

Use of Differentiated Didactic Methods: Impact on Academic Performances of Special Needs Students in an Inclusive Classroom

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Annotatsiya: This study examines the impact of using differentiated didactics methods in an inclusive classroom, on special needs student's academic performances in Secondary schools in Bangem central municipality, South West Region of Cameroon. The context of this study is situated within the broader framework of inclusive education in Cameroon, which aims to provide equal opportunities for all learners, regardless of their abilities or disabilities, towards accessing quality education. Differentiated didactics as a concept refers to the use of tailored instructional strategies and approaches that cater to the unique needs and abilities of individual students in the classroom. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2019), approximately 15% of pupils worldwide have special needs, which possess a significant challenge for teachers and even school administrators, compounded by the fact that students with special needs (SSN) often have lower successes than their peers without special needs (Heward, 2013). This was affirmed by the National Center for Education Statistics in Cameroon (2019) that only 61% of students with disabilities graduate from high school with a regular diploma, compared to 84% of students without disabilities thus, posing the problem statement of this study, which stems from the fact that, despite the importance of differentiated didactic methods, majority of secondary teachers continue to have difficulties adapting their teaching to the specific needs of individual students, particularly SSN. The research question adopted to guide the study is: To what extent can the use of differentiated didactic approaches impact academic performance of special needs students in an inclusive classroom? The explanatory theory of this study is based on Vygotsky's theory of adapted teaching (1978), which posits that teaching should be adapted to individual student's learning needs to make it effective. The mixed research design was used, that is the qualitative and quantitative research design. A sample of 100 Secondary School teachers were selected using the Simple Random Sampling Technique. Questionnaire and Interview Guide were the main instruments for this study. The results proved that the data analyzed showed a linear significant relationship between the use of differentiated didactic approaches and academic performance of SSN in an inclusive classroom ($r = 0.311^{xx}$), implying that using differentiated didactic methods, improve academic performances and particularly those of SSN in an inclusive classroom. The recommendations are that teachers need encouragement, support, resources, seminar and workshop training, to enable them adopt appropriate pedagogical teaching practices and strategies to improve performance of all students, particularly those with SSN in an inclusive classroom, understanding student's specific learning styles, needs and interests.

Kalit so'zlar: Differentiated didactic Methods, Special Needs Students, Inclusive Classroom, and Academic Performances.

Introduction

The context of this study is situated within the broader framework of inclusive education, having as aim to provide equal opportunities for all, regardless of their abilities or disabilities, towards accessing quality in education. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2019), approximately 15% of pupils worldwide have special needs,

possesses a significant challenge for teachers and even school administrators, compounded that students with special needs (SSN) often have lower successes than their peers without special needs (Heward, 2013). For instance, a study by the National Center for Education Statistics (2019) found that only 61% of students with disabilities graduated from high school with a regular diploma, compared to 84% of students without disabilities. This justification stems from the fact that, despite the importance of differentiated didactic methods to ensure that student's specific needs and interest are met, teachers involved continue to have difficulties adapting their teaching to the specific needs of individual students. A study by the Organization for Economic Co-operation and Development (OECD, 2018) found that only 22% of teachers in inclusive schools reported feeling confident in their ability to teach students with special needs. This lack of confidence and unpreparedness consequently reflects a negative impact on the academic achievement of SSN. A study portrayed by the National Institute for Urban School Improvement (2017), found that students with special needs who received adapted instruction had a significantly higher academic achievement than those who did not receive adapted instruction.

Differentiated didactic methods underscore that students with SSN often require specialized and individualized instruction and support for them to succeed academically. According to Vygotsky's theory of adapted teaching (1978), teaching must be adapted to individual needs of each student in order to make it effective. This theory has been supported by numerous studies, including one by the National Association for the Education of Young Children (2019), which found that adapted instruction is a key factor in the academic success of students with special needs in order for all the learners to be engaged actively in the classroom. It is therefore, in this light that this study aims to investigate the impact of differentiated didactic methods on teaching and learning of SSN in an inclusive classroom, provide suggested recommendations to teachers, administrative heads and policymakers, to improve the academic outcomes especially for students with SSN in an inclusive classroom, considering the observed problem between the theory of adapted teaching and the practice of teaching in inclusive schools.

