KNOWLEDGE AND USAGE OF DIFFERENTIATED INSTRUCTIONAL STRATEGIES IN JUNIOR HIGH SCHOOLS IN KWADASO MUNICIPAL, KUMASI –GHANA

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ABSTRACT

The study sought to explore Junior High School teachers' knowledge and Usage of Differentiated instructional (DI) strategies in the Kwadaso Municipality of the Ashanti Region of Ghana. A questionnaire was administered to a sample of 75 teachers from which a sub-sample of 10 teachers were randomly sampled for observation. The findings indicate that JHS teachers have high knowledge of DI. The results from classroom observation showed that, despite teachers' knowledge of sub-concepts of DI, they do not teach to meet the diverse needs of learners. They showed minimum evidence of differentiating their lesson in terms of content, process and assessment. Majority of the teacher generally adopted traditional classroom teaching strategies based on one size-fits-all approach which have proven to be ineffective means of instruction. The study recommends that the Ghana Education Service should organize in-service programmes and workshops on the differentiated instructional strategies to give teachers hands-on training on DI.

***Key Word**: Differentiated Instruction, Junior High School*

INTRODUCTION

An important and predominant theme in educational psychology is the uniqueness of individual students. Ghanaian classrooms are filled with students who have diverse backgrounds, experiences, abilities, interests and learning styles. It is therefore difficult for teachers to meet the needs of all students in the classroom with traditional teaching approaches. Experts argue that one way teachers can meet these diversities and differences in the classroom is the use of differentiated instructional approaches (Tomlinson, 2004; Alison & Rehm, 2007; Levy, 2008). Anderson (2009;7) defines

differentiated instruction (DI) as a process where the teacher matches the learning objectives, how the students learn, and how they demonstrate what they have learned to each student's ability level, interests and learning styles. Santamaria (2009) posits that DI is a process-oriented and a mixed-ability instructional approach which caters for diverse learning needs of students. Gibson (2005) also sees differentiated instruction as the process of modifying the content, process and product of learning based on students' abilities, interest and needs. DI therefore explains how to meet the needs of diverse learners within a homogeneous setting or classroom.

DI is important in the classroom because our classrooms are filled with students with a variety of needs who come to school with a wide range of experiences (Anderson, 2009). There is the need to educate all students especially those who are at risk of school failure, have cultural and language differences are disadvantaged, slow learners, gifted and talented learners, involved in special education, have race, ethnicity, and socio-economic differences, and students with different educational histories and family values (Nordlund, 2003). Instruction should be differentiated to meet the diverse needs of all these group of students. Similarly, Gibson (2005) indicated that students differ significantly in their readiness to learn, their interest, styles of learning, experiences and life circumstances. She grouped these differences into demographic differences (ethnicity, linguistic, religion, socio-economic status, parental education, nutrition and family structure) and individual differences (ability, experiences, inclusion and learning style differences). She also identified Gardner (1999)'s multiple intelligence theory which states that, humans have at least eight ways of being intelligent or talented about the world (thus; verbal/linguistic, logical/mathematical, visual/spatial, musical, naturalistic, interpersonal, intrapersonal and body/kinesthetic) and the brain-based instruction by Caine and Caine (1990); Powell (2000) which states that classroom environment should take into consideration emotions and brain-based search for meaning, as well as individual's brains' unique ways of learning. Gibson (2005) argues that these differences and theories serve as a basis for differentiating instruction to meet the diversity of students' needs. Therefore differentiated instruction will ensure that all students in the classroom benefits from the lessons and classroom activities. However, it seems there is no study which investigates JHS teacher's knowledge and usage of DI in Ghana. This study aims at bridging this gap.

Related Literature

Anderson (2009) posits that, teachers can choose to differentiate instruction based on abilities, learning styles, and interests of students. Instruction can be effectively differentiated if teachers understand students learning styles. It is also important to consider Gardner's eight multiple intelligence which include verbal/linguistic, logical/mathematical, visual/spatial, interpersonal, intrapersonal, bodily/kinesthetic, musical/rhythmic, and naturalistic. Students possess all eight levels, but function best using a few of them. Students should be exposed to all of them so they can determine their intelligence strengths.

