

Teachers' Perspective towards Differentiated Instruction Approach in Teaching and Learning of Mathematics in Kenya

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Abstract

Students' populations are becoming more academically diverse due to ever increasing variety of learners in the heterogeneous classroom make-up. Effective teachers in contemporary classrooms have to learn to develop classroom routines that attend to learner variance in order to raise students' achievement. Teachers need to focus on using sound instructional practices that will improve students' performance for all types of learners. Differentiated instruction is instructional practice that can be used by teachers to meet the diversity of student learning needs and also offers hope for increasing teacher effectiveness. The purpose of the study was to investigate the teachers' perspective with regard to differentiated instruction as a teaching and learning approach in Kenya. The study sought to explore the mathematics teachers' opinions, concerns and attitude towards differentiated instruction approach. The study employed descriptive research design and data was obtained from teachers using questionnaire. The research was carried out in secondary schools that were purposeful sampled. The study utilized 20 form three mathematics teachers who had been trained in differentiated instruction and had implemented the approach in their schools. The data obtained was analysed using descriptive statistics. Results indicated that teachers felt differentiated instruction approach was significant enough to use in the classroom, necessary for teacher effectiveness and improve student achievement. The findings of the study may help to heighten awareness of practices of differentiated instruction and also contribute to the limited body of research addressing teachers' perspective towards differentiated instruction approach.

Keywords: Differentiated Instruction, Perspective, Teaching Approach

Introduction

There is an increase in academic diversity of students in contemporary classrooms in that no two students learn in the same manner or at the same rate. Each student is unique and has different learning styles and preferences. Teachers are expected to meet the needs of all learners in these diverse classrooms. This presents daily challenges for the teachers to address the learning needs of the students (Villegas & Lucas, 2007). Differentiated instruction is a highly effective means of educating whereby teachers can meet the unique learning needs of all students in their class (George, 2005). Teachers need to customize their instructional delivery and assignments to address the needs of all learners while creating opportunities for success of all. The successful adoption of differentiated instruction depends on the willingness, commitment, readiness and support provided by the teacher to the learners as the facilitator. Teachers play a primary role in the application of differentiated instruction in classrooms and so they have the key to successful implementation of differentiated instruction strategies.

Students' academic needs are more readily met in a classroom where teachers utilize the differentiated instruction approach (Tomlinson, 2004). Teachers face increased pressure to ensure that every learner demonstrate high academic achievement. To be successful in providing all learners a fair, equal and significant opportunity to obtain a high quality education, teachers should consider differentiating instruction in order to give students meaningful and quality instruction. Johnsen (2003) argues that teachers have a responsibility to make school a place where every student can benefit. Teachers are instrumental in helping students to reach their heights and potential in learning. Thus teachers encounter unprecedented pressure to raise learning standards while meeting the needs of all learners in the diverse classroom.

Teachers need to prepare students for future by utilizing effective instructional alternatives for teaching an academically diverse population. Teachers should be sensitive to the needs of students, accommodate their different learning styles and find ways to help them make connections for learning to occur in the best possible way. Teachers are continually challenged to implement modifications to their lessons within the classroom to provide students with a positive, interesting, challenging, collaborative and supportive learning environment to ensure that each individual student's academic needs are met. Teachers need to assist in creating instructional environments that will maximize the learning opportunities and will help students in developing the knowledge and skills necessary for achieving positive learning outcomes. Beecher and Sweeney (2008) assert that the focus of education should be about helping students experience significant progress in fulfilling their learning potential. Such learning potential can be realized through differentiated instruction for it allows teacher to tailor the curriculum to meet the needs of each individual students. The teacher has the responsibility for initiating and implementing hence has to take an active role to maintain the integrity of differentiated instruction approach. Teachers' attitude is pivotal in determining effective implementation of differentiated instruction for success to be experienced. However, it is not known to what degree teachers are positive to implementing the differentiated instruction approach. Thus the study aimed at investigating the teachers' perspective towards differentiated instruction approach.

Statement of the Problem

There is immense student diversity in contemporary classrooms and so teachers are faced with a tremendous challenge to plan instruction that focuses on individual students academic needs. Despite the adoption of varied approaches in heterogeneous population there is need to tailor classroom instruction to meet the needs of all students. Teachers are a major influence on learning success of students. Teachers need to differentiate their instruction in order to give each child equal and appropriate education. This new innovative way of differentiated instruction that enable students learn by making adaptations to key learning variables will help teachers meet the needs of all students. However, the knowledge on teachers' response to adopting the new differentiated instruction approach is limited. Hence this study explored the teachers' perspective towards differentiated instruction approach in teaching and learning of mathematics in secondary schools in Kenya.