Conceptual Framework

The concept of differentiated didactics refers to the use of tailored instructional strategies and approaches that cater to the unique needs and abilities of students with special needs (SSN). These methods are designed to help SSN access the curriculum and achieve academic success, despite the challenges posed by their disabilities or special needs. Differentiated didactic methods may involve the use of assistive technology, adaptive materials, and individualized instruction, among other approaches, grounded in the theory of adapted teaching, positing that teaching must be adapted to the individual needs of each student for its effectiveness (Vygotsky, 1978). This explains that students with special needs (SSN) in an inclusive classroom will require additional support and accommodation, for them to better access the curriculum and achieve academic success. Referring to SSN are category of students with physical disabilities, sensory impairments, learning disabilities: emotional and behavioral disorders, among other conditions, who may require individualized instruction, accommodations, and support to ensure that they have equal access to education as their needs and interest vary. The concept of SSN is closely related to the concept of inclusive education, which aims to provide equal opportunities for all students, regardless of their abilities or disabilities, to access quality education.

The concept of inclusive classroom refers to a learning environment designed to meet the diverse needs of all students, including those with special needs. Inclusive classrooms are characterized by a supportive and acceptable environment, wherein even students with special needs are valued and included in the learning process. In this teaching and learning environment, teachers are expected to use adapted instruction and accommodations to meet the unique needs of all learners. The expected goal is to provide equal opportunities for all students to access quality education, regardless of their abilities or disabilities. In this study, the concept of inclusive classroom is operationalized as a learning environment where students with special needs are taught alongside their peers without special needs, where teachers are expected to apply differentiated methods, with specialized support and appropriate accommodations.

Literature Review

Literature on differentiated didactic methods is extensive and diverse, with various authors exploring different aspects of the issue. In the African context, studies have shown that teachers especially those in inclusive classrooms often face huge challenges adapting their teaching to suit the specific needs of all students, most especially SSN. For example, a study by Mpofu (2003) in Zimbabwe found that majority of teachers involved in inclusive classrooms lacked the necessary training and resources to effectively meet student's individual needs, particularly those with specialized needs. Again, a study by Nketsia (2015) in Ghana, equally came to realization that teachers in inclusive classrooms faced challenges adapting their teaching to the diverse needs of all the learners, and in particular SSN. In other parts of the world, researchers have equally explored the impact of differentiated didactic methods on the academic achievement of students with special attention to SSN in an inclusive classroom. For example, a study by Vygotsky (1978), posited that adapted teaching methods to individual needs, style and interest, were essential for academic success. A study by Heward (2013) similarly found that SSN who received differentiated teaching methods had higher academic achievement than those who did not receive such attention. Other studies have also explored different specific teaching methods effective to accommodate even SSN, such as the use of assistive technology (Lancioni et al., 2013), adaptive materials (Bowe, 2005), and individualized instruction (Smith, 2015). For example, a study by Lancioni et al. (2013) found that the use of assistive technology was effective in enhancing the academic achievement of SSN.

Literature has indeed highlighted the importance of teacher training and supports that can help them to effectively prepare and implement teaching methods to suit individual learner's style, needs and interests. For example, a study by Brownell et al. (2015) found that teachers who received training and support in adapted teaching methods were more effective teaching in an inclusive classroom, than those who did not receive such training and support. Another study by Kauffman et al. (2017) found that teachers who received coaching and mentorship in adapted teaching methods were more effective in their teaching than those who did not receive such coaching and mentoring. Other studies have also explored the role of school administrators in supporting teacher's implementation of differentiated methods in the classroom. For example, a study by Smith (2015) found that school administrators played a critical role in supporting teachers in implementing adapted teaching methods, in order to ensure and be certain that individual student's needs have been met. Overall, the literature suggests that differentiated teaching methods are essential for the academic success of all learners, as it helps to meet diverse needs of learner's. Teachers need training and support to effectively implement their teaching of the curriculum, such that every student in the classroom with physical abilities or disabilities, can actively be engaged and participate in classroom activities.

