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Peer Observation and Reflective Teaching: Student-Teachers Learning to Teach Mathematics from their own Experiences

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Abstract

Peer observation and reflective teaching enables student-teachers to continuously improve their practice while being informed by their own experiences. It requires peers working together to observe and learn from their own experiences. This paper discussed perspectives and experiences about peer observation and reflective teaching done by student-teachers in Tanzania. The study was done during the field practices of student-teachers. The work is an interpretive study which involved student teachers teaching mathematics. The study found that student teachers are willing to cooperate with their colleagues in peer observation and in other methods of 'shared transfer of knowledge' including that of reflective teaching. The number of field work sessions involvement were very few and not continuous and their intentions were mainly those of getting ready for assessment by their university supervisors. The study concluded by recommending the training of student-teachers to adopt reflective practices in their preparation for classes as a lifelong exercise in their teaching career.

Key terms: peer observation, reflective teaching, student teachers, Field teaching experiences

1. Introduction

The teaching of mathematics has been challenged by stories of ill performance in several learning areas (Kisakali & Kuznetsov, 2015; Mabula, 2015; UNESCO, 2011). Such areas include the general outcome performance, classroom participation among students, gender imbalances and teachers' competence, to mention but a few.

Some of these challenges' emanate from the amount and quality of resources invested in education. Challenges that face the teaching and learning of mathematics as pointed out by Kisakali and Kuznetsov (2015) include among others: lack or shortage of mathematics teachers, shortage of teaching and learning materials, such as: textbooks, lack of interests among learners, perceived triviality and lack of practice, and lack of internal drive and enthusiasm. Despite evidenced challenges in mathematics teachers' availability and other instructional resources such as text and reference books, instructional strategies are central to mathematics learning, the instructional strategies in mathematics are heavily informed by teachers active roles played in the classroom as they interact with students and other people (Walshaw, 2010). While the curriculum ought to be learner-centered by involving students in active construction of knowledge activities and in low resourced contexts the teachers have to intensify their classroom learning facilitation. Mathematics lesson facilitation is greatly influenced by content knowledge and pedagogical content knowledge teachers develop over time (Lowery, 2003; Walshaw, 2010).

The choice of the teaching strategy to adopt has to be informed by experience as urged by Saleh and Hussin (2011) that in mathematics, teachers are central to deciding the best teaching strategies that are also effective for their students. In order to continuously improve their classroom practices teachers have to rigorously evaluate their day to day teaching (Pollard, 2008; Saleh & Hussin, 2011). Evaluation of teachers' self undertakings informs further practices. Insuasty and Castillo (2010) argue that evaluation and reorganization of one's own teaching, is done to augment the teaching practices. Therefore, teachers need to evaluate their lessons in order to make decisions on how next to teach better and how effective their teaching is to their students' learning. Evaluation can be done in different ways but it is not the intention of this paper to discuss evaluation methods. However, the reflection on the whole classroom experience which a teacher does in an effort to uncover strengths and weaknesses of the classroom teaching with the help of other teachers is discussed. This paper discusses reflective teaching in mathematics lessons from the

student teachers perspective. The study was done in order to explore how student teachers with the help of their peers reflect on their teaching of mathematics.

2. Peer Observation Reflective Teaching

Reflective practice is a process of doing a retreat on what one does (Lowery, 2003). As a concept, it starts from the work of Dewey (1910) who contends that reflective thought is done out of conscious and involves deliberate efforts to establish beliefs or knowledge from dependable evidence. Reflective teaching is a process done willingly to engage oneself in self evaluation and personal driven professional development (Pollard, 2008). Reflective teaching is very important in teacher education as it is in teacher development (Insuasty & Castillo, 2010; Saleh & Hussin, 2011). In teaching, teachers can reflect on their classroom practices by recalling what was done and how it was done during the classroom interaction with their students. Recollection may also address the kind of materials that were used (Maat & Zakaria, 2010) and how interactive they were.

The rationale for doing reflection in teaching is to decide on the quality of the teaching process with intentions of improving the process for future lessons. Reflective practice is evidence based in the sense that the recollection is recorded and any analysis of the practices is informed by the recorded data (Pollard, 2008). Therefore, reflection does not only involve recalling what was done, but also documenting the same so that any further decisions may be based on such documented evidence. Different steps may be involved in doing reflection on teaching. The number of steps differs in the way they are analyzed just as the scholars do. A consolidation of the steps is hereby made from two literature sources: as explained by Insuasty and Castillo and by Jack Richards.

