

Practices and Implications of Constructivist Teaching Model in Education

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Abstract: Teaching is a profession and teacher education is a process of professional preparation of teachers. Teaching learning process based on constructive model, regard learning as an active process in which learner develop their own knowledge and understanding of the world by engaging in experiencing things and reflecting on those experiences. The present study is based on non-participatory observations of trainee teacher educators employing the 5E Instruction approach in the classroom. Various activities performed by aspiring teacher educators during different 5E model stages were documented. Students' participation and collaboration in teaching learning process was noted. Results of the study indicate that implementation of 5E model based lessons had equipped them to design productive learning environments and to engage students in authentic tasks and useful learning. Findings have also highlighted the efficiency of trainee teacher educators to manage constructive classroom by providing interactive and student centered activities. It was found that in constructive classroom, students enjoy enough freedom to work together and share knowledge to accomplish a common objective. Training in 5E Instructional model has proven to be genuinely helpful and effective for quality teacher education

1 INTRODUCTION

Education is a life-long process and goes on from birth to death. Education in broader sense is any act or experience that has a formative impact on the mind, character or physical ability of an individual. It is a social process that intends to modify student's behaviour through learning in a socially desirable way. It is the process whereby a human being gradually adopts himself to his physical, social, and spiritual environments in diverse ways. Education thus represents the sum of all experiences a child receives, both within and outside of the school. It is a means for holistic development of personality of a child. According to Mahatma Gandhi education is a tool to realize every individual talents and potential (Cited in Dash, N.K. 2015). UNESCO definition regarding goals of education mentioned in Jacques Delors report published in 1996 has stated the four pillars of education i.e. learning to know, learning to do, learning to be and learning to live together. The opportunity to live together is made possible in constructivist classroom and foster social equity, justice, peace and harmony (Cited in Dash, N.K. 2015).

Constructivism represents a paradigm shift from education based on behaviourism to education based on cognitive theories. Constructivism has its roots in philosophy and has been applied to theory of learning and education. The premise of constructivist epistemology is that learners create their own knowledge of the world through experiencing things and by reflecting on those experiences (Sudheesh Kumar and Noushad, 2011). According to Bruner (2011) constructivism is a learning theory in which students actively construct new ideas or concepts based on their present or prior knowledge. The core principle of constructivist theory is that learning is a socially enhanced active process of knowledge creation. Metacognition and reflection are crucial components in creating knowledge and meaning (Sudheesh Kumar and Noushad, 2011). Further, education refers to the process of facilitating that construction rather than simply imparting knowledge. In constructive classrooms, students are inspired to be independent thinker and problem solver (Bruner, J.S. 1966). They are encouraged to communicate and work together with others, thus allowing for inquiry, exploration, autonomy and personal expression of thoughts and concepts (Mohan, R., 2007). Thus, the

constructivist perspective provides strategies for promoting 'learning by all' (NCF, 2005).

2 5E INSTRUCTIONAL MODEL

Constructive learning is a process that incorporates both assimilation and accommodation and is based on the individual's existing knowledge. For designing lessons, based on Inquiry approach, widely used constructive 5E model given by Rodger W. Bybee (1997) is used for instruction which includes five phases- engage, explore, explain, elaborate and evaluate (cited in Bentley, M.L., et al., 2007).

2.1 Engage

This phase is intended to foster student interest, encourage their thinking and to retrieve their prior knowledge. Teacher can achieve this by using discrepant event, telling a story, demonstration, role play, or showing picture or image.

2.2 Explore

This is the most active phase for the students to work independently or in small groups collaboratively. Students get first-hand experiences by working with manipulative (natural objects, models), videos, pictures, or from text. Such experiences provide multiple perspectives which are added to their current knowledge and preconception. There is a social dimension as student talk and share with one another in the group. The teachers' role is to encourage independent thinking among students to construct their own understanding of the concept.

2.3 Explain

During this phase teacher direct the discussion, provide appropriate terminology and guide them to develop deeper understanding of the content. Teacher's explanations, text and media are used to clarify the content. This phase provide opportunity to report their findings and express their concepts.

2.4 Elaborate

This phase provides opportunity to transfer their learning to a new but closely related situation. Learners are encouraged to expand their understanding by posing and exploring different but related question.

2.5 Evaluate

Formative assessment is used since the engage phase and interwoven with teaching. This phase of learning cycle help to assess student understanding of the content.

3 TEACHER EDUCATION

Teaching is a profession and teacher education is a process of professional preparation of teachers (NCFTE, 2009). Stated by NCTE (Das, 1998) in Quality Concerns in Secondary Teacher Education – 'The teacher is the most important element in any educational program'. This demonstrates the necessity of investing in teacher preparation to make the future of a nation secured. According to National Council for Teacher Education, teacher education is a programme of education, research and training of persons to teach at all levels of education, from pre-primary to higher education (NCFTE, 2009). A teacher needs to be prepared to meet the expectations arising in the schools and in higher education.

3.1 Objectives of the Study

- To study the implementation of 5E model based lessons in professional development of the trainee teacher educators.
- To study the competency of trainee teacher educators in managing constructive classroom.
- To study students' collaboration to work in small groups in a constructive classrooms.