In the view of Gibson (2005), there are a number of resources available for teachers of students with advanced needs and also for teachers of students with learning disabilities and there are also resources explaining the philosophy and basic techniques for all students. Heacox (2002) clearly explains how to structure differentiation around multiple intelligence theory and Bloom's taxonomy which provides the necessary framework for differentiation in the classroom. She argues that differentiated instruction entails creating a classroom environment that embraces diversity and employs the strategies outlined in brain-based research. The classroom environment includes

physical aspects as well as interpersonal and affective aspects. After considering the environment, the next step entails modifying content (what students learn), process (how students learn), and product (how students show what they learn) based on students' needs. Differentiated instruction requires rich content based on core principles and understandings; engaging, meaningful processes of learning; and interesting and purposeful products. Modification begins with identifying the core beliefs, understandings, and skills that all students will learn, and then comparing that list to the needs and abilities of the students in a given class, as determined through assessments, teacher observations, and parent/teacher interviews. Content, process, and product are modified, as needed, to give the best fit between each student and the learning goals (Gibson, 2005).

Nordlund (2003) stated that a learning disability affects a person's ability to either interpret what he sees or hears, or to link information from different parts of the brain. DI allows students to learn at their ability level and they experience academic success, they feel confident, challenged, and they feel like each student has something to contribute. Students with learning disabilities often benefit from differentiated lessons that are concrete, hands-on manipulation of objects. The product may be differentiated for challenged learners by giving verbal tests, shortened tests, literal levels of questions, extended time for tests, more frequent tests, a quiet place for testing, scribe for written responses, or alternative to a test. Gibson (2005) placed less emphasis on how differentiated instruction benefits students with learning difficulties. According to her, vast majority of students with intellectual disabilities do better in integrated and differentiated classrooms rather than special education programs.

In the views of Lee and Olszewski-Kulibus (2006), cited in Anderson (2009), gifted and talented students often spend too much time on content they have already mastered, which makes learning boring and repetitious. One of the reasons that gifted and talented students need to have their instruction differentiated is because they have advanced reasoning abilities, passion for learning, rapid grasp of abstract concepts, intrinsic motivation, and advanced logical thinking (Anderson, 2009). It also help gifted and talented students develop problem solving strategies, critical thinking strategies, creative thinking strategies, and research strategies.
Gibson (2005) also states that when teachers appropriately modify the curriculum for gifted students, the bar is effectively raised for all students in the class and it reduces boredom that gifted students are subjected to in 'one-size-fits-all' approach. Gifted students increase in their academic achievement because they are challenged to work at their ability level.

Planning lessons using differentiated instruction takes time and using differentiated instruction strategies are also difficult to implement if teachers are not given proper training or given enough time to implement differentiated instruction strategies. It is time consuming thus, lessons sometimes takes longer time to complete when using differentiated instruction (Anderson, 2009).
Gibson (2005) posits that most teachers who begin implementing differentiated instruction eventually abandon it under pressure to cover curriculum in a prescribed time with a goal of performance on standardized tests. The researcher further explains that most teachers do not use differentiated instruction due to lack of training and support. Other challenges of differentiated instruction include the pressure co complete the workload in the syllabus, lack of proper training, inadequate support and difficulty in assessment.

In the view of Anderson (2009), numerous studies show that teachers who use differentiated instruction report that students are working to their ability level and appropriately challenged. When

students are working at their ability level, they experience academic success, they feel confident, challenged, and they feel like they have something to contribute. It meets the needs of all students and provides students with a positive learning experience. Similarly, Gibson (2005) states that differentiated instruction appropriately address broad academic diversity among students. She further intimated that differentiated instruction clearly addresses the diversity of our classrooms and serves to integrate the traditionalist and constructivist branches of pedagogy using brain-based learning strategies and the theories of multiple intelligences and learning styles to diagnose student differences and provide a variety of learning options and levels.

Studies indicates that children in a single classroom exhibit significant differences in religion, abilities and disabilities, socio-economic background, interest and needs (Tomlinson, 2004). This diversity is evident in Ghanaian classrooms as shown by the works of Kuyini (2010); Agbenyega and Deku, (2011); Abosi (2014) and Abora (2015).

