are critical for building ‘the guardians’ of a nation, who must be intellectual leaders of characters, such as meaningful classroom engagement, higher order thinking skills, and collaboration, derive from constructivism.

Before discussing further, it is imperative to discuss what military pedagogy is. The term is used widely in the European countries to refer to the approach or philosophy in educating and training military personnel. By definition, military pedagogy has two aspects: firstly, teaching and learning is for military purposes and secondly, education and training are done in a military setting (Falk, 2008). At the National Defence University of Malaysia (NDUM), the adoption of military pedagogy is at its infancy. Nonetheless, there are three prominent characteristics that have been identified including military pedagogy as an approach to educate and train future intellectual leaders of characters, military pedagogy for building personality of military personnel and military pedagogy as a balanced combination for critical teaching and learning aspects. For the Defence University, military pedagogy is critical in producing graduates who can face the 21st century challenges fearlessly.

2. Constructivism: An Evolution

Constructivist approach to learning promotes active participation from students. This suggests that students are taking control of learning by “interacting” with the learning materials. In a constructivist classroom, students come equipped with prior knowledge. Upon receiving new information, students must re-evaluate their understanding of new information based on their prior understanding. The original concept of constructivism derived from the

practices of Socrates' dialogues, where followers were challenged on their logic. This allowed for self-realisation of the weaknesses in the followers' thinking. This concept is still relevant today since it is one of the best approaches to allow constructivist educators to plan for the students' new learning experiences as well as assessments.

There are two critical components of constructivist approach to teaching and learning. The first component is a subclass of studies within cognitive psychology, and the second component is a subclass of studies within social psychology. Both components promote for the need of students to be active participants during classroom learning so that they are able to build and construct their own understanding and perceptions.

2.1 The Legacy of Dewey

John Dewey was often cited as the philosophical founder of and the greatest influence on constructivism (Lefoe, 1998). It was Dewey who placed the elements of constructivism in their rightful place in education as he argued against the earlier educational framework of memorisation and recitation. Dewey (1933) saw the human mind as an active processor that could work hard to make sense of the world – an idea that predated today's notions of constructivism and active learning. Dewey (1938) then developed theories of childhood development and education, which were labelled as Progressive Education. Progressive Education led to the evolution of constructivism. Before further discussion on constructivism, it is crucial to focus on what Dewey proposed for a reformed educational system. According to Dewey, there are four key educational issues, and these continue to provide the basis of critiques of and discussion about contemporary education. The educational issues are summarised below.

- Dewey emphasised on the values of students' experiences as students will engage in sustained inquiry: study, ponder, consider alternative possibilities and arrive at one's belief grounded in evidence. For Dewey, education is a re-construction of experiences that continuously unfolded students' potential.
- According to Dewey, learning should be by doing. This means giving more independence and active roles to students in their learning. Students are to describe the construction of their own learning by using their previous knowledge or experience.
- Dewey promoted the needs for purposeful learning. Dewey (1938) forcefully stressed the need for activities to be linked cumulatively, defining educative experiences as those that give rise to the students' need to gather more facts, become more skilled

and use lessons learnt in one experience as the basis for future experiences, and that they understand why they are learning something.

- Dewey also stressed on the importance of critical thinking in the education system. Dewey (1933) proposed that in order for learning to be truly effective, it must inculcate *reflective thought*, or what is referred to in contemporary education today as critical thinking. He defined reflective thought as an active and persistent process that is able to support individual's opinions.

Dewey and his philosophical and educational ideas have been criticised by many scholars. On the educational front, LaHaye (1980) and Robertson (1990) laid much of the blame for undisciplined, child-centred freedom and present social ills at the feet of Dewey. Notwithstanding these critics, Dewey's interpretations of learning have proven to be useful in the modern world of education. It is in the 21st century that scholars such as Garrison, Hickman and Ikeda (2014), Hickman and Spadafora (2009), Hickman (2001) and Phillips (2002) have realised that what Dewey stated as the critical issues in education are indeed valid. This is because when Dewey began his philosophising on education, many misunderstood his ideas of progressive and reflective education. Some even understood Dewey's ideas as only having relevance to children and their education. Nonetheless today, it has become increasingly obvious that Dewey's writings were not limited to children's education only.