Richards (2004) puts forth three steps; the event, recollection, and review and response. The event involves: explaining the session, nature of students, the subject taught any relevant information that identifies the characteristics of the event. The recollection involves

taking record of what really happened and it may include multiple tools such as taking of notes or using of video or audio recording. The review is then done based on the recollected data. Questions and answers for the purpose of reflection are provided.

Unlike Richards who puts forth three steps, Insuasty and Castillo (2010) have five stages: Mapping, Informing, Contesting, Appraisal and Acting. Mapping involves collection of evidence through observation in the classroom. Informing explains the meaning of what happened. Contesting finds reasons for what happened. Appraisal suggests different ways of teaching. And acting is the implementation of the new thought ways.

There are several ways of doing reflection on teaching such as recording of lessons, collaborative diary keeping, journal writing, autobiographies, self reports, written accounts of experiences and peer observation (Richards, 2004). Each of these has its own way of handling and bears strengths and challenges. It is not intended to discuss these types here, but in this paper peer observation as done among student teachers is discussed.

Peer review allows for observation of the teaching process. It is an essential component of teacher training which involves observing a student teacher facilitating a lesson and providing constructive feedback (O'Leary, 2014). Classroom observation is essential for improving teaching practices (O'Leary, 2014; Pollard, 2008). Peer review reflective teaching is done in several steps as explained by Richards (2004). The process begins with the making of agreements on observation. Participants agree on the involvent and to change roles in turns, observe and be observed. The second stage is te pre-observational orrientation which involves discussion on what is to be observed. This stage explains the nature of the students, the teaching strategies and the resources used. A focus may be established while explaining the goal to achieve. The third stage is that of peer observation itself, whereby the oberver(s) visit a slassroom session to see and record the lesson as agreed. The last stage is that of post-observation which involves the observer reporting observed

information and disscuss it with the one who taught the lesson. This stage has to follow immeadetely after observation.

3. Rationale for Peer Observation Reflective Teaching

Student teachers undertake field training with peers in an effort to merge theory and practice of teaching (Nyaumwe & Mtetwa, 2011). The field training intends to equip student teachers with the latest teaching experiences from the actual classroom with real students (Author, 2016). As prospective teachers, they need professional support from regular and experienced teacher and from their college or university supervisors (Author, 2016). However, student teachers can improve their practices by sharing what they know and learn from each other (Nyaumwe & Mtetwa, 2011). Furthermore, teachers who reflect on their teaching of mathematics broaden their view of how well to teach the subject and consequently improve their students learning (Naresh, 2013). Peer observation reflective teaching provides this opportunity. The objective of this study was to explore how student teachers utilize this opportunity of improving their teaching which is informed by their own practice especially in mathematics lessons. Peer reflection is important in this context because mathematics student teachers ought to receive regular supervision from regular teachers.

Unfortunately, most schools are faced with acute shortage of mathematics teachers (Kisakali & Kuznetsov, 2015; UNESCO, 2011) who in their capacity are supposed to provide subject specific professional help. This contention is well put by O'Leary (2014) and Lowery (2003) who points out that student teachers progress in schools is inhibited by insufficient mentorship which would involves observation and provision of constructive feedback. Available regular teachers are overloaded with teaching load and may find it difficult to provide supervision. The study therefore was intended to answer the following questions: i. what are the student teachers perceptions on peer reflective teaching practice? ii. to what extent student teachers do peer reflective practice in mathematics lessons?

4. Methodology

A qualitative approach was used to explore peer observation reflective practice around an interpretive study. This study was done to explore perceptions and experiences of student teachers on peer observation reflective teaching. It was done during the 2015/2016 teaching practicum of the University of Dare S Salaam. The study was done in eight secondary schools in Tanzania southern highlands. Mathematics student teachers were the respondents to the study. Schools had student teachers of different specializations, however those with mathematics specializations were purposefully chosen. There were eight student teachers in all who were involved in the study. Documentary review was done on student teachers portfolios in search of reflective teaching evidences. Interviews were used to obtain data from the respondents.

5. Ethical considerations

The study involved human respondents. Research with human participants always requires some ethical considerations. Despite having an academic permit to this role as a researcher, further participant consent was important. In order to fulfill ethical requirements in research I had to seek free consent from student teachers for their participation. Respondents were assured on the confidentiality and use of the information they were to provide.

6. Findings

Reflective teaching is done in order to inform further teaching practices (Insuasty & Castillo, 2010; O'Leary, 2014). The study explored how student teachers percive peer observation reflective teaching in their mathemtics lessons. All students who were interviews had an understanding of peer observation. However, there was a litle challenges to some student teachers when it came to explining the reflective teaching. While majority (6) of the student teachers thought of it as thinking of what they do, only one student teacher thought reflective teaching is evidence based. All student

teachers did not aggree before classroom obersevion on what has has to be observed. They reported to have been invited to observe the lessons and at time without being given time for preparation.

