

Early Grade Teachers Knowledge, Attitude and Practice of Differentiated Instruction in Selected Schools in a Municipality in the Upper West Region of Ghana

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Abstract: *This study investigates early grade teachers' knowledge, attitude and practice of differentiated instruction. The target population for the study was early grade (Kg 1-Basic 3) teachers in a municipality of the Upper West Region, Ghana. A descriptive survey design was employed to explore and create a detailed description of the phenomenon. A convenient sample technique was used to sample 50 (14 males and 36 females) participants from urban and rural schools for the study. A questionnaire was used for data collection. The data from the questionnaire were analysed descriptively into frequencies, percentages, means and standard deviations. The findings of the study revealed teachers to have demonstrated good knowledge of differentiated instruction coupled with a good attitude. The findings also indicated teachers have demonstrated poor pedagogical practices with respect to differentiating instruction in their classrooms. In light of the findings, the researcher proposed relevant recommendations in the paper.*

Keywords: Differentiated Instruction, Knowledge, Attitude, Early Grad

1. Introduction

In the 1960s, Ghana's education system was considered to be one of the strongest in sub-Saharan Africa. Since then, studies have shown a nosedive in Ghana's education and have suggested a shortage of teachers (Cobbold, 2015), low student performance, lack of infrastructure and inequalities between schools as major challenges (Aheto-Tsegah, 2011).

Cognizant of these, the past and current governments have made enormous efforts to help improve upon the system. Notable among these is the emphasis placed on equity and inclusive education policy in the current official curriculum for early grade education (Ministry of Education, 2017). These policies focused on educating and providing required assistance to learners with all manner of differences, disabilities, and needs in mainstream schools (Ministry of Education, 2013). The above-listed policies however are in tandem with differentiated instruction. Differentiated Instruction is not a novel concept. Its history dates as far back as the 1600s, where one-room schoolhouses served as the sine-quantone of education (Logan, 2011). Teachers, in an attempt to meet the varied needs of learners in the one-room schoolhouse, were confronted with unprecedented challenges such as interests, learning styles, socio-economic status and age groups. Despite the numerous challenges teachers faced in their one-room schoolhouses, the situation remains unchanged in modern classrooms (Tomlinson, 2014).

As a remedy to modern heterogeneous classrooms (Levy, 2008) Differentiated Instruction has not got a universally accepted definition. In light of this assertion, scholars explained Differentiated Instruction to suit the purposes of their respective interests. Weselby (2014) explained Differentiated Instruction to mean teaching the same content

to learners using varied strategies that appeal to the needs of learners or varying the level of difficulty of content based on the ability of each learner. Similarly, Tomlinson (2014) posits that Differentiated Instruction is an approach to teaching which involves tailoring instruction to meet the varied needs of learners. In light of this backdrop, Differentiated Instruction has been hypothesized and practiced differently (Smale-Jacobse, Meijer, Helms-Lorenz, & Maulana, 2019). For example, differentiated instruction was perceived to be the same as streaming, where learners are grouped based on their abilities (Ansalone, 2010). It can also be explained to mean an approach to teaching, which focuses on maximizing individual learners' gains in a heterogeneous learning environment.

It is quite educative to note that Tomlinson's (1999) theoretical conception of Differentiated Instruction opens a new window of research in classroom management and required pedagogy for teaching in modern heterogeneous classrooms. In a differentiated classroom, teachers' put in their best to help learners "achieve more than they thought they could; and come to believe that learning involves risk, error, and personal triumph" (Tomlinson, 2014). An effective differentiated classroom caters to the varied abilities of learners' interests, readiness level, centers on the learner, and makes them responsible for their learning. Cognizance of the numerous benefits tied with Differentiated Instruction, the Government of Ghana in collaboration with development partners (JICA, USAID) of education places much emphasis on training and equipping teachers with the required knowledge, skills, and strategies to meet the varied needs of learners in Ghanaian classrooms (Ministry of Education, 2013).

Although there are numerous benefits of Inclusive Education coupled with Differentiated Instruction in modern classrooms, teachers are reported to be glued to the didactic

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method of teaching with little or no regard for Differentiated Instruction (Ako, Kwame, Asare, & Amihere, 2019; Kuyini & Abosi, 2014). This study aimed to

2. Literature Review

In recent times, differentiated instruction has gained global recognition and is perceived as an antidote for the varied needs, backgrounds, abilities and interests of learners. In light of this several researchers have conducted studies to explore teachers' knowledge, perception, attitudes and practice of differentiated instruction. Tomlinson, Moon, and Callahan (1998) looked at the nature of middle school instructional practice, with a focus on the degree to which teachers correctly respond to academic diversity, using differentiation. The study revealed relatively few teachers to have had taken into account student interests, learning profiles, and/or cultural differences (Tomlinson et al., 1998).

