

Challenges Faced in Using Dialogic Approaches to Minimize Learner Errors in Mathematics Classes: A Case of Public Primary Teacher Training Colleges in North Rift Region, Kenya

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and recognise the errors present in this work. Tutors are required to interpret learners' performance in examinations and develop better lessons on the basis of these interpretations. This implies that teachers are expected to use learner data diagnostically. The purpose of this study was to establish the challenges faced in using dialogic approaches in minimizing learner errors in mathematics classes in Public Primary Teacher Training colleges in Kenya. Data was collected from trainees who were selected using stratified random sampling while Heads of Mathematics department and Deans of Curriculum were selected using purpose sampling. Data was collected using structured interviews, structured observation schedules, and document analysis. Qualitative data was analyzed thematically as reported by the respondents during the interview. The study established that large class sizes affected the use of the dialogical approach in minimization of learners' errors in mathematics classes. This approach requires more time in teaching during the initiative response feedback. Considering the scope of the content to be covered within the allocated time, it becomes difficult for the tutors to apply the approach. Personal characteristics of the teacher trainees like gender, personality and interpersonal relationships also affect the use of this approach.

Introduction

The aim of dialogic teaching in mathematics is not only to teach concepts but also to teach mathematical dialogue in which concepts are questioned and developed (Kazak *et al.*, 2015). Learners are constantly in interaction with activities, gestures, conversations, and mathematical symbols while learning mathematical concepts (Airey & Linder, 2008). Language acts as a tool in meaning making mathematical processes. Learners use language to think about their own ideas and their peers' ideas and to talk about and discuss mathematical concepts. In other words, learners construct mathematical

Abstract

Tutors identify errors in the mathematics classroom virtually every day. When tutors respond to learners' errors in their classrooms, during or after teaching, they are actively carrying out formative assessment. Responding to learners' error is a specialized activity of formative assessment, which relies on tutor's deep knowledge of content, and requires tutor's professional judgement on how to respond to learners' needs when teaching that content.

Tutors have always had to assess learners' work

knowledge using various forms of language. Language use can take on the form of either a monolog or a dialog. Proof from observational investigations demonstrate that in an investigation of more than 100 center and secondary school classes dialogic talk took up under 15% of guidance time and when 'lower-track students' were locked in there was a virtual nonappearance of such talk (Myhill & Fisher, 2005).

Lefstein (2006) censures backers of educational discourse as excessively optimistic and requires a progressively even minded methodology. He takes a gander at the awkwardness in the circulation of assets

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for the activity of intensity in establishments and reminds that mentors are ordered to restrain students' development and discourse, relegate errands and decide the nature of less fatty action just as being vested with epistemological position. The way that school is necessary, student participation is constrained and coaches are bound by authoritative and lawful commitments. Considering all these, one is left to question if mentors can break down or rise above their conventional jobs. Beneficial to note is that numerous students originate from hindered and subjected bunches where cultural imbalances are generally recreated in the study hall. Connections outside homeroom obviously sway on study hall communication and should be problematized. Force relations limit correspondence and will be impacted by students' solid encounters of benefit and persecution (Ellsworth, 1989). Backers of dialogic showing mourn the nonappearance of exchange, of authentic discussion in classes where youngsters are kept from creating voice and basic consciousness of their own closures, means and limits in learning. Testing such examples of association requires a lot of exertion and duty for the benefit of coaches and shows extensive test to the individuals who wish to set up such procedures in science classes and schools. As indicated by Brodie (2013) lion's share of students don't perform well in arithmetic since they make various kinds of mistakes. Along these lines, the way wherein a guide manages student blunders is critical, as it can either improve or restrain students' comprehension of Mathematics. Philosophies for remediating blunders are not constantly palatable, particularly when extra work or re-clarifying of thoughts are utilized as cures. While much research has been done on the idea of students' mistakes and their hidden misguided judgments (Hansen, 2011; Neshet, 1987; Olivier, 1989) and how mentors may manage such blunders (Borasi, 1994; Swan, 2001), next to no work has been done on the challenges encountered in using dialogic approaches in minimization of learner errors in mathematics classes in public primary teacher training colleges.

Methodology

The study was done in selected Public Teacher Training Colleges in North Rift Region, Kenya. The investigation was secured in social constructivism theory. This Philosophy holds that the very idea of human learning necessitates that every individual make their own comprehension of the world from direct understanding, activity and reflection, not from predigested data and abilities displayed by a mentor and a course reading (Zevenbergen, 1995). Productive cases that significance doesn't exist in its

own privilege rather it's built by person as they associate and participate in translation. It perceives that the truth is a result of human knowledge connecting with involvement with this present reality. Constructivism acknowledges reality as a build of human brain and in this manner the truth is seen as abstract. For constructivism the truth is socially developed (Andrew, Pedersen & McEray, 2011). A descriptive survey design was used in the study.

The target population of the study was 4 public teacher training colleges in North Rift, Kenya. The targeted respondents were 4HoDs (Mathematics Department), 4DoCs (Deans of Curriculum, and 1980 teacher trainees in the second year of study. Out of the total 1980 second year teacher-trainees from the sampled colleges, the researcher selected 322 (16.3%) teacher-trainees. Purposively, 8 tutors of second year mathematics teacher trainees, 4 HoDs and 4 DoCs participated in the study. The respondents were selected proportionately from each of the colleges where the study was done. Simple random sampling was used to identify individual participants in the study. Data was collected using interviews, observations and document analysis. Qualitative data was analyzed thematically.