Peer observation involves inviting fellow practitioners to see what and how one is doing one's work. Students were asked to explain how willing they were to be observed by their peers, regular teachers and their university supervisors. All student teachers reported to be more comfortable to be observed by their peers whom they knew very well. Five student teachers reported to be comfortable being observed by school regular teacher. All student teachers reported to feel not at ease being observed by their university supervisors. The presence of university supervisors made them less comfortable with the explanation that it was associated with grades. One student pointed out that:

> "…when I see a lecturer at school I begin thinking of how I will perform in the course. The lectures provide good feedback but it is normally associated with grades. They cannot fail to see mistakes in my teaching and this makes me feel not at ease. I always think how I am going to be assessed and the final score that I will get…."

Reflective teaching is a way of making teachers lifelong learners (Pollard, 2008) in the sense that one continually acquires knowledge through learning from their own practices. It is not a one day activity that is done once a year but as often as possible. Student teachers were asked how often they have been involved in peer observation of mathematics lessons. None of the eight students was observed more than once. One student teacher was not observed at all. However, majority (5) of the mathematics student teachers observed more lessons of their peers of different subject specializations. Mathematics student teachers who were observed in their teaching reported that most of their peers were of different specializations. In all the schools that the studies were done it was found that there was no more than a single mathematics student teacher there.

Peer observation reflective teaching is done in order to improve teaching process informed by teachers own experiences (Pollard, 2008). Mathematics student teachers were asked to provide reasons for doing peer observation reflective teaching. Most (five) student teachers who did this kind of reflective teaching reported that they did in order to build their confidence to stand in front of their university supervisors when assessment begins. Only two student teachers reported to do reflective teaching in order to improve their practices. Student teachers were also asked on the constructiveness of the feedback they received from their peers. All student teachers reported to have received constructive feedback especially in the area of the teaching strategies.

Students teachers were also asked to explain challenges they faced in doing peer reflective teaching practice. Obtaining someone who is willing to observe their lesson was the most identified challenge. Finding time for peer observation that fits your peers was yet another challenge. In all the schools involved in the study, only one mathematics student-teacher was available, a situation which made peer observation to be done by student teachers, a different subject of specialization.

7. Discussion

Most student teachers had an understanding of what peer observation is. However, their conception of reflective teaching was ill constructed. While majority thought of it as thinking on what they do, which actually is as explained by Saleh and Hussin (2011) and Nyaumwe and Mtetwa (2011), they did not think of it as requiring some evidence as a professional practice. Therefore, all the peer observation reflective teaching sessions that were reported to have been done had no record. They did not put in writing what was observed in the classroom. More still there was no record of the post-observation discussion. This suggests that any further decisions that affected their practice was not documented, hence lacking evidence as a professional undertaking. This is not an attempt to insinuate that there was no positive improvement in their teaching but such

improvements could not be supported with evidence. The lack of evidenced practices inhibits the follow up and implementation of the decisions made and their expected effects that ought to be improved. It is also difficult to justify the progress of improving their practices.

All student teachers were willing to welcome a colleague to their lesson for observation. However, the little willingness was reported when it comes to someone they are not familiar to. More still if the observation was attached to grading, it made students feel less at ease and this happened when the observation was done by university supervisors. This suggests that classroom observation done by university lecturers was perceived by student teachers as mainly for grading and not for informing their further teaching endeavours. This argument is contrasted by the findings reported by Mahende and Mabula (2014) who contend that majority of the students saw teaching practice as being for improvement of their practices. However, students are more likely to welcome someone to their lesson if the person is more of a colleague, whose observation may influence their next lessons and not their university grades. Generally peer observation was more welcome by student teachers than formal classroom teaching supervision done by school regular teacher or university lecturers.

Student teachers who were peer observed did so only once. This suggests that reflective practice involving peer observation is not frequently done by student teachers. Mathematics student teachers had no opportunity to be observed by their peer students with specialization in mathematics. This happened because in all the schools where the study was done there was only one student teacher, if any, with specialization in mathematics. The same challenge of shortage of persons who have specialized in mathematics was with regular teachers. Shortage in regular mathematics teachers in schools inhibited specific pedagogical content knowledge support to mathematics student teachers. Thus, most of the peer observation reflective teaching involved student teachers of diverse specialization especially in mathematics lessons. This might have inhibited content specific challenges from being uncovered and addressed.

