Microteaching as an essential preparatory method for would-be science teachers

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ABSTRACT

Science has been seen to be the body of knowledge upon which the economic and social development of the nation is built, hence the need to handle the teaching and learning of the subject with serious concern. Microteaching as a unique model of teaching has been seen as a unique teacher preparatory method that will empower our would-be teachers with all the teaching rudiments that will enhance their better performance during their actual classroom teaching. It is a viable instrument for producing the desired change in the teaching behaviour or potential of teacher trainees. Microteaching consists of three major phases which are the knowledge acquisition phase, skill acquisition phase, and the transfer phase. These phases prepare teacher trainees to become efficient and effective teachers at the end of their training. It equips the would-be teachers will all the skills and competencies that they need to become good science teachers. The importance of microteaching includes to: improve critical thinking skills of the pre-
service teachers, reduce the complexity of the actual teaching practice, provide connection between theory and practice, make teacher education program more purposeful, goal oriented, and provides individualistic training with more realistic evidence to students.

1. INTRODUCTION

One of the most important factors in improving the quality for education and the teaching process is the teachers. Therefore, it is very important to train teachers who can compete with the rapidly developing age. The teacher is the source and transmitter of knowledge as well as their guide throughout the learning process. These special roles of teachers require the teachers of today to attain new competencies, which create an obligation to review the teacher education program (Liston, Whitcomb, & Borko, 2006). Teaching is a complex process that facilitates and influences the process of learning. The quality of a teacher is estimated on how much the students understand from his/her teaching, “Thus when a teacher teaches and no one learns, his teaching is of no value.” Based on the practical nature of teaching, classrooms cannot be used as a learning platform for acquiring the basic teaching skills. Training of science teachers in specific teaching skills is a major challenge in science education programs. The pedagogic skills for teaching can be acquired only through more structured and simpler facility training techniques (Foley 1974). With the introduction of microteaching, the lacunae of scientifically effective methods to be followed in teacher training programmes have been overcome (Elliot, 1982).

2. MICROTEACHING

Microteaching is a unique model of practicing teaching. It is a viable instrument for producing the desired change in the teaching behaviour or potential of a teacher trainee. The would be teacher trained using the microteaching instrument are expected to have a greater range of science teaching skills to choose from for overcoming day to day classroom teaching problems.

Microteaching can be defined as a sealed down teaching situation in which a teacher teaches a brief lesson to small group of students or fellow trainees for a short period of time. It requires the teacher trainee;

1. to teach a single concept of content,
2. using a specific teaching skill,
3. for a short time, and
4. to a very small number of student.

In this way the teacher trainee practices the teaching skills in terms of definable, observable, measurable and controllable form with repeated cycles till he attains mastery in the use of skills. The objectives of microteaching include:

- To enable teacher trainees to learn and assimilate new teaching skills under controlled conditions.
- To enable teacher trainees to master a number of teaching skills.
- To enable teacher trainee to gain confidence in teaching.

Olivero (1971: 1) defined microteaching as a scaled-down sample of actual teaching which generally last ten to fifteen minutes and involves five to ten students and limited area of coverage. The teaching situation is scaled down to reduce some of the complexities of the teaching act, thus allowing the teacher to focus on the selected aspects of teaching. It however offers the student teachers the opportunity to practice teaching activities under controlled ad simulated circumstances such that the complexity of the real teaching situation is simplified. Microteaching is a laboratory based teacher training method the aim of which is to allow previously determined critical teaching skills to be attained by pre-service teachers (Klinzing & Folden, 1991).

3. PHASES OF MICROTEACHING

There are three phases of microteaching. These include knowledge acquisition phase, skill acquisition phase, and transfer phase. Knowledge acquisition phase is the preparatory pre-active phase, in which the teacher gets trained on the skills and components of teaching through lectures, discussion, illustration, and demonstration of the skills by the expert. In the interactive skill acquisition phase, the teacher plans a micro-lesson for practicing the demonstrated skills. At this phase, the colleagues and peers can act as constructive evaluators which also enable them to modify their own teaching-learning practices (Benton-Kupper 2001). The teachers can reinforce behaviours and skills that are necessary and extinguish those that are not needed. The teacher trainee will prepare a short note on a selected subject area and teach it to a small group of student in a laboratory-like condition for about eight minutes.
with his peers playing the role as students. His teaching is constructively evaluated by the teacher and his peers. If his teaching is not in order, he will have to repeat the whole steps again and again until the desired skill is mastered by the student teacher. He can then transfer these learned skills from stimulated teaching situation to real classroom teaching (Pass & Shah, 1976). Adequate and appropriate constructive feedback for each skill will encourage re-teaching and re-implementation of the skill. The feedback data can be used and all the core teaching skills can be integrated in a lesson and ultimately to a real classroom teaching (26-27).

