Student Centered Education: A Mission of NCT with Special Reference to Jean Piaget's Notion of Constructivist Method of Teaching

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Abstract

Technology is very important for the development of any society. It plays a very crucial role in wealth creation, improvement of quality of life, real economic growth, and transformation in any society. Hence, technical education plays an essential role in preparing and qualifying citizens to meet the state requirements for a qualified national labor force in the market. The government of Oman has accorded special attention to the technical colleges which were expanded and developed to provide qualified and well trained national labor force to the local market. Nizwa College of Technology, one of the seven colleges of technology, is playing an active role in providing qualified technicians, technologists, and professionals in different fields of life to contribute in development of the Sultanate. It aims to produce innovative graduates and researchers that focus on meeting the present and future needs of society. For this reason NCT sets its mission. To deliver high-quality student-centered education that produces competitive graduates who enter the labor market with confidence, strong technological and personal skills, prepared for a life of contribution and success.

Constructivist thinkers believe that knowledge is not a thing that can be simply delivered by the teacher to students on their desks. Rather, knowledge is constructed by learners through an active, mental process of development. Learners are the builders and creators of meaning and knowledge. Swiss psychologist *Jean Piaget* in his theory of *constructivism* advocates *student centered education*. In a constructivist classroom, the teacher provides students with experiences that allow them to hypothesize, predict, manipulate objects, pose questions, research, investigate, imagine, and invent. The teacher's role is to facilitate this process.

This is a qualitative, descriptive, paper. The purpose of this paper is to discuss the theoretical background of student centered education with special reference to Jean Piaget and its importance on academia. And how NCT in general and BSD in particular applies this method of teaching to achieve the objectives of the college and Sultanate.

Key words: Constructivism, Student centered education, Jean Piaget, NCT,

Introduction:

Technology is very important for the development of any society. It plays a very crucial role in wealth creation, improvement of the quality of life, real economic growth, and transformation in any society. Hence technical education plays an important role in preparing and qualifying citizens to meet the State requirements for a qualified national labor force in the market.

The government of Oman has accorded special attention to the technical colleges which were expanded and developed to provide qualified and well trained national labor force to the local market. These colleges are playing an active role in providing qualified technicians, technologists, and professionals in the different fields of life to contribute in the development of the Sultanate. It aims to produce innovative graduates and researchers that focus on meeting the present and future needs of society. It strives to improve the lives of the citizens of Oman through services and research. For this reason the colleges of technology provide education and training to Omani youngsters to enable them to join the job market and can satisfy the needs of the qualified manpower. It provides the professional and technical skills to local students required for employment. For this reason Sultanate opens seven colleges of technology in different regions of Oman. Oman's Ministry of Manpower operates the Higher College of Technology in Muscat and six colleges of technology in Al-Mussana, Ibra, Ibri, Nizwa, Salalah, and Shinas.

The main objectives of the colleges of technology as discussed in college Manual are:

- Working towards the application of technological and administrative knowledge in technological and administrative fields at par with the requirements of the labor market.
- Meeting the student's needs through social, academic, technological, and vocational development.
- Building up a generation of highly competent technicians by providing recognized and high quality technological programs.
- Providing the economic sector and other sectors with technically and administratively qualified personnel.
- Providing technological and parallel education and training services; and
- Conducting scientific and applied research and studies and publishing them for the benefit of the Colleges of Technology and the society.

Documentation related to Oman's "Vision 2020" — produced in 1995 on the country's economic future (Ministry of Development, 1997) contains specific policies concerning education inspired by the following statement of the Ministry of Education (Al-Belushi, Al-Adawi & Al-Ketani, 1999):

> The challenges facing Oman, particularly the need of self-sufficiency and the need to diversify the economy and keep pace with technological change, require new educational goals to prepare Omanis for life and work in the new conditions created by the modern global economy. These will require a high degree of adaptability and a strong background in mathematics and science in order to independently apply rapidly changing technologies to Oman's needs. The proposed educational reforms are designed to achieve the knowledge and mental skills and attitudes that young Omanis will need to learn and adapt to the very different future most of them will face. (Shapour Rassekh, 2004, p.09)

As mentioned in the Vision 2020 document, those policies are (Ministry of Development, 1997):

- to implement and improve the standards of basic education;

- to make secondary education more consistent with the requirements of the future society;

- to pay more attention to the science subjects;

- to introduce the teaching of computers in schools as a basic subject;

- to improve the teaching/learning of the English language in basic education;

- to provide schools with adequate human resources and educational equipment;

- to improve the status of teachers;

- to improve in-service training courses and workshops for all staff in the educational field;

- to improve teaching methods and education practices according to new trends and to encourage the concept of learning by doing. (Shapour Rassekh, 2004, p.09)

Constructivist Method of Teaching:

We can cope up with these challenges and can achieve our objectives if we have a better educational system and have a better method of teaching and learning. One of the prominent and very effective methods of teaching in contemporary academic world is constructivist method of teaching developed by Jean Piaget, a Swiss psychologist, in his book *The development of thought: Equilibration of cognitive structure* in 1977.