Mengistie (2020) looked at Primary School Teachers' Knowledge, Attitude and Practice of Differentiated Instruction and found that participants limited knowledge of differentiated instruction in terms of how they respond to learners' learning needs to have a negative impact in their classroom practice. However, the results point out that teachers' knowledge on specific strategies to manage mixed ability classrooms in a way that engages each group of learners during instruction. Participants also showed a lesser degree of implementation of differentiated instruction as compared to their level of understanding, according to the findings. Similarly, docility in differentiated instruction practice was brought to bear owing to a lack of understanding in specific tactics, time constraints in preparing DI lessons, and the lack of relevant teacher-learner resources.

Melesse (2019) in a study of instructors' knowledge, attitude and practice of differentiated instruction concluded that participants demonstrated good knowledge in differentiated instructions. On the contrary, instructors were reported to have demonstrated poor practice of differentiated instruction in their classrooms. Teachers were reported to be ambassadors of the didactic method and crusaders of paper and pencil assessment.

Similarly, Ako et al (2019) in a study of teachers' knowledge and usage of differentiated instruction strategies in Junior High Schools indicates teachers have displayed high knowledge of differentiated instructions. Notwithstanding the knowledge of differentiated instruction demonstrated by teachers, results of their classroom practice of differentiated instruction revealed the docility of teachers in its praxis. The majority of teachers were reported to have adopted traditional classroom teaching strategies based on a one-size-fits-all approach which has been asserted to be ineffective (Tomlinson, et al., 2003)

Moreover, results from a descriptive survey by Siam and Al-Natour (2016) entitled "Teacher's Differentiated Instruction Practices and Implementation Challenges for Learning Disabilities in Jordan" reveal teachers have demonstrated low pedagogical practices in their classrooms. Emphasis was

placed on teachers' knowledge of differentiated instruction as a major determining factor for their classroom practice.

Lavania and Mohammed (2020) in a systematic review of literature on barriers in differentiated instruction revealed a good percentage of the literature (63.7%) to have pointed at teachers' limited knowledge in differentiated instruction to have a negative impact on their classroom practice. However, the study aimed to investigate early grade teachers' knowledge, attitude and practice of differentiated instruction.

3. Statement of the Problem

The Government of Ghana coupled with its development partners of education hold the view that inclusivity is a means of reducing the stigma attached to individuals with special needs and also to cater to the varied needs of learners in Ghanaian classrooms (Ministry of Education, 2013). However, they seem to be little or no regard for the tool, Differentiated Instruction that will make inclusivity a success in the Ghanaian educational sector. Albeit, the fact that Differentiated Instruction is viewed as an old approach to teaching (Logan, 2011), a remedy to modern heterogeneous classrooms (Levy, 2008), and the fact that teaching for understanding is the main focus of contemporary education, Ghanaian teachers are reported to be oblivion of this approach (Kuyinni and Abosi 2014; Henne, 2013).

Even though there is abundant literature on Differentiated Instruction, there seems to be little or no research on early grade teachers' knowledge, attitude and practice of differentiated instruction in Ghanaian early grade schools and more specifically in the Wa Municipality of the Upper West Region. The proposed study, however, aimed at filling the void.

4. Research Questions

The study was guided by the following questions:

- 1) What is the knowledge base of early grade teachers on differentiated instruction?
- 2) What is the attitude of early grade teachers towards differentiated instruction?
- 3) To what extent do early grade teachers practice differentiated instruction in their classrooms?

5. Methodology

5.1 Research design

The study utilized a descriptive survey design to explore and create a detailed description of early grade teachers' knowledge, attitude and practice of differentiated instruction. The design is appropriate for the study because of its usefulness in describing the characteristics of a heterogeneous population (Glasow, 2005). The design also provides room for researchers to effectively analyze frequencies and identify patterns in survey responses.

5.2 Participants and context

The target population of the study was early grade (Kg 1-Basic 3) teachers in the Wa municipality of the Upper West Region. Convenience sampling was employed to select 50 (14 Males, 36 Females) early grade teachers from two clusters of schools in the Wa municipality. Early grade teachers were studied because learners at that level of education manifest varied needs and interests in the course of learning. Teachers at that level are encouraged to modify their lessons to cater to these variations. This made it imperative for the researcher to explore their knowledge, attitude and practice of differentiated instruction.