Tomlinson (2000) is of the stated that, differentiated instruction involves teachers' effort to react to differences among students in the classroom by varying instructions to accommodate the diversities in learners' needs. Similarly, Gangi (2011) indicated that teachers can vary the content of their lessons to accommodate individual differences in the classroom. Content can be modified based on learners' readiness, learning profiles and interest. Learner characteristics therefore form the basis of content for teachers' differentiated instruction (Tomlinson, 2001).

The procedure and teaching process is another area where DI can be used in the classroom (Tomlinson, 2001). Thus the various approaches, strategies and techniques through which learners can be helped to learn.

Assessment strategies and products can also be differentiated. According to Gangi (2011), teachers should differentiate how to measure learners' evidence of learning. Products can be differentiated based on learners' readiness and interest. Both formative and summative assessment techniques should be used to assess products of learning.

Attempts has been made to meet these diversity by introducing policies on special education which emphasizes the needs to train teachers to appropriately cater for the needs of all children in the classroom (MoE, 2013). This policy has led to the introduction of Special Education in teacher preparation programmes in colleges of education across the country. Furthermore, the Curriculum Research and Development Division [CRDD] (2012) admonish teachers to take into cognizance students with physical and mental challenges as well as other students with learning difficulties when planning and delivering instructions.

However, studies show that Ghanaian basic school teachers employ what is popularly referred to as a one-size-fits-all approach as well as teacher centered instructional approaches which do not cater for the diverse needs in the classroom (Henne, 2013; Kuyini & Abosi, 2014). DI seems to be given little attention in Ghanaian classrooms as evidenced in numerous calls for significant shift from traditional methods of teaching to DI approaches. This study therefore seeks to find out Junior high school teachers' knowledge and usage of differentiated instructional approaches.

The following research questions guided the study:

1. What are Basic School Teachers' Knowledge of Differentiated Instructional Strategies?
2. To What Extent Does Basic School Teachers use Differentiated Instructional Strategies?

Methodology

Cross-sectional survey method was employed in the study. In cross-sectional studies, measures of variables are taken at the same time or in practice over a relatively short period of time (Robson,

2002). Sequential explanatory mixed method approach was adopted for the study. The sample for this study consisted of 75 Junior High School teachers who were randomly sampled for the study. The simple random sampling technique was used to give equal chance to all Junior High School teachers to participate in the study. Out of the 75 teachers sampled for the study, 62.7% (47) were males while 37.3% (28) were females. Out of the 75 teachers, 10 were randomly sampled and their lessons observed.

Instrument

A differentiated Instruction Questionnaire and a structured observation guide were used for data collection. The DI questionnaire was adapted from Whipple (2012). The adaptation took the form of modifying and picking items which suites the present study and context. The first part of the questionnaire which consisted of four items sought information on the background information of the participants while the second part solicited information of teachers' knowledge of differentiated instructional strategies. The second part consist of 41 items of four-point Likert scale with options Strongly Disagree (1), Disgree (2), Agree (3) and Strongly agree (4). The observation guide was adapted from Whipple (2012) to suite the context of the study. The observational guide which consisted of 19 items was used to explore JHS teachers' usage of DI with regards to content, process and products. The Chronbach alpha value of the DI questionnaire was 0.72 which indicates high internal consistency and therefore suitable for the study.

The observational guide was weighed, No Evidence = 0; Minimum Evidence = 1; Some Evidence = 2; Clear Evidence = 3; Clearer Evidence = 4 or more ticks. In order to maintain confidentiality in this study, the researchers used a T1, T2, T3, etc to represent each of the participants. Each teacher was observed once and the participants were allowed to select and design their own lesson. Each observed lesson lasted for about 60 minutes.

Data Analysis

Descriptive statistics in the form of simple percentages, frequency, mean and standard deviation were used to analyze the quantitative data. The mean score and standard deviation of each sub-concept of DI was computed. This was used to determine teachers' knowledge level of DI. A mean score of 0 – 2.4 indicates that the participants disagreed to the item while a mean score of 2.5 and above indicates that the participants agreed to the item. The statements in the questionnaire were in the affirmative or true. So agreeing to the statement indicated that one has knowledge in the DI concept. Therefore, a mean score of below 2.4 indicate low knowledge of DI while that of above 2.5 indicates high knowledge in DI. Data from the classroom observation was organized into frequency and converted into percentages and used to describe teachers' usage of DI.