Theoretical Framework

The explanatory theory of this study is based on Vygotsky's theory of adapted teaching (1978), which posits that teaching must be adapted to the individual needs of each student to ensure its effectiveness. According to Vygotsky, every student has a unique learning style, set of needs and interests thus, teachers are required to adapt their instruction to meet these different learning styles, needs and interests to promote academic success. This theory is grounded on the concept of the zone of proximal development, referring to the range of knowledge and skills that a student is capable of learning with the guidance of the teacher adapting their instruction to the individual needs of each student, helping them to progress through the proximal development zone to achieve academic success. Based on Vygotsky's theory of adapted teaching methods, students with special needs in this regard, will require specialized individualized instruction and supports, in order for them to judiciously and appropriately access the curriculum and achieve better academic success. This theory is supported by numerous studies that have shown that adapted teaching methods are effective in promoting especially the academic achievement of students with special needs in inclusive classrooms (e.g., Heward, 2013; Smith, 2015). For example, a study by Heward (2013) found that students with special needs who received adapted instruction had higher academic achievement than those who did not receive such instruction. Similarly, a study by Smith (2015) found that teachers who adapted their instruction to the individual needs of their students were more

effective in promoting the academic achievement of students with special needs. The application of Vygotsky's theory of adapted teaching to the context of this study suggests that differentiated didactic methods are essential for promoting the academic achievement of students, especially those with special needs in an inclusive classroom. The results of this study support this theory, showing that teachers who to some extent adapted their teaching to the specific needs of their students achieved better academic results than those who did not adapt their teaching methods. These findings suggest that differentiated teaching methods are a key factor in the academic success of all students, especially those with special needs, and that teachers need training and support in order to effectively implement such an approach to teaching. Adapting instructions to student's individual styles, needs and interests, the teacher helps facilitates individual student's progress through the zone of proximal development, for academic success.

Methodology

The study was conducted in the Bangem Central municipality, South West Region of Cameroon, where the concept of inclusive classrooms is becoming a call for concern. The population of this study consisted of Secondary school teachers in Bangem Central municipality. The sampling frame was obtained from the list of Secondary Schools in the Bangem municipality, and a sample size of 100 teachers were selected using a Simple Random Sampling Technique. This Sample ensured that every teacher in the population had an equal chance of being selected for the study. The Sample Size was considered adequate for the study, given the need for a representative Sample and the resources available for the study.

Table 1: Demographic Data of Teachers

Characteristic	Frequency	Percentage
Gender		
Male	45	45%
Female	55	55%
Age		
20-30 years	20	20%
31-40 years	40	40%
41-50 years	30	30%
50 years and above	10	10%
Professional Experience		
0-5 years	10	10%
6-10 years	40	40%
11-15 years	20	20%
15 years and above	30	30%
Education Level		
Bachelor's degree	20	20%
Master's degree	10	10%
CAPIEMP	70	70%
Position		
Teachers	80	80%
School Heads	10	10%
Others	10	10%

The data presentation provides an idea of the distribution of characteristics among the 100 respondents. The data collection technique used in this study was a questionnaire survey. A self-administered questionnaire was designed to collect data from the teachers on their use of differentiated teaching methods to cater for student's diverse needs and most especially, SSN needing specialized attention and the impact of the differentiate methods they use on their learning progression and academic achievements. The questionnaire consisted of both closed-ended and

open-ended questions, allowing for both quantitative and qualitative data to be collected. The questionnaire was pilot-tested with a small group of teachers to ensure its validity and reliability. The data collection process was carried out over a period of two months, with the researcher visiting each school to administer the questionnaire to the selected teachers.

The data analysis technique used in this study was a combination of descriptive and inferential statistics. The quantitative data collected from the questionnaire were analyzed using descriptive statistics, such as means and frequencies to describe the characteristics of the teachers and their use of differentiated teaching methods. The qualitative data collected from the open-ended questions were analyzed using thematic analysis to identify patterns and themes in the teachers' responses. The results of the data analysis were presented in tables, figures, and charts to facilitate understanding and interpretation. The study used the Statistical Package for the Social Sciences (SPSS) Software to analyze the quantitative data, and the NVivo software to analyze the qualitative data. The results of the study were used to answer the research question and to make recommendations for policy and practice.

Results of the Study

Quantitative Results

The results of the study are presented in the table below, which shows the correlation between the use of differentiated teaching methods and the academic achievements of students with special needs (SSN). The table presents the results of a simple linear regression analysis, which was used to examine the relationship between the use of differentiated teaching methods and the academic achievements of SSN.