5.3 Instruments of Data Collection

A four Likert scale type questionnaire was used as a data collection tool. The questionnaire has four main sections; A to D. section ‘A’ seeks for participants’ biodata. Section ‘B’ to ‘D’ is made up of 24 Likert scale-type items on a 4-point scale “strongly disagree (1)”, “disagree (2)”, “agree (3)” and “strongly agree (4)”.

The questionnaire was piloted among 24 early grade teachers who were not part of the actual study. The internal consistency of the questionnaire was tested via Cronbach’s alpha statistics with the help of SPSS package version 20. The Cronbach’s alpha coefficient for the sub-scales namely knowledge (9 items), attitude (7 items) and practice (8 items) were $\alpha = 0.73$, $\alpha = 0.62$ and $\alpha = 0.71$, respectively. The three subscales of the questionnaire attained Cronbach’s alpha coefficient of 0.82. In practice, reliability coefficients greater than .80 suggest high internal consistency among questionnaire items (Tan, 2009). The questionnaire was administered by the author in participants’ schools. Participants’ consented to their participation in the study and willingly responded to the questionnaire items and handed them over to the researcher. A total of 50 questionnaires were administered and retrieved from participants’ thereby attaining a 100% return rate.

5.4 Data Analysis

Quantitative data from the survey were analysed using descriptive statistics with the help of Statistically Package for Service Solution (SPSS) software version 20. The data were summarized and transformed into frequencies, percentages, means, and standard deviations.

6. Results

The results of the study centered on early grade teachers’ knowledge, attitude and practice of differentiated instruction in the lower primary (Grade 1-3) and kindergarten (Kg 1 and 2) in the Wa municipality.

6.1 Demographic Information

Table 1: Demographic characteristics of respondent (n=50)

Category	Variable	Frequency (f)	Percentage (%)
School location	Urban	22	44
	Rural	28	56
Gender	Male	14	28

	Female	36	72
Teaching experience	Less than 2 years	14	28
	2-3 years	19	38
	4-6 years	13	26
	7 years above	4	8
Professional Qualification	Certificate	7	14
	Diploma	41	82
	Degree	2	4
Current teaching assignment	Kindergarten	28	56
	Lower primary	22	44

6.2 Early Grade Teachers Knowledge of Differentiated Instruction

To assess early grade teachers knowledge of differentiated instruction, 9 knowledge-based statements on differentiated instruction of which eight are correct (items 1, 2, 4, 5, 6, 7 &8) and one incorrect statement (item 3) were presented for the participants to indicate the extent to which they agree or disagree with the items. Descriptive analysis of participants’ responses is presented in Table 2.

Table 2: Early grade teachers’ knowledge of differentiated instruction

Item	Statement	Df (%)	Af (%)	M	SD
1	Learners come to the classroom with varied learning needs and styles	10 (20)	40 (80)	3.16	0.74
2	Flexible grouping is an appropriate strategy for today classrooms	7 (14)	43 (86)	3.10	0.61
3	*Norm reference is an appropriate strategy for assessing students’ performance	39 (78)	11 (22)	2.88	0.69
4	Classroom assignments should be tailored to meet students’ needs	6 (12)	44 (88)	3.32	0.68
5	Content and materials should be tailored to meet individual students’ levels of prior knowledge, readiness, critical thinking, and learning style	7 (14)	43 (86)	3.32	0.71
6	Students process information differently	6 (12)	44 (88)	3.40	0.81
7	Teachers must show respect for their learners’ commonalities and differences	6 (12)	44 (88)	3.32	0.68
8	Teachers should make use of homogenous grouping to effectively tailor instructions to students’ needs.	10 (20)	40 (80)	2.98	0.68
9	Teachers must have very specific learning objectives and provide multiple learning pathways to those objectives.	6 (12)	44 (88)	3.40	0.70
Grand Mean				3.21	

Note: SD: Standard Deviation, M: Mean, N: Item Number, D: Disagree, A: Agree, f: Frequency