Results

Research Question 1: *What is Junior School Teachers' Knowledge of Differentiated Instructional Strategies?*

Table 1: *JHS Teachers' knowledge of DI based on learner Diversity*

Items	MS	SD
I see all pupils in my classroom as homogeneously the same	2.12	1.13
Pupils in my classroom have the same learning characteristics	1.80	0.74
Every classroom have pupils with learning disabilities/abilities	3.01	0.86
Gifted learners are also special pupils who need extra attention	2.89	0.82
Lessons must be taught to satisfy each learner in the classroom	3.39	0.77
Lessons must be taught to all pupils generally in the same way	2.51	0.94
Every learner in the same class should understand the content after teaching a lesson using the best single method of teaching	2.72	0.86

(MS = 2.63, SD = 0.29)

Table 1 summarizes Junior High School teachers' knowledge of DI based on learner diversity. The mean of the items ranged from 1.80 to 3.39 while the *SD* ranged from 0.74 to 1.13. The item which asked whether pupils have the same learning characteristics had the lowest mean *(1.80, SD = 0.74)*. This means that disagreed that pupils have the same learning characteristics. Also, the highest mean *(3.39, SD = 0.77)* was on teaching to satisfy each learner in the classroom. This indicates that majority of the teachers agreed that lessons must be taught to satisfy each students in the classroom. The overall mean for the items was *(2.63, SD = 0.29*) which indicates that JHS teachers generally agreed to the statements and are therefore have fair knowledge of DI based on learner diversity.

Table 2: *JHS Teachers' knowledge of DI based on learner Interest*

Items	***MS***	***SD***
Every pupil in the classroom has hi/her own learning interest	3.27	.76
Every individual learner has learning culture and expectations	3.12	.52
Every pupil's interest, cultures and expectations should be considered when teaching	3.05	.70
Individual pupils' life situations impact their learning greatly	3.27	.78

(MS = 3.12, SD = 0.69)

Table 2 presents JHS teachers' knowledge of DI based on learner interest. The mean of the items ranged from 3.05 to 3.27 and the SD ranged from o.70 to 0.78. The item which obtained the lowest mean (3.05, SD = 0.70) was whether every pupil's interest, cultures and expectations should be considered when teaching. The results indicate that majority of the teachers agreed that pupil's interest, cultures and expectations should be considered when teaching. Also, majority of the teachers agreed that individual pupils' life situations impact on their learning greatly (MS = 3.27, SD = 0.78).

Table 3: *JHS Teachers' knowledge of DI based on learning styles*

Items	***MS***	***SD***
Every pupil in the classroom has his/her learning style	3.35	.48
Each learner learns through a particular learning style	3.17	.60
Every pupil's learning abilities and disabilities must be addressed through his/her learning style when teaching	3.12	.46

(MS = 3.21, SD = 0.51)

Table 3 summarizes JHS teachers' knowledge of DI based on learning styles. The mean of the items ranged from 3.12 to 3.35 and *SD* ranged from 0.46 to 0.60. The results showed that majority of the teachers agreed that every pupil in the classroom has his/her learning style (*3.35, SD = 0.48*). Also, the teachers agreed that every pupil's learning disability and disability should be addressed through

his/her learning style when teaching (*3.12, SD = 0.46).* The total mean score of 3.21, SD = 0.51 showed that majority of the teachers are knowledgeable about DI based of learning styles.

Table 4: *JHS Teachers' knowledge of DI based on lesson planning*

Item	***MS***	***SD***
Every pupil's needs must be considered when planning lessons	3.11	.75
Lesson objectives must consider individual learner's needs	3.05	.77
Lessons should be planned considering pupil's differences	3.16	.75
The same lesson plan must satisfy all learners in the same class	2.80	.90

(MS = 3.03, SD = 0.79)

Table 4 summarizes JHS teachers' knowledge of DI based on lesson planning. The mean of the items ranged from 2.80 to 3.16 and the SD ranged from 0.75 to 0.90. The item with lowest mean was on whether the same lesson plan must satisfy all learners in the same classroom (2.80, SD = 0.90). This means the participants agreed that same lesson plan can satisfy all leaners in the same class. Also, the item with the highest mean was on whether lessons should be planned considering pupil's differences (3.16, SD = 0.75) to which the participants generally agreed. The total mean was 3.03, SD = 0.79 which showed the participants are knowledgeable about DI based of their considerations during lesson planning.