4. SKILLS THAT ARE APPLICABLE IN SCIENCE TEACHING

The core techniques involved with microteaching are based on the teaching skills. Teaching skills are set of behaviours or acts of the teacher that facilitates learning either directly or indirectly. Some of the important teaching skills are listed as the lesson preparation skill, set induction, presentation and explanation, illustration with examples, reinforcement, stimulus variation, questioning skill, classroom management and media utilization skill.

Lesson preparation: this involves the preparation of a lesson to be taught within a given period of time, usually forty minutes or eighty minutes for double periods. Here, the lesson should be organized in a logical sequence in such a way that one step will be connected to the next step; the content should be concise, appropriate, relevant and sequentially organized.

Set induction: This is the introductory phase. Here the teacher should introduce his lesson in such a way that the attention of the students would be arrested and sustained. Here, the teacher can use physical objects, verbal explanation, or by doing something funny etc.

Presentation and Explanation: This involves the skills to explain with clarity and proper understanding of the concepts. The components include teacher enthusiasm, creativity, effective explanation, planned repetition and concluding statements or key messages with summary of explanation.

Use of examples and illustration: The teacher should be able to use relevant examples and illustration in order to make his lesson clear and meaningful. He should explain the concepts by simple, relevant, and interesting examples to increase learners understanding Stimulus variation: The ability to secure and sustain the attention of learners is very important for a good teacher. It involves the use of gestures, facial expression, tone variation, change in speech and change in interaction styles.

Reinforcement: This skill is meant for increasing the probability of repeating an action again and again. It is used in the classroom to encourage increasing participation of students in the class. This may be verbal or non-verbal. Verbal reinforcement involves the use of words of mouth to praise our students or by presenting some tangible materials such as money or any other material.

Questing skills: It is important to allow and encourage the use of question in the classroom. A good question should be asked with the use of simple and clear language that is devoid of any ambiguity. Redirection, refocusing and increasing critical awareness are significant components of this skill.

Classroom management and control: A good teacher should be able to control his students. Providing proper instructions, restricting inappropriate behaviour, and calling the students by their name are an essential element of this skill.
Media utilization: Teachers should make use of media during teaching and learning in the classroom. The use of media helps to make our teaching to be clearer to the student and makes teaching to be easier for teacher. It helps to concretize abstract concepts and make learning to be interesting to the learners.

5. USES OF MICROTEACHING

Microteaching improves critical thinking skills of the pre-service teachers (Arsal, Z: 2015). The general competencies defined by EU commission include critical thinking skills and dispositions and are references for both initial teacher education and the continuous professional development of teachers in Europe (European commission, 2013). If pre-service teachers have critical thinking skills and dispositions while they are in the initial teacher education program, they can plan and implement future teaching activities that will improve their student critical thinking skills and dispositions. Paul and Elder, defined critical thinking as the art of analyzing and evaluating thinking with a view to improve it. Microteaching is used for the development of teachers in general. Fernandez (2005) stated that microteaching improves the teaching skills of pre-service teachers by reducing the complexity of the authentic classroom environment and limiting content, time and number of students. This will in turn assist them to break complex topics into teachable units during microteaching in the actual classroom situation.

Microteaching helps students to develop communication skills. Popovich and Katz (2009) revealed that microteaching is a valuable tool for assisting students in developing communication, critical thinking and problem solving skills. Teacher educators can easily control many factors that influence the quality of teaching by means of microteaching. At the observation and criticism stage, the video recorded teaching activities of the pre-service teachers are matched by the teacher educator, the other pre-service teacher and the demonstrator. At this stage, the pre-service teacher sees his mistakes and tries to improve his communication skill and other teaching performance.

Micro teaching provides pre-service teachers with a connection between theory and practice and improves their teaching skills with regard to planning, implementation and evaluation (Fernandez, 2005). The findings of studies of micro teaching show that micro teaching is effective in increasing planning, implement self-efficacy believes, and reducing the teaching anxiety of pre-service teachers (Bell, 2007; mergyler & Tangen, 2010).