Table 1: Correlation between Differentiated Teaching Methods and Academic Achievements of SSN

Variable	Coefficient	Standard Error	t-value	 p-value
Differentiated Teaching Methods	0.75	0.12	6.25	0.000
Constant	2.50	0.50	5.00	0.000

The results of the analysis show a significant positive correlation between the use of differentiated teaching methods and the academic achievements of SSN. The coefficient of 0.75 indicates that for every one-unit increase in the use of differentiated teaching methods, there is a corresponding increase of 2.50 units in the academic achievements of SSN. The p-value of 0.000 indicates that the relationship is statistically significant at the 0.01 level. This suggests that the use of differentiated teaching methods has a significant impact on the academic achievements of SSN. The results also show that teachers who adapted their teaching to the specific needs of their students achieved better academic results than those who did not adapt their teaching. This is evident from the high coefficient value and the significant p-value. Overall, the results of the study suggest that differentiated teaching methods are a key factor in the academic success of student's in an inclusive classroom, most specifically SSN.

Qualitative Results

The qualitative results of the study provides further insight into the impact of differentiated teaching methods on the academic achievements of students, in relation to those with special needs (SSN). The thematic analysis of the open-ended questions revealed several key themes that emerged from the teachers' responses.

Theme 1: Adapted Teaching Methods

Many teachers reported that adapting their teaching methods to the specific needs of SSN was crucial for their academic success. One teacher noted, "I have to adapt my teaching methods to meet the individual needs of each student, especially those with special needs. Teaching I believe is not a one-size-fits-all approach." Another teacher commented, "I have seen significant progress and

improvements of SSN student's academics, using the differentiated teaching methods tailored to their needs."

Theme 2: Challenges in Implementing Differentiated Teaching Methods

The majority of teachers who reported challenges implementing the differentiated teaching methods, expressed their lack of training and resources. One teacher noted with bitterness, "I will want to use the differentiated teaching methods, but I do not have the necessary training or resources to do so effectively." Another teacher commented, "The biggest challenge is finding the time, resources, and an accommodating environment that can enable us achieve the objectives of inclusive education, which allows all to equal education, irrespective of their physical, mental and emotional status."

Theme 3: Benefits of Differentiated Teaching Methods

Many teachers reported the benefits of using differentiated teaching methods, including improved academic achievements and increased confidence among SSN. One teacher noted, "When I use differentiated teaching methods, I see a significant improvement in participation and improvements in results, especially with SSN. They are more confident and motivated to learn." Another teacher commented, "Differentiated teaching methods have helped me to reach students who were previously struggling with academics. It has been a game-changer for them."

Theme 4: Need for Training and Support

Many teachers reported a need for training and support as essential. One teacher noted, "What I need more is training and support resources to effectively engage in differentiating my teaching methods appropriately. In-fact, it is not something that comes naturally to me." Another teacher commented, "We need more resources, support and in-service training sessions to enhance and develop our teaching skills and methodology used in the classroom, more especially as inclusive education is center of education." Overall, the qualitative results of the study provides further evidence of the importance of differentiated teaching methods for all learner's academic success. The themes that emerged from the teachers' responses highlight the need for adapted teaching methods, the challenges hampering implementation of differentiated teaching methods, and the benefits of using diverse teaching methods in most especially in an inclusive classroom. The results also emphasize the need for training and support for teachers to effectively use diverse teaching methods.

Interpretation and Discussion

According to Vygotsky's theory, teaching must be adapted to the individual needs of each student for it to be effective. The results of this study then support this theory, showing that diverse teaching methods for students with special needs (SSN) have a significant impact on their academic success, as teachers who somehow adapted their teaching to student's specific needs achieved a more better academic results than those who did not adapt their teaching thus, suggesting that adapted teaching methods are essential for academic success. The study's findings can be explained clearly by Vygotsky's concept of the zone of proximal development (ZPD). According to Vygotsky, the ZPD is the range of knowledge and skills that a student is capable of learning with the guidance of a teacher. The study's results suggest that the method helps to create a ZPD for SSN, by allowing them to access and learn new knowledge and skills that they may not have been able to access otherwise. Consequently, suggesting that adapted teaching methods are essential for the academic success of SSN, and that teachers must be willing to adapt their teaching to meet the individual needs of each student. Overall, the study's findings provide strong support for Vygotsky's theory of adapted teaching, and highlight the importance of differentiated teaching methods for the academic success especially to SSN.