Objective

The objective of the study was to investigate the teachers' perspective towards differentiated instruction in teaching and learning of mathematics in secondary schools in Kenya.

Research Question

The research question that was addressed in the study was to find out the teachers' attitude, opinions and concerns towards differentiated instruction approach in teaching and learning of mathematics in secondary schools.

Methodology

The study adopted descriptive research design which is most appropriate when the purpose of study is to explore and create a detailed description of phenomenon. It is also used to obtain information concerning the current status of phenomena to describe what exists with respect to variables or conditions in a situation (Faulkner and Faulkner, 2009). The actual sample size used in the study was 20 teachers chosen through purposeful sampling. The participants were all form three mathematics teachers who received training prior to implementing differentiated instruction. The purpose of training was to educate teachers so that they could have a higher level of understanding of the overall process of differentiated instruction and implement it with fidelity in mathematics classrooms. They were also trained because for all teachers, differentiated instruction was a new approach for providing instruction. Also for any approach to be successful it requires competent teachers. The participants were at least five teachers teaching the same form hence the schools which had five streams and above were purposeful sampled in Meru County in Kenya.

The instrument used was a questionnaire. The questionnaire had three sections. The first section included teachers demographics, section two was a five-point likert scale questions for measuring teachers attitude while the third section was open-ended questions for teachers to express their concerns and opinions about differentiated instruction approach. The pilot study was conducted before the actual data collection to ascertain the reliability of the research instrument.

The reliability of teachers' questionnaire was tested using the cronbach alpha and the coefficient value was 0.88 showing the instrument was reliable. The questionnaire was administered to the teachers by the researcher. Data analysis was done quantitatively.

Results and Discussion

This section presents the research findings in line with objective that guided the study. A total of 20 teachers responded to the questionnaire. The results were as follows:

Demographic Information

The teachers identified their gender, age range, years of experience and education level. The participants varied in educational background, teaching experience and age. A large proportion of teachers, 65% were male while 35% were female. This depicts the presence of gender disparity in favour of males in the study locale. About 50% of teachers were of the age between 31-40 years and 32% are between 41-50 years old. This implies that the teachers are not advanced in age and may find use of differentiated instruction a viable and worthwhile teaching model to meet all students' needs. About 39% of teachers had been teaching for 5-9 years and around 35% for 10-14 years so they have not been in teaching profession for a long time. This implies that they were able to embrace changes in their instructional practices to include principles of differentiated instruction with no much resistance. This depicts teachers' greater inclination to adopt differentiated instruction approach. The researcher found out that 70% of the young people preferred using differentiated instruction always in all the lessons they teach. It implies that differentiated instruction proved more popular with the younger teachers than their more experienced and older counterparts. The findings are not consistent with Affholder (2003) who asserts that differentiated instruction was favoured by more experienced teachers who were familiar with the curriculum they taught.

Teachers Attitude toward Differentiated Instruction

Teachers attitude are thoughts and feelings that are positive or negative emotional disposition toward differentiated instruction approach. Data analysis involved finding the frequencies and percentages of responses falling in each of the 5-point likert scale, Strongly Agree (SA) to Strongly Disagree (SD). The conclusions made in this study are based on the majority of teachers' responses in the Strongly Disagree (SD) and Disagree (D) or Strongly Agree (SA) and Agree (A) category.

About 85% of teachers expressed views that they were enthusiastic to attend more lessons when using differentiated instruction than when using other methods. A total of 80% of teachers said that they were eager to attend lessons when using differentiated instruction. This confirms the positive attitude that teachers have on differentiated instruction approach. When teachers were asked whether each time they are using differentiated instruction in the lesson they get a great deal of satisfaction, 36% strongly agreed and 41% agreed. A total of 76% at least agreed and this indicates that teachers had positive disposition toward differentiated instruction approach. This implies the positive experiences to teachers which may give them confidence and motivation to continue to use differentiated instruction practices. This agrees with the findings of Johnsen (2003) who asserted that use of differentiated technique proved to be engaging, stimulate teachers' interest and providing a gratifying experience.

About 75% of teachers agreed that there was better students' achievement when differentiated instruction approach was used. The findings agrees with research by Tomlinson (2004) who concluded that students academic needs are more readily meet in a classroom where teachers utilize the differentiated instruction approach.

The teachers were asked whether when using differentiated instruction the instructional objectives were always achieved. The teachers' responses are given in Figure 1.

