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THE CHALLENGES FACED BY PRESERVICE SCIENCE TEACHERS DURING TEACHING PRACTICE

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ABSTRACT: This study investigated the challenges of teaching preservice science teachers (PSTs) articulated within the context of their practice teaching in mentor schools. Six PSTs were interviewed at the end of their fourth year in science teacher education program. All PSTs completed their practice teaching in the same mentor school. They observed two different science teachers in six, seven, and eight grade science classrooms as well as teach in those classrooms. The constant comparative method was used to analyze their interview data. The results indicated that PSTs encountered five main challenges during their teaching practice. All PSTs expressed that there were students with disabilities in the mentor school and they were not trained for teaching science in inclusive classrooms. As a result, those disable students were not involved in classroom activities. The next problem PSTs identified was that they were not allowed to make enough teaching practice in mentor schools due to mentor teachers' concerns about covering the curriculum. The third one they clarified was that they do not have enough pedagogical content knowledge. Preservice science teachers also experienced problems with classroom assessment and classroom management due to lack of enough training. Although they took one course for measurement and evaluation, they thought they were not knowledgeable enough for assessing science learning effectively. In terms of classroom management, they believed that they learned the theory but they lacked practice. Results were discussed and implications were made for teacher education programs.

Key words: Teaching practice, teacher education, preservice science teachers, science education

INTRODUCTION

Teaching practice is central element of teacher education programs because it provides student-teachers first-hand experience (Maphosa, Shumba, & Shumba, 2007; Ngidi & Sibaya, 2003; Perry 2004; Quick & Sieborger, 2005). Teacher education is related to how and what teachers should know about subject matter and pedagogy; how they thought and how they learned in preservice programs and schools (Cochran-Smith, 2004). This is critical for well-prepared and effective teachers. The quality of teaching in schools depends on the quality of training student-teachers receive during teacher education program. Feiman-Nemser (2001) emphasized that policy makers and educators are realizing that what students learn in schools is directly connected to what and how teachers teach which, in turn, depends on the knowledge, skills, and commitment they gain during teacher education. Moreover she argued that not only students require powerful learning in schools, but also teachers need powerful learning before starting their professions. Although teachers receive training during teacher education, they may still face difficulties in performing their profession due to some problems in teacher education. There is important evidence in the literature that the success of teachers does not only depend on theoretical knowledge, but also on practical experience (e.g. Lingam, 2002; Williams, 1994). Therefore, researchers should focus more on the classrooms in which practical experience take place. Crookes (2003) pointed out that much of what is happening in the classroom taught by preservice teachers remains unknown. With this in mind, this study aspired to investigate what difficulties preservice science teachers experience in real classroom environment during their teaching in cooperating schools. More specifically the following research question was investigated: "What are the challenges preservice science teachers face in trying to meet the expectations of real classroom environment?"

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METHODS

The Participants and Study Context

The main aim of this investigation is to find out the challenges preservice science teachers (PSTs) face in their teaching practice in mentor schools. Six PSTs were interviewed at the end of their fourth year in science teacher education program. All PSTs completed observing elementary schools (School Experience Course) during fall semesters of their last years in teacher education program. In the course of this experience, they observe school and classroom environment, the way mentor teacher instructs science in 6, 7 and 8 grades. However they do not experience practice teaching in science within the scope of this course. In the spring semester, however, in addition to observation, they also practice teaching science in mentor schools. The PSTs in this study completed their teaching practice in the same mentor school. They observed two different science teachers in six, seven, and eight grade science classrooms. This course, namely Teaching Practice Course, aimed to provide student teachers with the opportunities for obtaining experience in observing and participating actively in all the diverse educational activities in the school. This course included finishing a minimum of 6 hours of classroom observation and participation each week in mentor schools.