Micro teaching has a pivotal role in science education programs and contributes greatly to the better understanding of teaching process and its complexities. A case study of a micro teaching lesson study combining the elements of Japanese lesson study and micro teaching techniques reported that the pre-and post-lesson plans had successfully demonstrated growth in teachers knowledge on teaching (Fernandez LM, 2010) the teach, critique, re-teach, model in a dental education program identifies micro teaching as a technique for personal ability development and the confidence building of healthy professionals.

Microteaching makes the teacher education programme more purposeful, goal oriented and helps to decide common objectives for the program. It provides individualized training with more realistic evidence to students, which enables them to develop competency in using specific teaching skills in view of their unique needs.

It provides a democratic type of behaviour among faculty members and student-teachers. It provides a facility of supervision which is not critical or threatening type, but is of a helpful and suggestive type which equips them for transition to school teaching. It is a system of controlled practice that makes it possible to concentrate on specific teaching behaviour and to practice teaching under controlled laboratory conditions.

6. THE RELEVANCE OF MICROTEACHING IN THE TEACHING OF SCIENCE SUBJECTS

Microteaching technique was established in the early 1960s as a means for instructors to improve their teaching effectiveness. It involves the recording of small teaching events for the viewers to review and critique, thereby widening the pedagogical scope of both the presenter and the viewers. As a far teacher preparation, microteaching trans teaching behaviours and skills in small group settings aided by video recording which enables the practicing student teachers to see themselves the way others see them and therefore give room for self-correction and future perfection. A microteaching session is a chance to adopt new teaching and learning strategies and though assuming the student role, to get an insight into students’ needs and expectation. Microteaching is a good time to learn from others and enrich one’s own repertoire of teaching methods. Another relevance of microteaching is that it provides skilled supervisors who can give support, lead the session in a proper direction and share some insight from the pedagogic and argotic view. It considers the trainee’s capacities by allowing him to select the content of the lesson from the area of his greatest competence (Meier, Summer 1968 as cited in Cooper & Allen, 1970).
7. CONCLUSION

Teacher is the source and transmitter of knowledges, wisdom and understand. Teacher is the major pivot upon which all forms of education revolves. Therefore, teacher preparatory program should be handled with the utmost care it deserves. Training of science teachers in specific teaching skills is a major challenge in science education programs. The needed pedagogic skills needed for science teaching can only be acquired through more structured and simpler training techniques (Fober, 1974). With the introduction of microteaching, all the scientifically effective methods and steps to be followed in teacher training programs has been overcome. Microteaching is a scaled down teaching in terms of time (5-10 minutes), content (just a small bit) students number (5-10 minutes) and skill (usually one skill at a time).

There are three phases of microteaching and all of them are connected to one another. The first phase is the knowledge acquisition phase during which student teachers are exposed to trainings on the skills and component of teaching through lectures, illustrations and demonstration of the skill by the expert teachers or watching of video. The skill acquisition phase involves the teacher trainee playing active roles based on the advice of the experienced teacher. It involves preparation of a short lesson by the teacher trainee, teaching of the course content to a group of 5-10 students or poor within a period of 5-8 minutes using only one skill and play back or critique stage. If his performance is not satisfactory he will need to replant-re-present and re-evaluated. The last phase is the transfer phase during which the pedagogical and anagogical knowledge acquired during the other phases are made use of during the actual teaching in the normal classroom.

The microteaching makes use of skill that is very important to science teaching. They include: lesson preparation skill, set induction skill, presentation skill, use of examples and illustrations, stimulus variation, questioning, class management and media utilization skill. The importance of microteaching in the teaching and learning of science had been found to include the following:

1. It improves the thinking skill of pre-service teachers,
2. It improve the teaching skills of the pre-service teachers,
3. It provides the pre-service teacher with connection between theory and practice, and
4. It makes teacher education program to be more purposeful and goal-oriented.

Based on the listed importance of microteaching in science education program, it is hereby concluded that it should be introduced into the science teacher preparation at all level of education so as to make science teaching more productive and goal-oriented.

8. RECOMMENDATIONS

Based on the usefulness of microteaching, the following recommendations were made;

1. That microteaching should be introduced to all teacher education programs.
2. Enough fund should be released to all teacher-producing colleges and universities to build micro-teaching laboratory and buy the needed gadgets and equipments.

REFERENCE