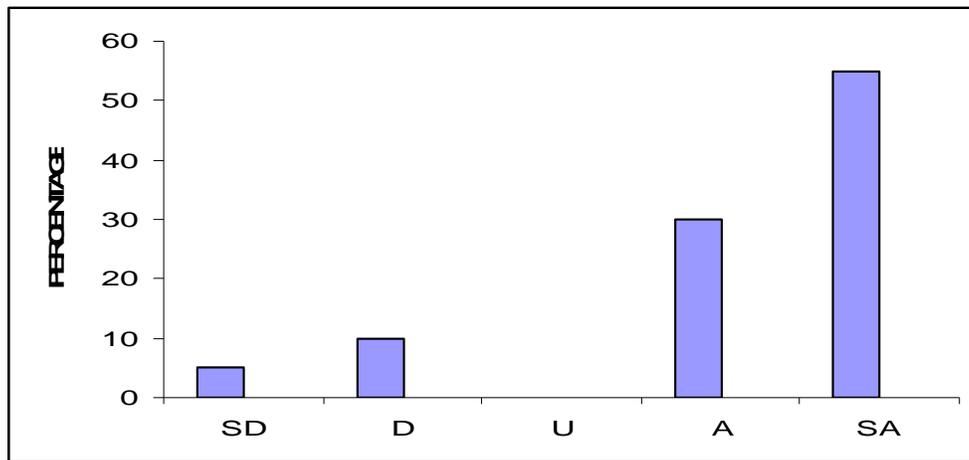


Figure 1: Teachers Response to Whether When Using Differentiated Instruction the Instructional Objectives are Always Achieved

The results on Figure 1 show that the largest proportion 55% of teachers strongly agrees and 30% agrees that when using differentiated instruction the instructional objectives are always achieved. A total of 15% disagree with the statement. The teacher teaches expecting each student to benefit from instruction and also instructional objectives be achieved. This indicates that teachers have positive inclinations toward differentiated instruction for it increases teachers’ effectiveness and enables them achieve the lesson objectives.

The teachers were asked whether the lessons were interesting when using differentiated instruction. The results are shown on Table 1.

Table 1: Teachers Responses on Whether the Lessons were Interesting when Using Differentiated Instruction

	Frequency	Percentage
Strongly Disagree	0	00
Disagree	1	05
Undecided	1	05
Agree	8	40
Strongly Agree	10	50

The results on Table 1 show that 50% of teachers strongly agreed and 40% agreed that lessons were interesting when using differentiated instruction. A total of 90% of teachers indicated that when differentiated instruction was used as an instructional process the lessons were interesting to the learners. The findings concur with Tuttle (2000) who found out that teachers opting for differentiation find that they can use time and resources flexibly and creatively, assisting to create an atmosphere of collaboration in the classroom.

Teachers Opinions and Concerns about Differentiated Instruction

Teachers’ opinions are beliefs or views about differentiated instruction while teachers concerns are challenges that they face when implementing differentiated instruction approach. Thematic analysis was done for the open-ended questions. Teachers indicated that one of the factors that hinder them from using differentiated instruction in classroom was time constraints. The differentiated instruction lessons are time consuming because the teachers requires more planning time and more analysis time in that all cannot get done effectively within the allocated time. Teachers view the issue of increased planning time with unease. The teachers had concerns over time allocated to prepare for differentiated instruction for they have syllabus to cover, high expectations for results and huge workload. The findings concur with Affholder (2003) who found out that the demands of time for planning and preparation to be a major concern of teachers.

On the recommendations about differentiated instruction teaching approach, the teachers noted that there was necessity for more information on differentiated instruction strategies. This implies that in order to effectively meet the needs of diverse learners there is need to provide teachers with knowledge, skills and support necessary to differentiate instruction.

Teachers reported that they required more training on utilization of differentiated instruction techniques. The knowledge and comfort of using differentiated instruction are the major predictors of teachers' willingness to use the approach. This agrees with Blozowich (2001) who concluded that teachers implementing differentiated instruction require continuous and consistent profession development, coupled with intensive dialogue and consultation about how differentiated instruction techniques are being implemented in the classroom. Also McKenzie (2000) noted that there was strong need for teachers to have extensive training in the implementation of differentiated instruction.

In order to implement differentiated instruction more effectively, the teachers suggested that they need to be supported by the administrators. Teachers also asserted that their needs should be acknowledged for they may want to have input in the type of training that is offered. This implies increased teachers commitment and also feels more confident implementing differentiated instruction. The findings are in line with Rodriguez (2012) who pointed out that differentiating instruction requires that teachers be supported by their administrators through the provision of ongoing staff development and training tailored to meet the needs of the teachers. Brighton et al (2005) noted that teachers who are learning to differentiate require support from knowledgeable individuals who are able to observe and provide constructive feedback. Also Robison (2004) concluded that teachers require support structures and cooperative teamwork to assist them as they prepare lessons incorporating differentiated instruction.