Findings

The fourth objective of this study was to determine challenges encountered in using dialogic approaches in minimization of learner errors in mathematics classes in public primary teacher training colleges. To achieve this objective, the respondents were asked an open ended question that required them to state the challenges encountered in using dialogic approaches in minimization of learner errors in mathematics classes. This elicited multiple responses.

Majority of the respondents stated that large class sizes affected the use of dialogic approach in minimization of learner errors in mathematics. The high numbers of learners in a class make it difficult for effective dialogue between tutor and learners and among the learners in class as a group or as individual learners. This response was stated by all the categories of respondents who participated in this study that included the teacher trainees, tutors, Heads of departments and deans of curriculum in the colleges where the study was done.

The other challenge mentioned by majority of the respondents through questionnaire and interview was lack or inadequate time allocated for the mathematics lesson. Considering the scope of content to be covered within the time allocated, it becomes difficult for the tutors to use dialogic approach in minimization of learner errors in mathematics. Dialogic approach requires more time because it

entails giving chance another party to provide his/her opinion concerning a mathematical problem. This is why the dialogic approach might not be effectively used in minimizing learner errors in mathematics.

The respondents also asserted that learners' attitude towards each other and towards the mathematics tutors affects the use of dialogic approach in minimizing errors. There are situations where the learners perceive others as people whom they cannot work with or had previously been in bad terms with. This implies that they cannot have a dialogue with the colleagues they have a negative attitude towards. Cultural diversity was another challenge that affects the implementation of the dialogic approach towards minimization of errors in mathematics. There are cultural beliefs that are retrogressive and might affect the use dialogic approach in minimizing errors in mathematics. The study also established that personal characteristics of learners like gender, personality and interpersonal skills affect the use of dialogic approach in minimizing errors in mathematics. This was stated by majority of the respondents who participated in the study.

It was the opinion of the respondents that for effective use of dialogic approach, the learners require good interpersonal skills that will enable them relate well with the learners in class and even with the tutors during mathematics lesson. This diagram of current deduction on dialogic teaching features the hole between standard practice and the developing acknowledgment of the intensity of exchange during the time spent making meaning. One of the obstructions to the usage of dialogic practice in the instructing of arithmetic is the predominance of the mentor's voice to the detriment of students' own significance making voices. The force connection among guides and students is a hindrance to certified discourse in study hall settings. Likewise, numerous guides do not have the essential abilities for arranging successful entire class discourse and thus the instructive capability of learning through dialogic talk is unattainable.

Proof from observational examinations demonstrate that in an investigation of more than 100 center and secondary school classes dialogic talk took up under 15% of guidance time and when 'lower-track students' were locked in there was a virtual nonappearance of such talk (Nystrand et al., 1977). Myhill and Fisher (2005) found that students had little chance to address or investigate thoughts in homerooms. Frequently there is minimal useful significance making and constrained open door for student interest. The accentuation is on real review as opposed to higher request associations including thinking. This may be the explanation behind low execution of students in

their assessments. The nearness of a National Curriculum in numerous nations implies mentors have an abrogating down to earth worry with covering the educational plan. Numerous guides work to exacting time tables and substance drove educational plan necessities and battle to perceive how dialogic can turn into a standard element of study hall practice. This is especially valid for open essential instructors preparing schools. Much will rely upon how current patterns towards the advancement of reasoning aptitudes require synergistic talk, are really installed in the statutory educational program. How mentors can push ahead on this requires earnest consideration by specialists and experts.

Lefstein (2006) condemns supporters of instructive discourse as excessively hopeful and requires an increasingly down to earth approach. He takes a gander at the unevenness in the appropriation of assets for the activity of intensity in schools and reminds that coaches are ordered to confine students' development and discourse, dole out undertakings and decide the nature of understudy movement just as being vested with epistemological power. The way that school is obligatory, student participation is constrained and mentors are bound by authoritative and legitimate commitments. Considering all these, one is left to question if guides can break up or rise above their customary jobs. Advantageous to note is that numerous students originate from hindered and subjected bunches where cultural disparities are usually repeated in the study hall. Connections outside homeroom plainly sway on study hall communication and should be problematized. Force relations confine correspondence and will be affected by students' solid encounters of benefit and persecution (Ellsworth, 1989). Backers of dialogic showing regret the nonattendance of exchange, of certified discussion in classes where kids are kept from creating voice and basic familiarity with their own closures, means and limits in learning. Testing such examples of collaboration requires a lot of exertion and duty for the benefit of guides and shows extensive test to the individuals who wish to set up such procedures in science classes and schools.

Conclusion

Based on the findings of the study, it can be concluded that large class sizes affected the use of dialogic approach in minimization of learner errors in mathematics. The high numbers of learners in a class make it difficult for effective dialogue between tutor and learners and among the learners in class as a group or as individual learners. The study established that considering the scope of content to be covered

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within the time allocated, it becomes difficult for the tutors to use dialogic approach in minimization of learner errors in mathematics. The other challenge was learners' attitude towards each other and towards the mathematics tutors that affect the use of dialogic approach in minimizing errors. There are cultural beliefs that are retrogressive and might affect the use of dialogic approach in minimizing errors in mathematics. The study also established that personal characteristics of learners like gender, personality and interpersonal skills affect the use of dialogic approach in minimizing errors in mathematics.

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