Historically there is no one, clear, universal explanation of how we learn and subsequent guidebook as to how we should teach. Rather, there are a range of theories, each with their background in a different psychological and epistemological tradition. Therefore, to understand learning it is important to understand the different psychological and philosophical theories and the rationale behind these theories. Constructivism is one of the most effective learning theories of our times. It is very effective because it does not take any reductionist standpoint but it is holistic in nature. It considers both psychological as well as epistemological approach.

Constructivism is a theory pioneered by Dewey, Piaget, Vygotsky, and Bruner, which takes the ideas from Cognitivism that the mind is more than just a 'black box' responding to stimuli, but focuses on the very active processes involved in learning. This model based by Bruner and Piaget, advocate that learning is a process.

The constructivist (or cognitive-developmental) stream "is based on the idea that the dialectic or interactionist process of development and learning through the student's active construction should be facilitated and promoted by adults" (DeVries et al., 2002)

The term constructivism covers a broad range of complex philosophical theories that address the way knowledge is acquired (D.C. Phillips 1995). The early development of constructivism can be traced to the eighteenth century (Ernst von Glaserfeld,2000) and there are many constructivist philosophers and many definitions of constructivism. (Karen P. Harris & Steve Graham,1994) Considered "one of the most influential views of learning during the last two decades of the 20th century," constructivist theory continues to be applied to today's education practices. (James M. Applefield, 2000-01)

Piaget's theory of constructivism impacts learning curriculum because teachers have to make a curriculum plan which enhances their students' logical and conceptual growth. Teacher must put emphasis on the significant role that experiences-or connections with the adjoining atmosphere-play in student education. For example, teachers must bear in mind the role those fundamental concepts, such as the permanence of objects, plays when it comes to establishing cognitive structures. Because Piaget believes that "There is no structure apart from construction." (Piaget, 1970, p.140)

Educational curricula and teaching methods are changing. One component of the current development of all subject curricula is the change in focus of instruction. It shifts from the **transmission curriculum** to a **transactional curriculum**.

In a **traditional curriculum** teacher transmits information to students who passively listen and acquire facts. There is strict adherence to fixed curriculum and materials are primarily textbooks and workbooks. Learning is based on repetition. Teachers disseminate information to students and students are considered as the recipients of knowledge. Teacher's role is directive and rooted in authority. Assessment is through testing, correct answers. Students work primarily alone.

On the other hand, in transactional curriculum students are actively involved in their learning to reach new understandings, and the job of teachers is to create an environment in which learners can construct their own understandings. Pursuit of student questions and interests is valued. Materials include primary sources of material and manipulative materials. Learning is interactive, building on what the student already knows. Teachers have a dialogue with students, helping students construct their own knowledge. Teacher's role is interactive, rooted in negotiation. Assessment includes student works, observations, and points of view, as well as tests. Process is as important as product. Knowledge is seen as dynamic, ever changing with our experiences. Students work primarily in groups

Thus, a constructivist student-centered approach places more focus on students learning than on teachers teaching. A traditional perspective focuses more on teaching. From a constructivist view, knowing occurs by a process of construction by the knower. How we teach should originate from how students learn. The teacher facilitates a process of learning in which students are encouraged to be responsible and autonomous. As Piaget says "A truth learnt is only a half-truth; the whole truth is re-conquered, reconstructed and rediscovered by the pupil himself/herself". (Cited in Munari, Piaget, 1950, p. 35).

Importance of Constructivist Method of Teaching:

The activities of the constructive classes are interactive and student-centered, where the student is perceived as meaning-maker. Teacher-centered, text-centered and skills-oriented approaches of instructions are replaced by more student-centered approaches where processes of understanding are emphasized. As Piaget says:

"the construction of a …theory requires not simply an "analysis" of its "presuppositions", but the construction of the next higher theory…the pyramid of knowledge no longer rests on foundations but hangs by its vertex." (Piaget, 1970, p.34)

A constructivist student-centered approach places more focus on students learning than on teachers teaching. A traditional perspective focuses more on teaching. From a constructivist view, knowing occurs by a process of construction by the knower. How we teach should originate from how students learn. The teacher facilitates a process of learning in which students are encouraged to be responsible and autonomous. As Piaget says:

"We have trusted in the educational and creative value of objective exchange. We have believed that mutual information and reciprocal understanding of different angles are ways of attaining the truth. We have shunned the mirage of general truths and instead have believed in that concrete and living truth which stems from free discussion and from the laborious and tentative co-ordination of different, and sometimes opposing, points of view". (Cited in Munari, Piaget, 1954b, p.28)

The student is the person who creates new understanding for him/herself. The teacher coaches, moderates, suggests, but allows the students to experiment, ask questions, try things that don't work. Learning activities require the students' full participation (like hands-on experiments). An important part of the learning process is that students reflect on, and talk about, their activities. Students also help set their own goals and means of assessment. For example, in ethics class, asking students to read and think about different versions of and perspectives on an ethical dilemma can lead to interesting discussions.