As presented in table 2, the minimum and maximum mean and standard deviation for the various items range from 2.88 (SD = 0.69) disagreeing to 3.4 (SD = 0.7) agreeing. Similarly, the frequency and percentages of responses range from 6 (12%) disagreeing to 44 (88%) agreeing. An equal proportion of respondents, 44 representing 88%, correctly agreed on items 4 (Classroom assignments should be

tailored to meet student's needs), 6 (Students process information differently), 7 (Teachers must show respect for their learners' commonalities and differences) and 9 (Teachers must have very specific learning objectives and provide multiple learning pathways to those objectives.). This is followed by items 2 (Flexible grouping is an appropriate strategy for today classrooms) and 5 (Content and materials should be tailored to meet individual students' levels of prior knowledge, readiness, critical thinking, and learning style) with a proportion of 43 participants representing 86% correctly agreeing to them. Subsequently, an equal proportion of respondents, 40 representing 80%, correctly agreed on items 1 (Learners comes to the classroom with varied learning needs and styles) and 8 (Teachers should make use of homogenous grouping to effectively tailor instructions to students' needs.)

respectively. Moreover, 39 respondents representing 78% correctly disagree with item 3 (Norm reference is an appropriate strategy for assessing students' performance). The results suggested that respondents had above-average knowledge about differentiated instruction.

6.3 Early Grade Teachers Attitude towards Differentiated Instruction

To assess early grade teachers attitudes towards differentiated instruction, 7 attitude based statements on differentiated instruction of which 6 are correct (items 10, 11, 12, 14, 15 & 16) and one incorrect statement (item 13) were presented for the participants to indicate the extent to which they agree or disagree with the items. Descriptive analysis of participants' responses is presented in Table 3.

Table 3: Early grade teachers' attitude towards differentiated instruction

Item	Statement	Df (%)	Af (%)	M	SD
10	I should present my lessons to meet the varied learning styles of learners.	4 (8)	46 (92)	3.36	0.69
11	I should plan my lesson from what students know to what they are ignorant of or have little knowledge of.	22 (44)	28 (56)	3.42	0.73
12	I should provide a learning environment that creates room for students to learn at their own pace.	29 (58)	21 (42)	3.24	0.74
13	*I should provide a homogenous assessment to all learners in the same classroom.	41 (82)	9 (18)	3.22	0.79
14	I should make use of varied teaching and learning resources that appeal to the needs of learners.	29 (58)	21 (42)	3.32	0.65
15	Learners should be provided with the choice to work alone, in pairs or in small groups.	12 (24)	38 (76)	3.06	0.84
16	Assessment should not be separated from learning.	10 (20)	40 (80)	3.10	0.71
Grand Mean				3.25	

Note: SD: Standard Deviation, M: Mean, N: Item Number, D: Disagree, A: Agree, f: Frequency

The result in table 3 shows that the minimum and maximum mean and standard deviation ranges from 3.06 (SD: 0.84) disagreeing to 3.42 (SD: 0.73) agreeing. Similarly, the frequency and percentage of respondents ranges from 4 (8%) disagree to 46 (92%) agreeing. A cursory look at table 3 suggests that items 12, 13 and 14 posed challenges to early grade. This was evident when an equal proportion of respondents, 29 representing 58% wrongly disagreed to items 12 (I should provide a learning environment that creates room for students to learn at their own pace.), 14 (I should make use of varied teaching and learning resources that appeal to the needs of learners.) and 41 representing 82% wrongly agreed to item 13 (I should provide a homogenous assessment to all learners in the same classroom). On the contrary, the majority of participants correctly agreed to items 10 (I should present my lessons to meet the varied learning styles of learners.) 46 representing 92%, 11 (I should plan my lesson from what students know to what they are ignorant of or have little knowledge of) 28

representing 56%, 15 (Learners should be provided with the choice to work alone, in pairs or small groups) 38 representing 76% and 16 (Assessment should not be separated from learning) 40 representing 80%. Four (12, 13, 15, and 16) out of the seven items attained means (3.24, 3.22, 3.06 and 3.10 respectively) lower than the grand mean (3.25) for the section. This indicates the negative attitude Early Grade Teachers have towards differentiated instruction.

6.4 Early Grade Teachers Practice of Differentiated Instruction in their Classrooms.

To ascertain the practice of differentiated instruction by early grade teachers, 8 statements were presented for participants to indicate the extent to which they agree or disagree with the items. Descriptive analysis of participants' responses is presented in Table 4.

Table 4: Early grade teachers practice differentiated instruction in their classrooms.