The teachers indicated that the students were more receptive to differentiated instruction and motivated to learn. The teachers also noted that the opportunities for students learning were increased in that differentiated instruction created a learner-centred environment that allows for students independence, choice and flexibility. This concur with the findings of McAdamis (2001) who noted that teachers indicated that their students were more motivated and enthusiastic about learning when differentiated instruction approach was used. Also, Christensen (2007) asserted that successful implementation of differentiated instruction has been found to improve student motivation in classroom activities.

Teachers indicated that differentiated instruction was good approach because it involves student participation, activities make learning interesting and it is flexible. The findings are in line with Heacox (2002) who found out differentiated instruction serves to address the issue of academic diversity in classrooms with a focus on using and developing instructional material that is based on essential skills, processes and varied learning paths and to provide distinct varieties of instructional formats.

Conclusions

The teachers expressed views that differentiated instruction had positive impact on their student for there was better achievement when the approach was used. They also noted that it was of importance to implement differentiated instruction within their classrooms because this approach is necessary to address the diversity of learners. Teachers had positive attitude towards differentiated instruction. The administrators' support was said to be important for successful implementation of differentiated instruction. Teachers expressed concern over time required for planning and implementing differentiated instruction.

The research therefore found out that teachers have positive predisposition about differentiated instruction and that there is need for extensive training and support so that differentiated instruction can succeed.

Recommendations

Differentiated instruction approach is an effective instructional strategy to meet the needs of all students and should be implemented in instruction. Teachers need to be advised and encouraged to make appropriate adaptations when implementing educational curriculum by using differentiated instruction. Teachers require on-going trainings to help them increase their understanding of differentiated instruction and heighten awareness of its practices. Teachers need to be provided with support, information and suggestion relating to effective implementation of differentiated instruction. Administrators should take active role in supporting teachers' endeavors to differentiate instruction in the classrooms to meet the needs of all learners. Further studies could also be carried out in other subjects.

References

- Affholder, L.P. (2003). Differentiated Instruction in Inclusive Elementary Classrooms. Unpublished EdD thesis. University of Kansas, Kansas.
- Beecher, M., & Sweeny, S. (2008). Closing the Achievement Gap with Curriculum Enrichment and Differentiation: One school's story. *Journal of Advanced Academics*, 19(3), 502-530.
- Blozowich, D.G. (2001). Differentiated Instruction in Heterogeneously Grouped Sixth Grade Classrooms. Unpublished EdD thesis. Immaculate College.
- Brighton, C.; Hertberg, H.; Moon, T.; Tomlinson, C.; Callahan, C. (2005). Differentiating Instruction in Response to Student Readiness, Interest and Learning Profile in Academically Diverse classrooms: A review of the literature. *Journal of the Education of the Gifted*, 27 (2/3), 119-145.
- Christensen, S. M. (2007). Differentiated Instruction and Motivation with Highly Capable Primary Students: Case Studies within Two Math Units. Master's Thesis, Pacific Lutheran University. UMI: 1447832.
- Faulkner, S.S. & Faulkner, C. (2009). Research Methods for Social Workers. Practice—Based Approach. Morehead State University. Lyceum Books. Inc
- George, P.S. (2005). A Rationale for Differentiating Instruction in the Regular Classroom. *Theory into practice*, 44 (3), 185-193.
- Heacox, D. (2002). *Differentiating Instruction in the Regular Classroom: How to Reach and Teach all Learners, Grades 3-12*. Minneapolis, MN: Free Spirit Publishing.
- Johnsen, S. (2003). Adapting Instruction with Heterogenous Groups. *Gifted Child Today*, 26 (3), 5-6.
- McAdamis, S. (2001). Teachers Tailor their Instruction to Meet a Variety of Student Needs. *Journal of Staff Development*, 22 (2), 1-5.
- McKenzie, E.D. (2000). *Beyond Technology*. Bellingham, Washington: FNO Press.
- Robison, E. M. (2004). Teacher Decision-making in Utilising Differentiated Instruction. Unpublished PhD thesis. Marywood University.
- Rodriguez, A. (2012). An Analysis of Elementary School Teachers' Knowledge and Use of Differentiated Instruction. EdD. Dissertations paper 39. Olivert Nazarene University.
- Tomlinson, C. A. (2004). Sharing Responsibility for Differentiating Instruction. *Roeper Review*, 26 (4), 188-200.
- Tuttle, J. (2000). *Differentiated Classrooms*. (Report). Woodbury: Cedar Mountain Academy. Retrieved on 25th November 2010 from <http://aim.Cast.Org/learn/history/archive/backgroundpapers/differentiated-instruction>.
- Villegas, A. M., & Lucas, T. (2002). *Educating Culturally Responsive Teachers: A Conceptually Coherent and Structurally Integrated Approach*. Albany: State University of New York Press