Table 5: *JHS Teachers' knowledge of DI based on lesson content*

Item	**MS**	**SD**
Content can be varied for pupils in the same class	2.84	.77
Specifically, contents can be reduced for pupils with learning difficulties and upgraded for gifted learners (in the same class)	2.93	.98
All learners in the same classroom must learn the same content no matter their learning differences or needs	2.59	.79
Content must satisfy the curriculum needs or examination requirements instead of individual pupil's needs	2.48	.88

(MS = 2.71, SD = 0.86)

Table 5 presents JHS teachers' knowledge of DI based on the content of the lesson. The mean of the items ranged from 2.48 to 2.93 and SD ranged from 0.77 to 0.98. The item with the lowest mean was on whether content should satisfy the curriculum needs or examination requirements instead of individual pupil's needs (2.48, SD = 0.88). also, the item with the highest mean was on whether contents should be reduced specifically for pupils with learning difficulties and upgraded for gifted learners in the same class (2.93, SD = 0.98). The participants agreed to both items. The overall mean for the items was 2.71 (SD = 0.86) which showed that JHS teachers are generally knowledgeable in DI based on lesson content.

Table 6: *JHS Teachers' knowledge of DI based on teaching process*

Item	MS	SD
Teaching/Learning activities should mainly/primarily be based or centred on individual pupil's needs during lesson delivery	3.01	.78
Lessons should be taught strictly in order to complete the syllabus instead of varying instruction to satisfy individual learner needs	2.28	.83
Each leaner in the classroom should allowed to choose his/her own preferred way of learning	2.60	.82
Learner groups in the classroom should be formed based on leaners' abilities, interests, styles and learning preferences	3.00	.59
Students should be provided with the choice to work alone, in pairs or in small groups during teaching/learning	2.92	.82
Some pupils can be given individual attention during teaching	3.20	.70
A variety of teaching methods should be used during teaching	3.08	.78
I am familiar with engaging learners in tiered activities/lessons	2.73	.64
I am familiar with entering into learning contracts with pupils	2.65	.73
I am familiar with scaffolding learners in teaching/learning	2.68	.81

(MS = 2.82, SD = 0.75)

Table 6 presents JHS teachers' knowledge of DI based on the teaching process. The mean of the items ranged from 2.28 to 3.20 and the SD ranged from 0.59 to 0.83. The item with the lowest mean was on whether Lessons should be taught strictly in order to complete the syllabus instead of varying instruction to satisfy individual learner needs (2.28, SD = 0.83). The participants disagreed to this item. Also, the item with the highest mean was on whether some pupils can be given individual attention during teaching (3.20, SD = 0.70). The participants agreed that some pupils can be given individual attention during teaching. Also, the participants agreed that pupils should be provided with the choice to work alone, in pairs or in small groups during teaching/learning (2.92, SD = 0.82). The total mean for the items was *2.82, SD = 0.75* which showed that JHS teachers generally agreed and are therefore knowledgeable about DI based on teaching process. This supports the views of Tomlinson and Imbeau (2010) and Whipple (2012) who indicated that teachers need to have adequate knowledge about DI before they can actually implement it in their classrooms.

Table 7: *JHS Teachers' knowledge of DI based on assessment strategies*

Item	MS	SD
Questions asked during teaching should only measure pupil's understanding and progress on the content being taught	3.08	1.51
Pupils should be provided with the choice to work alone, in pairs or in small groups during assessment	2.88	.73
I provide variety of assessment tasks for pupils to choose from	2.81	.65
A variety of assessment tools/strategies should be employed before, during and after teaching /learning	3.24	.59
Every learner in the classroom must work on the same assessment tasks	2.81	.77
Assessment should not be separated from learning	2.81	.88

(MS = 2.9, SD = 0.86)

Table 7 presents the results of JHS teachers' knowledge of DI based on assessment strategies. The mean of the items ranged from 2.80 to 3. 24 and the SD ranged from 0.59 to 1.51. The three items with the lowest mean were on whether teachers provide variety of assessment tasks for pupils to choose from, whether every learner in the classroom must work on the same assessment tasks and whether assessment should be separated from learning (2.81, SD = 0.65, 0.77 and 0.88 respectively) and the item with the highest mean was on whether a variety of assessment tools/strategies should be employed before, during and after teaching /learning (3.24, SD = 0.59). The overall mean for the items was (*2.9, SD = 0.86*). This shows that majority of teachers generally agreed to the items hence, are knowledgeable in DI based on assessment strategies. The findings are in line with the works of Hobson (2008) and Whipple (2012) who found that teachers were knowledgeable of DI based on assessment.