In essence, Dewey's discussion about the nature of learning led to the theory of constructivism. After many decades, constructivism has revolutionised into various branches accordingly. The most prominent are twofold: cognitive constructivism and social constructivism. Piaget (1972a, 1972b) and Bruner (1990) are considered the chief theorists amongst cognitive constructivists, whilst Vygotsky (1978) is the major theorist of the social constructivists.

2.2 After Dewey

Piaget's interest in cognitive development came from his training in the natural sciences and his interest in epistemology. Piaget was very interested in knowledge and how children came to know their world. In short, Piaget concluded that intellectual development is the result of the interaction of hereditary and environmental factors. As the child develops and constantly interacts with the world around him/her, knowledge is invented and re-invented. Piaget (1972a) was best known for developing the theory of the four stages of intellectual development. He discovered that children think and reason differently at different

periods in their lives. He believed that everyone passes through a fixed sequence of four qualitatively distinct stages. Although every normal child passes through stages in exactly the same order, there is some variability in the ages at which children attain each stage. Generally, the evolution of intellectual development is divided into four phases and they are,

- sensorimotor (birth to two years) – the mastery of concrete objects
- preoperational – two years to seven years (two sub-stages) – the mastery of symbols
- concrete operational – seven years to 11 years – the mastery of classes, relations and numbers and reasons; operational thinking is beginning to develop, such as, the ability to hold an idea whilst dealing with a problem
- formal operational (abstract thinking) – 11 years and more – the mastery of thought is being developed; thinking is no longer limited to reality or personal experience; the ability to classify.

A central component of Piaget's developmental theory of learning and thinking is that it involves the participation of the student. Knowledge is not merely transmitted verbally but must be constructed and re-constructed by the student. In this way, Piaget elaborated on Dewey. Piaget asserted that for a child to know and construct knowledge of the world the child must act on objects, and it is this action that provides knowledge of those objects; the mind organises reality and acts upon it. Piaget's approach to learning is a *readiness* approach. Readiness approaches in developmental psychology emphasise that children could not learn something until maturation gives them certain pre-requisites. The ability to learn any cognitive content is always related to their stage of intellectual development. Children who are at a given stage could not be taught the concepts of a higher stage. In addition, according to Piaget, intellectual growth involves three fundamental processes – assimilation (applying old knowledge to new), accommodation (changing old knowledge to ensure it works better) and equilibration (the balance between assimilation and accommodation).

For Piaget, equilibration is the major factor in explaining why some students advance more quickly in the development of logical intelligence than do others. The role of educators is that they must be able to assess students' present cognitive level – their strengths and weaknesses. Instruction should be individualised as much as possible and students should have opportunities to communicate with one another, such as, to argue and debate issues. Educators are the facilitators of knowledge – they are to guide and stimulate students. In actual fact, learning is much more meaningful if students are allowed to experiment on their

own rather than listening to the educator. Therefore, Piaget's contribution to cognitive constructivism is in giving educators an understanding of how students develop their cognitive skills through his conceptualisation of the four stages of intellectual development and its fundamental processes. It is as if Dewey's individual learning process has now been de-constructed into four distinctive phases, all of them demonstrating the interaction between learning, thought and experience.

Apart from Dewey, two other leaders in constructivism can be described according to the two components mentioned earlier. The first one is Bruner. Bruner (1990) promoted cognitive constructivism. Bruner happened to be one of the early critics of Piaget's ideas (Sutherland, 1992). Bruner's main proposition was that learning is an active process because students are expected to construct new understanding based on what was previously learnt. Students must decide, select and transform new information into something useful. The task of educators is to encourage active dialogues, that is, Socratic learning. Therefore, the curriculum, in Bruner's opinions, must be in a spiral manner where the students are able to cumulatively build their knowledge.