Research Design, Data Collection and Data Analysis

The research was conducted using a case study approach and qualitative data gathering methods. Data collection focused on answering the research problem of the study which was exploring the problems which challenge PSTs in doing their professions. The data source included semi-structured interviews with participants individually about the problems and difficulties they had during their visit in mentor school. Data analysis focused on the identification of common patterns that emerged from the semi- structured interviews without using a pre-established system of categories or codes.

RESULTS AND FINDINGS

Our close analysis of data through the constant comparative method revealed that preservice science teachers' problems during their teaching practice could be collected under five main categories. These were *lack of training for teaching science to students with disabilities in inclusive classrooms, insufficient teaching practice in mentor schools, lack of pedagogical content knowledge, lack of training for classroom assessment* and, the last one, *lack of training for classroom management*.

All PSTs expressed that there were students with disabilities in the mentor school and they were not trained for teaching science in inclusive classrooms. As a result, those students were not involved in classroom activities. For example the following PST stated that

What can I do with a student having mental disability in my science classroom? How can I teach science to her or how can she learn? I do not know.

Another PST stated that

When students are working in a group and doing an experiment, the student with disability could not participate and I felt bad because I did not know what to do. I just told him sit and wait until the end of the group activity.

All PSTs also referred to the insufficient teaching practice in mentor schools due to mentor teachers' concerns about covering the curriculum. The next quote exemplifies this.

We are required to teach at least two times in mentor schools by university instructors and mentor teachers obey this. However this is not enough. I should experience teaching more. Our mentor teacher complains about lack of time and not to be able to cover the topics in the curriculum.

The third prevalent problem among PSTs was the lack of pedagogical content knowledge. For example the PST's statement below illustrates this;

Sometimes I know the subject but I do not know how to teach it so I just try to cover the topic.

Another PSTs noted that

I am confused about using teaching methods. Not all methods are appropriate for all topics.

Preservice science teachers also experienced problems with classroom assessment.

I just ask questions whether students remember what I told. For example in my last practice teaching, at the end of the lesson I asked "what force is, whether it has direction"... some of them answered some not. I think this is not effective.

Lastly, PSTs had difficulty for classroom management due to lack of practice in courses they took during teacher education.

I could not control the students. We took a course about it but we just made lots of readings without understanding what classroom management really means. Our instructors didn't let us practice it.

CONCLUSION

This study aimed to find out the problems and difficulties preservice science teachers experienced after they completed school experience course in their teacher education program. Five main categories were identified as a result of data analysis. These were lack of training for teaching science to students with disabilities, insufficient teaching practice in mentor schools, lack of pedagogical content knowledge, lack of training for classroom assessment and, the last one, lack of training for classroom management. It was not surprising that all PSTs stated that they do not know how to teach science to a student with disability because there is not such a concern in teacher education programs. There is not a compulsory course for this purpose in elementary science teacher training program in Turkey. However, this is important because the vision of science curriculum in Turkey is set to educate all students scientifically literate without considering individual differences. The second problem, insufficient teaching practice stated by participants, was also expected since teaching only two times for a whole semester is not enough for a teacher candidate. This is the only opportunity that PSTs get before they graduate and start teaching as a profession. The mentor teachers do not allow more because they are concerned about curriculum. However, PSTs are also concerned due to lack of practice in teaching. Classroom assessment is usually ignored by many teachers and we believe that this also does not get enough importance in teacher education programs. As a result, participants in this study neither used classroom assessment strategies nor they used it very simply. Similarly, classroom management was not so emphasized in teacher education programs and PSTs do not get enough practice for it.

RECOMMENDATIONS

The fundamental goal of teacher education programs should be prepare competent teacher candidates. Cochran-Smith (2004) stated that the goal of teacher preparation programs was to design the social, organizational, and intellectual contexts wherein prospective teachers could develop the knowledge, skills, and dispositions needed to function as decision makers. Teacher preparation is important because they are responsible for student learning in classrooms. Therefore teacher educators should pay attention to the problems explored in this study and those programs should be redesigned to address them.

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