Student teachers did peer observation reflective teaching in order to prepare themselves for the more formal classroom assessment done by their university lecturers. The reflective practice is intended to improve the teaching process. When this process is improved student teachers do not have to worry about assessment and grading. The focus on assessment and grades from the university supervisors is losing the actual rationale for the process of reflection.

8. Recommendations and Conclusion

Peer observation reflective practice enables student teachers to improve their classroom teaching from their own experiences. Student teachers may find more time for classroom observation with their peers unlike it is the case with university supervisors or school regular teachers. The availability of mathematics teachers for classroom supervision is also less certain because of their few numbers and teaching load that they have. Therefore, peer observation may be of more help in improving student teachers classroom practices than supervision from any other relevant observer. While uncovering the importance of peer observation in reflective teaching for student teachers, it is also equally important to point out that student teachers need to be trained how to do peer observation for their own reflective teaching. Student teachers need to follow all important stages of the process including negotiation for involvement, preparation for the process, taking evidences, discussions and decisions, and implementing the decision.

Awareness of the general principles of reflective teaching and its benefits or potentials in improving their teaching career practices is central to their willingness and commitment of doing reflection (Insuasty & Castillo, 2010; Lowery, 2003). While peer observation improves their collaborative skills, doing it for reflective teaching prepares them to become lifelong learners. University lectures need to provide supervision for improvement to rather than grading (Mahende & Mabula, 2014). This supervision should be done to supplement the peer observation reflective teaching done by student

teachers own efforts. In cases where peers are not of the same specialization, efforts should be made to find peers whose specializations are closely related to each other for example; specialization in mathematics and physics. Nevertheless, specializations should not obstruct peer observation activities because there are other potential benefits beyond the subject matter related benefits. Peer observation reflective teaching among student teachers improves cooperation among participants and helps to continuously inform future teaching practices towards becoming professional teachers, a reason why it has to be upheld.

References

Author (2016).

Dewey, J. (1910). *How we Think.* New York: D. C. Heath & Co.

Insuasty, E. A., & Castillo, L. C. (2010, October). Exploring Reflective Teaching through Informed Journal Keeping and Blog Group Discussion in the Teaching Practicum. *Profile, 12*(2), 87-105.

Kisakali, J., & Kuznetsov, D. (2015). Modeling Factors influencing Mathematics Learning and Performance in Tanzanian Secondary Schools. *Asian Journal of mathematics and Applications, 2015*, 1-11.

Lowery, N. V. (2003). The Fourth "R": Reflection. *The Mathematics Educator, 13*(2), 23–31.

Maat, S. M., & Zakaria, E. (2010). An Exploration of Mathematics Teachers' Reflection on Their Teaching Practices. *Asian Social Science, 6*(5), 147-152.

Mabula, S. (2015). Modeling Student Performance in Mathematics Using Binary Logistic Regression at Selected Secondary Schools: A Case Study of Mtwara Municipality and Ilemela District. *Journal of Education and Practice 6* (36), 96-103.

Mahende, G. A., & Mabula, N. (2014). Is teaching practice for grading or improvement? Examining student teachers' perception and experience at the University of Dar es salaam, Tanzania. *African Educational Research Journal 2*(1), 1-11.

Naresh, N. (2013). Traverses through the Landscape of Reflective Thinking: Teachers' Actions in the Context of Lesson Study. *Fields Mathematics Education Journal, 1*, 21-42.

Nyaumwe, L. J., & Mtetwa, D. K. (2011). Developing a cognitive theory from student teachers' post-lesson reflective dialogues on secondary school mathematics. *South African Journal of Education, 31*, 145-159.

O'Leary, M. (2014). *Classrom Observation: A Guide to The Effective Observation of Teaching and Learning .* New York: Routledge.

Pollard, A. (2008). *Reflective Teaching: Evidence-informed Professional Practice, 3rd Ed.* New York: Continuum International Publishing Group.

Richards, J. C. (2004). Towards Reflective Teaching. *The Teacher Trainer 33*, 2–5.

Saleh, F., & Hussin, Z. (2011). Reflective Practices Among Mathematics Teachers. *Asia Pacific Journal of Educators and Education, 26*(1), 145–157.

UNESCO. (2011). *Tanzania Education Sector Aalysis: Beyond Primary Education, the Quest for Balanced and Efficient Policy Choices for Human Development and Economic Growth.* Dar es Salaam: UNESCO.

Walshaw, M. (2010). Mathematics pedagogical change: rethinking identity and reflective practice. *Journal of Mathematics Teacher Education, 13*, 487–497.