Bruner (1966) stated that a theory of instruction should address four major factors,

- students' predisposition towards learning,
- the ways in which a body of knowledge could be structured so that it could be most readily grasped by the students,
- the most effective sequences in which to present materials, and
- the nature and pacing of rewards and punishments.

These factors require that teachers be aware of students' levels of understanding and readiness in learning new knowledge. In this way, students would grasp the new experience more readily. Alongside these four major factors, there are three important principles stressed by Bruner on the subject of cognitive constructivism. The first principle is that instruction must be concerned with the experiences and contexts that make the students willing and able to learn (readiness). The second principle is that instruction must be structured so that it could be easily grasped by the students (spiral organisation). The last principle is that instruction should be designed to facilitate extrapolation and/or fill in the gaps (going beyond the information given). All in all, Bruner stressed that active participation of students through their own experiences helps them to develop their own learning processes. Again, it can be seen how Bruner refined the interaction between learning and experience, first identified by Dewey, as the critical foundation for new learning.

The second component of constructivist approach to learning is led by Vygotsky. Ironically, similar to how Bruner became the critic of Piaget, Vygotsky too was originally a critic of Piaget and his ideas. Vygotsky claimed that cognitive constructivism does not take into account the importance of social and cultural aspects in the learning process. As such, Vygotsky promoted two key theoretical frameworks to constructivist learning. Firstly, the development of cognition must include aspects of social interaction. He further stated that a child is exposed to inter-psychological and intra-psychological aspects of interaction. The former is the child's exposure to his/her social contact with people and then the latter, a child would have inner interaction with him/herself. Secondly, zone of proximal development (ZPD) allows for all children to go beyond their present level of learning if prompted and facilitated by educators. This suggests that children have the potential to excel if they are given proper and appropriate encouragement.

Vygotsky believed that students could achieve more in learning with the assistance of educators or more able peers. He termed this assistance "scaffolding." In order for educators or more able peers to scaffold, they need to be very keen observers of the students. Using the information from these observations, educators and peers would be able to estimate the level of assistance needed by the students. This is similar to Dewey's belief that teachers should use "their greater knowledge of the world" to help students make sense of the learning process (Mooney, 2000). All in all, Vygotsky claimed that students need their surroundings to enhance their learning process, especially their educators and peers, and social as well as cultural contexts. One can see in Vygotsky how he is an intellectual heir to Dewey; at the same time, as the educational debate becomes more intense, Dewey's original ideas give birth to a range of related but competing ideas in which the exponents themselves are then subjected to further critique and counter-critique.

Other critics of Piaget, especially of his four stages of intellectual development, include Bower (1977) and Butterworth (1981) on the sensorimotor period, and Donaldson and Mc Garrigle (1974) on the concrete operations. Specifically, for educators, Piaget's theory has two serious weaknesses. These are firstly, the failure to take individual differences into account (Sutherland, 1992), including personality, gender, intelligence and experiences (as criticised by Bruner), and other factors that affect the ability to progress cognitively. Secondly, as Vygotskay noted, Piaget had ignored the social and cultural aspects of intellectual development. Global cultural differences are also ignored by Piaget. Sutherland

(1992), for example, argued that Piaget's paradigms are not relevant to some non-western cultures that either lack formal organisations or do not value abstract thinking.

Nonetheless, Piaget remained an important figure in learning theory (Smith, 1996; Campbell, 2002). It was Piaget who introduced developmental psychology; without his contributions it is reasonable to say that the discipline would not have existed. In fact, Piaget's quest for knowledge was a considerable intellectual resource which had raised and which might continue to raise, good questions regarding the associations between psychology and education (Smith, 1996). Piaget himself claimed that he had provided an important and necessary link that connects "a priori question in philosophy with empirical issues across the spiral of sciences" (Piaget, 1979).