Research Question 2: To What Extent Do Basic School Teachers use Differentiated Instructional Strategies?

Table 8: *Matrix of Teachers use Differentiated Instructional Strategies based on lesson content*

S/N	Content	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	Total
1	Materials support the standards and topics	3	3	2	2	3	3	4	2	3	3	70.0(28)
2	Materials are age appropriate	2	2	3	2	2	1	3	4	2	1	57.5(23)
3	Materials are adequate for the class size	1	4	3	2	4	3	2	1	2	2	60.0(24)
4	Teacher uses variety of materials other than standard textbooks	2	1	1	2	1	1	2	2	1	2	37.5(15)
5	Teacher differentiates using major concepts	0	2	1	0	0	0	0	1	0	3	17.5(7)
	TOTAL	**40**	**60**	**50**	**40**	**50**	**40**	**55**	**50**	**40**	**55**	
	Percentage % freq.	**(8)**	**(12)**	**(10)**	**(8)**	**(10)**	**(8)**	**(11)**	**(10)**	**(8)**	**(11)**	

***Frequency in parenthesis**

Key: 0 = No Evidence, 1= Minimum Evidence, 2 = Some Evidence, 3 = Clear Evidence, 4 = Clearer Evidence

Table 8 shows the overall rating of Junior High School use of differentiated instruction in the content of their lesson notes. The rating ranged from 0 (no evidence) to 4 (clearer evidence). The maximum frequency for each indicator was 40 (maximum 4 ×10 teachers) and that of each participant was 20 (maximum 4 × 5 items). The respondents' total percentage frequency scores on the observation schedule varied between 40% (6) and 60% (12). Respondents T1, T4, T6 and T9 obtained 40% (8) whiles respondents T2 obtained 60% (12). The overall mean for the 10 teachers whose lessons were observed was 48. This shows that the teacher scored a little below average with regards to differentiated instruction based on the content of their lessons.

It was observed that, the overall rating of the 10 teachers on the first indicator (Materials support the standards and topics) was 70% (28). On the fifth indicator (teacher differentiates using major concepts) four teachers differentiated their lessons using major concepts and had ratings from 1 to 3. However, six teachers did not differentiate major concepts of their lessons. The overall mean of the five indicators was 48.5. The results in Table 8 therefore showed that, Junior High School teachers in Kwadaso Municipality of the Ashanti Region of Ghana generally do not adequately differentiate the content of their lessons. The results in Table 8 therefore showed that, Junior High

School teachers in Kwadaso Municipality of the Ashanti Region of Ghana generally do not adequately differentiate the content of their lessons.

Table 9: *Matrix of Teachers use Differentiated Instructional Strategies during lesson process/delivery*

S/N	Process	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	Total
1	Teacher works with individuals and small groups	1	2	1	1	2	1	1	2	1	1	**27.5(11)**
2	Teacher monitors individual and small groups	1	2	1	2	1	1	1	1	1	1	**30.0(12)**
3	Teacher allows adequate time for students to actively process information	2	3	2	2	1	2	3	2	3	2	**55.0(22)**
4	Teacher gives specific feedback to individual and/or small groups	2	2	1	2	2	1	2	1	2	2	**42.5(17)**
5	Teacher meets the diverse needs of learners	1	2	1	1	1	1	1	1	1	1	**27.5(11)**
6	Teacher uses a variety of instructional strategies and activities to teach	2	3	2	2	3	2	2	3	2	2	**57.5(23)**
	TOTAL	**37.5**	**58.3**	**33.3**	**41.7**	**41.7**	**33.3**	**41.7**	**41.7**	**41.7**	**37.5**	
	Percentage % freq.	**(9)**	**(14)**	**(8)**	**(10)**	**(10)**	**(8)**	**(10)**	**(10)**	**(10)**	**(9)**	

***Frequency in parenthesis**

Key: 0 = No Evidence, 1= Minimum Evidence, 2 = Some Evidence, 3 = Clear Evidence, 4 = Clearer Evidence