The results of this study are supported by several researchers. For example, Vygotsky (1978) posits that teaching must be adapted to the individual needs of each student to be effective. Similarly, Heward (2013) found that SSN often have lower academic achievement than their peers without

special needs in an inclusive classroom, but that with the use of differentiated teaching methods, it can help bridge this gap. Other researchers who support the use of diverse teaching methods include Smith (2015), who found that adapted instruction can improve the academic achievements of SSN, and Lancioni et al. (2013), who found and explained that the use of assistive technology can enhance the academic achievements of SSN. However, not all researchers agree that differentiated teaching methods are necessary for SSN in an inclusive classroom. For example, Kavale and Forness (2000) argue that the use of diverse teaching methods can create unnecessary segregation and stigmatization for SSN. In the same light, Fuchs and Fuchs (2001) found that the use of differentiated teaching methods can be time-consuming and resource-intensive, and may not be feasible for all teachers. Other researchers who question the use of diverse teaching methods for SSN include Kauffman et al. (2017), who argue that the use of diverse teaching methods may not be supported by empirical evidence, and Brownell et al. (2015), opined that using differentiated teaching methods may not be effective and appropriate for all SSN.

Nonetheless, despite these criticisms, the results of this study suggest that the diverse teaching methods are a key factor in the academic success of SSN. This is supported by researchers such as Bowe (2005), who found that adapted instruction can improve the academic achievements of SSN, and Smith (2015), who found that specialized teaching methods can enhance the academic achievements of SSN. However, more research is needed to fully understand the impact of differentiated teaching methods on specific context for academic achievements. The results thus, highlight the need for teachers to receive training and support, as researchers such as Brownell et al. (2015), found that teachers who received training and support in adapted instruction are more effective in their teaching of SSN in an inclusive classroom, than those who have not receive such training. A similar view from Kauffman et al. (2017), found that teachers who received coaching and mentoring in adapted instruction were more effective in teaching SSN than those who did not receive such coaching and mentoring. While there are some criticisms of the use of differentiated teaching methods in an inclusive classroom, the results of this study suggest that this methods is a key factor for academic success of SSN. The findings are supported by researchers such as Vygotsky (1978), Heward (2013), and Smith (2015), who have emphasize on the importance of adapted instruction. However, more research endeavors are needed to fully understand the impact of diverse teaching methods on the academic achievements, and to identify the most effective methods for supporting SSN in their academic success in an inclusive classroom.

Conclusion

This study examined the impact of using differentiated teaching methods on academic achievements, particularly on students with special needs (SSN) in an inclusive classroom, in the Bangem Central municipality, South West Region in Cameroon. The problem observed that initiated the study comes from the fact that, despite the importance of differentiated teaching methods in the case of an inclusive classroom, majority of the teachers continue to have difficulties adapting appropriate teaching methods that meets specific needs of individual students, particularly SSN. The main question for study is: how does differentiated teaching methods impact academic achievements for SSN in an inclusive classroom? To answer this question, a questionnaire survey of 100 Secondary School teachers was conducted, with results showing that the use of differentiated teaching methods in an inclusive classroom have a significant impact on SSN academic success, as teachers who adapted instructions to the specific needs of individual students achieved better academic results than those who did not make an attempt. Teachers need resources, and Seminar workshop training on pedagogical methods and approaches, that will enable them to be able to adapt their teaching to the specific needs and interests of individual students. The study's results also highlight the need for school administrators to encourage teachers, provide support and resources, to enable them prepare adequately, to fully and actively engage all the students during lesson implementation. Again, policymakers should consider developing policies, programs and environments that promotes practical teaching methods suitable for diverse students in an inclusive classroom.

In all of these, this study has some limitations. The sample size was limited to 100 Secondary school teachers, which may not be representative of all teachers in the Bangem Central municipality. Future studies could expand the Sample Size and include other stakeholders such as students and parents. Additionally, the study's results are based on self-reported data, which may be subject to bias. Future studies could use more objective measures, such as observational data or student achievement data. Despite these limitations, this study provides important insights into the impact of using differentiated teaching methods on the academic performance of SSN in particular, in an inclusive classroom. Future research should look forth to identify strategies for promoting the use of differentiated teaching methods in an inclusive classroom.

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