Students control their own learning process, and they lead the way by reflecting on their experiences. This process makes them experts of their own learning. The teacher helps create situations where the students feel safe questioning and reflecting on their own processes, either privately or in group

discussions. The teacher should also create activities that lead the student to reflect on his or her prior knowledge and experiences. Talking about what was learned and how it was learned is really important. As Piaget's says:

"Active methods requiring a type of work that is both spontaneous and guided by the questions posed, and work in which the pupil rediscovers and reconstructs truths instead of receiving them ready-made." (Cited in Mumari, Piaget, 1965b, p. 43)
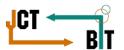
The constructivist classroom relies heavily on collaboration among students. There are many reasons why collaboration contributes to learning. The main reason it is used so much in constructivism is that students learn about learning not only from themselves, but also from their peers. When students review and reflect on their learning processes together, they can pick up strategies and methods from one another.

Thus, Piaget believes that we develop ways of construing or understanding the world based on our experience. When we encounter a new experience, we attempt to fit these patterns over the new experience. For example, we know from experience that when we see a red traffic light, we are supposed to stop. The point is that we create our own ways of seeing the world in which we live; the world does not create them for us.

A productive, constructivist classroom, then, consists of learner-centered, active instruction. In such a classroom, the teacher provides students with experiences that allow them to hypothesize, predict, manipulate objects, pose questions, research, investigate, imagine, and invent. The teacher's role is to facilitate this process.

Features of Constructivist Method of Teaching:

1. It is interactive: Constructivist class is interactive. In a constructivist classroom authentic student to student and student to teacher dialogue is very important. Constructivists believe that a scientific and systematic talk is not possible where participants only reports their experiences and not listening others. In a non- participative class room no new understanding occurs. But in a real talk where

careful listening happens create an environment within which emerging` ideas can grow. Hence, purposeful talk by students in a student-centered constructivist classroom the meaningful discussion occurs and meanings emerge. In student centered class room the domination is absent, while reciprocity, cooperation, and collaborative involvement are prominent. Consequently, constructivist activities in the classroom that focus on speaking and listening promote not only constructivist thought but also important connections between teacher and students.

2. Students are meaning maker: Constructivist classrooms are structured so that learners are immersed in experiences within which they may engage in meaning-making inquiry, action, imagination, invention, interaction, hypothesizing and personal reflection. Teachers need to recognize how students use their own experiences, prior knowledge and perceptions, as well as their physical and interpersonal environments to construct knowledge and meaning. The goal is to produce a democratic classroom environment that provides meaningful learning experiences for autonomous learners.

3. The constructivist class is democratic. Teacher focuses on students' learning rather than on their performance. These things make possible to create a democratic environment. A democratic classroom is self-regulating. Rather than overtly controlling the class. The democratic environment of the class promotes constructivist learning, because a democratic classroom environment emphasizes shared responsibility and decision-making.

4. Encourages competency: A constructivist teacher empowers his students with a feeling of competence and success. Student empowerment and autonomy may be aided by encouraging students to ask questions and by making them active learners.

5. Improves critical thinking: Asking questions is a challenging and important part of thinking and learning, especially if students are continually encouraged to ask more probing, more appropriate, and more effective questions. By asking their own questions, students acquire more consciousness of and control over their thinking. Students having "control over their thinking" is an important matter in a constructivist classroom. The constructivists follow a process approach. In a process approach, a context is created within which students are able to explore new ideas and experiences. Within this

context, a teacher's role in providing information decreases and is replaced by a "strengthened role in promoting and supporting students' own thinking" and meaning-making abilities.

6. The teacher of a constructivist class is researcher: A crucially important aspect of a teacher's job is watching, listening, and asking questions of students in order to learn about them and about how they learn so that teachers may be more helpful to students. This kind of watching and listening may contribute to a teacher's ability to use what the classroom experience provides to help him or her create contextualized and meaningful lessons for small groups and individuals. The ability to observe and listen to one's students and their experiences in the classroom contributes to his or her ability to use a constructivist approach. Paradoxically, a constructivist approach contributes to one's ability to observe and listen in the classroom. Thus, the process is circular.

Conclusion: From the above discussion we can conclude that the active participation of students is very important for an effective teaching and learning environment. Teachers should understand their roles as a facilitator and should not impose their ideas on students but allow them to speak and think independently. Nizwa College of Technology as a technical institution whose mission to is to provide a student centered education may take help from Piaget's theory of constructivism.

Suggestions for Teaching with the Constructivist Learning Theory:

- Encourage the students to participate, and accept their autonomy and initiative.
- Give raw data and primary sources to the students also, in addition to manipulative, interactive, and physical materials,
- Always use cognitive terminology such as "classify," "analyze," "predict," and "create" when assigning tasks to the students
- Try to find out students' understanding and prior experiences about a concept before going to start classes.
- Try to promote and encourage communication between the teacher and students and also between the students.

- Encourage student critical thinking and inquiry by asking them thoughtful, open-ended questions, and encourage them to ask questions to each other.

- Ask follow up questions and seek elaboration after a student's initial response.

- Put them in situations that might challenge their previous conceptions and that will create contradictions that will encourage discussion.

- After posing a question, give enough time to them, so that they can be able to think about their answers and can respond thoughtfully.

- Give enough time to students to construct their own meaning and understanding when learning some new concepts.

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