As constructivism evolves and generates increasingly complex insights into the human learning process, it also finds itself challenged by a range of practical issues that emerge in the field of education. The biggest challenges to constructivism are threefold. Firstly, as students come from various educational backgrounds, they enter a classroom with different levels of knowledge and experience. It would be a great challenge to present the students with an issue and expect them all to achieve the same level of understanding at the same time. Therefore, the time taken to complete a discussion and to finish a lesson using constructivist principles may be longer than what is possible in a traditional classroom. This challenge gives rise to a second one, namely time management in classes. Since students have different ways of interpreting experiences and new ideas, educators need to guide students in realising their individual potential, and so *real* learning takes time. Thirdly, the assessment of constructivist teaching is difficult as constructivists do not believe in any quantitative assessment of the information acquired by students. Rather, constructivists prefer students to be able to understand the knowledge gained and use it when and where appropriate. This makes it extremely difficult to set standards to assess the meaningfulness of learning in a classroom situation (Karagiorgi & Symeou, 2005). Nonetheless, all these challenges are actually what makes 'learning,' *learning*.

Table 1 synthesises the main points of cognitive and social constructivist thoughts, including the key supporters and critics of each movement. The table is based on the work of Wink and Putney (2002) but includes the author's own analysis of the key ideas of Dewey, as well as the links between constructivism and military pedagogy. Dewey is placed into this table because as Boris and Hall (2004) argued, cognitive and social constructivism is

originally embedded in Dewey’s idea of a collaborative constructivist approach to learning and training.

Whilst cognitive constructivism focuses on students’ construction of knowledge, social constructivism emphasises on learning as a process that occurs within a larger social context. The teaching methods that derive from this latter view focus on dialogue, instructor co-learning and the joint construction of knowledge. Social constructivism argues that students could, with the help of instructors or peers who are more advanced, grasp concepts and ideas that they could not understand on their own. In social constructivism, teachers or instructors do not merely stand by and watch students explore and discover. Rather their role is to guide and advise students, and encourage them to work in groups to think about issues and find solutions to questions in the empirical and theoretical worlds.

Military pedagogy is added to the table in order to highlight clear relations between all these theorists. In so doing, the practices of military pedagogy can be understood better. As this conceptual paper is to form a bigger documentation, it can be concluded that military pedagogy has its own roots in constructivism as exemplified in Table 1.

Further, as illustrated in the table, military pedagogy fits *perfectly* in the constructivism discussions. It must be noted that military pedagogy is not a branch of constructivism; rather it is a philosophy, approach and strategy to teaching and learning at military institutions. Some of the roots of military pedagogy are found in the evolution of constructivism analysed in the earlier part of this paper.

Table 1: *Comparison Chart of Perspectives – Dewey, Piaget, Bruner and Vygotsky and the Positioning of Military Pedagogy in the Constructivism Discussions*

Construct	Reformed Education – Dewey*	Cognitive Constructivist – Piaget/Bruner	Social Constructivist - Vygotsky	Military Pedagogy
Approach	Pragmatist	Piaget – Realist; Bruner – Interventionist	Developmental Interactionist	Transformist
Main Key Word(s)/ Phrase(s)	Progressive Education, Learning by Doing, Reflective Activity/Learning	Piaget – Schemata, Intellectual Development, Ego-centricism Bruner – Meaning Making, Spiral Curriculum	Zone of Proximal Development, Scaffolding	Blended Learning, Learning by Doing, Reflective Learning
Knowledge	For students to re-describe, re-construct and re-evaluate	Changing body of knowledge, individually constructed in social	Changing body of knowledge, mutually constructed with	Re-construct; Re-evaluate