3.2 Methodology

The present study is descriptive in nature. After taking into consideration objectives of the study, a non-participatory observation was used to collect data. During observation various activities performed by trainees' teacher educators during their Internship was noted. Students' participation in teaching learning process was also noticed. Information collected by observation is presented descriptively.

3.3 Sample

Sixteen trainee teacher educators of Education College (PG Department), Bangalore were observed during internship.

3.4 Tool

Field notes were used to analyse data collected through non-participatory observation of trainee teacher educators during their classroom transaction. Analysis was based on the following criteria:

3.4.1 Implementation of 5E Mode

means following five phases of 5E constructivist cycle for knowledge construction by the trainee teacher educators, which includes - engage, explore, explain, elaborate and evaluate.

3.4.2 Classroom Management

includes competency of trainee teacher educators to create democratic classrooms and student centered activities. It also includes facilitation of student's reflective and autonomous thinking through discussion, dialogues, drawings or other representations by trainees.

3.4.3 Collaborative Work

includes the nature of opportunities provided to the students to interact, discuss and communicate in small groups to expose them to alternative viewpoint for the active accomplishment of the task. Learning is joyful because higher mental functions such as reasoning, comprehension, and critical thinking originate in social interaction.

4 ANALYSIS AND DISCUSSION

The potentiality of constructive models to facilitate knowledge and enhance the learning process is revealed through observation based on 5E model lessons presented by the trainee teacher educators. Data collected by examining different activities carried out by trainee teacher educators using 5E model is descriptively analysed as follows:

4.1 Execution of 5E Model

Trainees has designed lessons for their Internship using 5E model given by Bybee, R.W. (1997). The process of constructing knowledge incorporates the learner's prior knowledge, beliefs, and attitudes into account. To 'engage' and capture the learners' attention, some trainees had introduced the topic by eliciting key words, while others has used puzzles, role plays, stories, demonstration, discussion etc. For

'exploration' phase hands on experience was provided in the form of visuals, videos, experimentation and various group activities. Trainees incorporate technologies like videos, recording, animations, and graphics throughout the exploration phase to promote autonomous thought and knowledge construction. Such an experience has provided multiple perspective and representation of concepts and content necessary to mediate learning. During 'explain' phase teacher guide the discussion, provided appropriate terminology and helped the students to get a deeper understanding of the topic. Text, media and explanations are all employed by trainees to make the content clear. Students are asked to explain their thoughts and conceptions and to report their findings. Before reporting, students are encouraged to 'elaborate' their understanding by applying the concept in real world setting. The outcome of their learning is 'evaluated' by using them in new conditions. To examine the outcome of students learning, trainee teacher educators have used a range of assessment strategies like quiz and different types of objective questions.

4.2 Classroom Management

Trainee teacher educators in training had created an environment where the students could actively participate by fostering collaboration among them. Students were given activities to perform, problems to solve and freedom to ask their own questions. Trainees' also facilitated student's reflections and thinking through questioning, drawings, explanations and use of digital tools.

4.3 Collaborative Work

Students were provided with the opportunity to collaborate in small groups, explore the idea and impart knowledge to one another. Group collaboration has sparked learning and contributed in the group's development of a deeper understanding. Throughout the process of learning, students were not left alone and are constantly given guidance by trainee teacher educators. Their thinking and problem solving is aided by computer software supports, models, expert hints, and peers in the collaborative group. Students were urged to reflect upon on their experiences, share them with others, and build their own conceptual frameworks. By comprehending and reflecting on activities students are scaffold to reconcile new knowledge.

5 FINDINGS

It was found that the 5E model has offered the opportunity to trainee teacher educators to create productive learning environments and involve students in real-world tasks. Digital tools and a variety of activities helped to maintain students' varied interest and requirements while promoting conceptual clarity. Implementation of 5E Model lessons has provided hands-on experience to the trainees to use large amount of teaching materials accessible to teach various topics in their chosen methodological subject.

- Trainee teacher educators had efficiently managed constructive classroom by creating democratic classrooms where students collaborate in small groups. Collaboration had provided the social support and scaffold students to go beyond their current state and try new ideas.
- It was found that in constructive classroom students enjoyed freedom to collaborate in small groups and to share their understanding with others in a class. Group collaboration has sparked learning and facilitated deeper understanding among the group members. Findings of research have shown that majority of the trainee teacher educators were proficient in implementing 5E Instructional model and others had performed fairly well. A very small number of trainees found difficulty to involve students in learning process. But with mentoring they picked up the problem and shown improvement in their successive presentations. All the trainees had integrated technology throughout various phases of developing a lesson. Results had indicated that the rigorous training received by trainee teacher educators in the form of orientation and demonstration of lessons based on 5E model had equipped them to design and implement the lesson efficiently.

6 CONCLUSION

The 5E Instructional style had made it easier for students to build strong foundation of knowledge by engaging in experiences and reflecting on those experiences. Learning in groups has integrated the development of the students' social and academic skills. They gained knowledge of teamwork skills, patience, perseverance, and a sense of group belonging in addition to their academic learning. Group setting had enhanced students' positive

attitude towards learning as they contribute to it. This study has shown that 5E Instructional had created a unique learning experience for learners and helped to build a strong foundation of knowledge. Planning and executing lessons in a variety of subjects for higher education can be successfully accomplished using the 5E model. It has proven to be genuinely helpful and effective for quality teacher education.

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