Item	Statement	Df (%)	Af (%)	M	SD
17	I plan and prepare my lessons with learners' differences in mind.	29 (58)	21 (42)	2.52	0.79
18	I make use of a variety of assessments in the course of teaching (assessment "as, for and of")	20 (40)	30 (60)	2.74	0.69
19	I make use of scaffolding to help boost learners' understanding.	15 (30)	35 (70)	2.92	0.78
20	When necessary I modify and tailor textbook content to meet the readiness level of learners.	29 (58)	21 (42)	2.52	0.74
21	I use a variety of materials that appeal to the varied learning styles of learners.	27 (54)	23 (46)	2.68	0.82
22	I provide a conducive classroom environment that provides room for students to choose from a variety of groupings that appeal to their needs.	27 (54)	23 (46)	2.60	0.73
23	I appreciate learners' commonalities in differences in the course of my lessons.	11 (22)	39 (78)	2.96	0.70
24	I tailor my classroom assignments to meet the varied needs of learners.	15 (30)	35 (70)	3.06	0.82
Grand Mean				2.75	

Note: SD: Standard Deviation, M: Mean, N: Item Number, D: Disagree, A: Agree, f: Frequency

As presented in Table 4, the minimum and maximum mean and standard deviation for the various items ranges from 2.52 ($SD = 0.79$) disagreeing to 3.06 ($SD = 0.82$) agreeing. Similarly, the frequency and percentages of responses range from 11 (22%) disagreeing to 39 (78%) agreeing. Equal proportions of respondents, 29 representing 58%, wrongly disagreed on items 17 (I plan and prepare my lessons with learners' differences in mind) and 20 (When necessary I modify and tailor textbook content to meet the readiness level of learners.). Similarly, 27 representing 54% wrongly disagreed on items 21 (I use a variety of materials that appeal to the varied learning styles of learners') and 22 (I provide a conducive classroom environment that provides room for students to choose from a variety of groupings that appeal to their needs.). On the contrary 35 representing 70% correctly agreed on items 19 (I make use of scaffolding to help boost learners' understanding.) and 24 (I tailor my classroom assignments to meet the varied needs of learners.). Also, the majority of participants, 39 representing 78% and 30 representing 60% correctly agreed to items 23 (I appreciate learners' commonalities in differences in the course of my lessons.) and 18 (I make use of a variety of assessments in the course of teaching (assessment "as, for and of")) respectively. Five (17, 18, 20, 21, & 22) out of the eight items attained means lesser than the mean of means (2.75) of the sub-section. This indicates that the majority of the participants are not observant of differentiating instruction.

7. Discussions

The study investigated early grade teachers' knowledge, attitude and practice of differentiated instruction. The findings from this study suggest that teachers demonstrated good knowledge of differentiated instruction. This was clear when the majority (over 84%) of participants correctly responded to the items designed to assess their knowledge in differentiated instruction. The results were in line with the findings of studies by Ako et al (2019), Melesse (2019) and Mengistie (2020) which postulate teachers to have displayed a good understanding of differentiated instructions. Seemingly, the results contradict the claims of Lavania and Mohammed (2020) that teachers' inadequate knowledge of differentiated instruction impacted negatively their classroom practices.

Similarly, the findings indicated teachers have a positive attitude towards differentiated instruction. This was evident when the majority (over 67%) correctly responded to the items designed to ascertain their attitude towards differentiated instruction. The findings of the study corroborated with Mengistie (2020) study that investigated Primary School Teachers' Knowledge, Attitude and Practice of Differentiated Instruction.

Moreover, the findings of the study corresponded with subsequent literature (Mengistie 2020; Ako et al 2019; Siam and Al-Natour 2016) and indicated the inefficacy of teachers on the practice of differentiated instruction. This was evident when the majority wrongly responded to the items designed to ascertain the efficacy of differentiated instruction in their classrooms. The findings revealed the majority of teachers to be glued to the traditional method of teaching.

8. Conclusion

Differentiated instruction is asserted to be a remedy to our modern heterogeneous classrooms (Tomlinson C. A., *The Differentiated Classroom: Responding to the Needs of All Learners*, 2014). Teaching for understanding is the hallmark of 21st-century education. Differentiated instruction as a pedagogical instrument is proven to be one of the best approaches that appeal to the varied needs of learners in the modern classroom and stand a high chance of realizing this goal. The findings of the present study revealed early grade teachers in the Wa municipality to have good knowledge and attitude of differentiated instructions. However, participants were reported to be docile in the practice of differentiated instruction.

9. Recommendations

In light of the conclusions drawn, the researcher recommended that the Wa Municipal Education Directorate should organize in-service programmes, seminars, short courses and workshops on the implementation of differentiated instruction. Also, the research recommends officers in charge of supervision and monitoring of early grade schools encourage and motivate early grade teachers to put to practice their knowledge of differentiated instructions to help realize the objectives of the curriculum. Similarly, continuous professional development should be organized by school administrators to help increase early grade teachers' understanding of differentiated instruction and their awareness of the efficacy of its practice.

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