		world	others	
Learning What	Things that are relevant to students' development	Active construction, reconstructing prior knowledge	Collaborative construction of socially/culturally defined knowledge and values	Learning for military and world purpose
How	Through past and relevant experiences, by doing and purposeful learning, reflective activities	Through multiple opportunities and diverse processes to connect to what is already known	Through socially and culturally constructed opportunities, tying to students' experience	Experiences shared, reflective activities
Where	Interaction with others and self	In interaction with others and environment	In collaboration with others through the social/cultural setting	Interactions with others
Teaching	Provide students a platform to explore, relate to other students' experience	Challenge thinking towards more complete understanding (guide on the side)	Co-construct knowledge with students by sharing expertise and understanding (actuator of learning)	Co-construct knowledge
Motivation	Self-development	Self-development, competence	Collective and individual development through collaboration	Self-development
Role of Teacher	Facilitator, Guide	Facilitator, Guide	Mediator, Mentor, Actuator	Facilitator, Role Model
Actions (by Teacher)	Create opportunities for interacting with meaningful ideas, materials and others	Create opportunities for interacting with meaningful ideas, materials and others	Construct with students' opportunities for interacting with meaningful ideas, materials and others	Establish opportunities for interactions
Role of Peer	Construct meaning; social activity	Not necessarily encouraged, but could stimulate thinking, raise questions	Assume part of knowledge constructions, contribute to definition of knowledge, help define opportunities for learning	Comradeships
Role of Student	Sense-maker, problem solver, reflective thinker	<ul style="list-style-type: none"> • Active construction within mind • Generator, constructor • Active thinker, explainer, interpreter, questioner 	<ul style="list-style-type: none"> • Active construction with others and self in negotiating meaning • Co-generator, co-constructor, re-formulator 	Follower, gradually to be Leaders

			<ul style="list-style-type: none"> Active thinker, explainer, interpreter, inquirer, active social participator 	
Student view of Self	<ul style="list-style-type: none"> Process of Inquiry Explanation of Reasoning 	Sense-maker, problem solver	Sense-maker, problem solver, socially appropriate member of collective	Intellectual Leaders of Characters
Evidence of Learning	Create new knowledge, progressive education	<ul style="list-style-type: none"> Process of inquiry Performance: explanation of reasoning On-going assessment 	Process of inquiry, problem solving, socially competent participation in collective <ul style="list-style-type: none"> Performance: explanation of reasoning, social performance over multiple sites On-going assessment over multiple sites 	Critical Thinking, Debates on Relevant Issues
Purpose of School	Platform to create new meaning and knowledge by students	Create new knowledge, learn strategies to continue learning	<ul style="list-style-type: none"> Create new knowledge, learn strategies to continue learning Prepare individuals as social members with expanding repertoires of appropriate ways of interacting 	Educate, Train and Inspire
Critics	LaHaye, Robertson & Colson	Piaget – Bruner, Vygotsky, Donaldson, Bower & Butterworth Bruner – nil**	Gee, Hull & Lankshear	(still a new area of interest)
Supporters	Spadafora, Garrison, Ikeda, Hickman & Phillips	Piaget – Peel, Campbell, Inhelder & Szeminska Bruner – Adey, Shayer & Yates	Doise, Mugny & Schaffer	(still a new area of interest)

Notes:

The basic variables in the left-hand column are first identified by Wink and Putney. To this, the author adds 'Approach,' 'Main Key Word(s)/Phrase(s),' 'Critics' and 'Supporters.'

Adapted from: Bruner (1966; 1990), Dewey (1916; 1933; 1934; 1938; 1968), Piaget (1972a; 1972b), Vygotsky (1978), Wink and Putney (2002)

* Author's Interpretation

**According to Sutherland (1992), Bruner was not seen as a fundamentally original thinker in comparison to Piaget and Vygotsky. He was seen as having some qualities of Piaget and some qualities of Vygotsky, thus making it difficult to identify his critics

3. Conclusion

The task of educating ‘the guardians’ of Malaysia is a massive responsibility. To allow the students to think critically and analytically may lead them to challenge the authority, where it is impossible due to the chain of command in the military institution. Yet, facing the 21st century unknown challenges requires ‘the guardians’ to have specific skills that can be taught by adopting constructivist approach to learning. Therefore, future studies may focus on how constructivist approach to learning is implemented during the academic and military training of the students at the NDUM. At the same time, other scholars may want to investigate how military pedagogy is viewed by both educators and students alike. It is with great urgency that students are given the required training as intellectual leaders of characters accordingly. Given this, the constructivism of Dewey and his intellectual heirs, provides a critical theoretical anchor for the discussion of military pedagogy.

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