Table 9 shows the overall rating of Junior High School use of differentiated instruction in the during their lesson delivery. The rating ranged from 1 (minimum evidence) to 3 (clear evidence). The maximum frequency for each indicator was 40 (maximum 4 ×10 teachers) and that of each participant was 24 (maximum 4 × 7 items). The respondents' total percentage frequency scores on the observation schedule ranges from 28.6 % (8) and 50.0% (14). Respondents T4, T5, T7, T8 and T9 obtained 35.7% (10) whiles respondents T2 obtained 50% (14). Respondents with the lowest ratings 28.6% (9) were T3 and T6. The total mean of the 10 respondents was 40.84. The results showed that, Junior High School teachers in Kwadaso Municipality scored below average with regards to using differentiated instructional strategies during their lesson delivery.

It was observed that, the overall rating of the 10 teachers on the seventh indicator (Teacher uses a variety of instructional strategies and activities to teach) was 57.5% (23). The lowest 27.5% (11) ratings were on the first (Teacher works with individuals and small groups) and sixth (Teacher meets the diverse needs of learners) indicators respectively. The total mean of the six indicators was 40. The results in Table 9 therefore showed that, Junior High School teachers in Kwadaso Municipality of the Ashanti Region of Ghana scored below average in differentiating their lesson delivery.

Table 10: *Matrix of Teachers use Differentiated Instructional Strategies during assessment*

S/N	Product/Assessment	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	Total
1	Teacher uses variety of assessment tools before, during and after lessons	0	2	1	2	1	1	0	2	1	2	**30.0 (12)**
2	Teacher provides opportunities for students to be assessed based upon the solving of real and relevant problems	1	1	2	1	1	1	1	1	0	1	**25.0 (10)**
3	Teacher allows for a wide range of assessment alternatives	1	1	0	0	0	1	0	0	1	1	**12.5 (5)**
4	Teacher works with individual students or groups to determine the form of assessment	0	1	0	0	0	1	1	0	1	1	**12.5 (5)**
5	Teacher uses both formative and summative assessment	3	3	2	3	3	3	2	3	3	2	**67.5 (27)**
	TOTAL	**25.0**	**40.0**	**25.0**	**30.0**	**25.0**	**35.0**	**20.0**	**30.0**	**30.0**	**35.0**	
	Percentage % freq.	**(5)**	**(8)**	**(5)**	**(6)**	**(5)**	**(7)**	**(4)**	**(6)**	**(6)**	**(7)**	

***Frequency in parenthesis**

Key: 0 = No Evidence, 1= Minimum Evidence, 2 = Some Evidence, 3 = Clear Evidence, 4 = Clearer Evidence

The maximum frequency for each indicator was 40 and that of each participant was 20. The respondents' total percentage frequency score on the observation schedule varied between 20.0% (4) and 40.0% (8). Respondents T2 had the highest rating of 40% (8) and T7 obtained 20% (4). The overall mean of respondents' use of differentiated instructional strategies during assessment phase was 29.5. This means that the teachers' respondents showed minimum evidence of using differentiated assessment strategies to evaluate their lessons.

It was observed that, the percentage frequency of the 10 teachers on the first indicator (Teacher uses variety of assessment tools before, during and after lessons) was 30% (12). Also, the percentage frequency of the 10 teachers on the third (Teacher allows for a wide range of assessment alternatives) and fourth (Teacher works with individual students or groups to determine the form of assessment) indicators respectively was 12.5% (5). The indicator with the highest ratings (67.5%) was the fifth indicator (Teacher uses both formative and summative assessment). The overall mean rating of the 10 teachers on the five indicators was 29.5. This means that the teachers showed minimum evidence of differentiated their assessment strategies.

Discussion

Junior High School teachers' knowledge of differentiated instruction was examined based on seven sub-concepts which are: learner diversity, learner interest, learning styles, lesson planning, lesson content and teaching process as well as assessment strategies.

The findings indicate that Junior High School teachers have high knowledge of DI based on learning style with M = 3.21 (SD = 0.51), lesson plan with M = 3.03 (SD = 0.79), learner interest with M = *3.12 (SD = 0.69*), learner diversity with *M = 2.63 (SD = 0.29*), lesson content with M = 2.71 (SD = 0.86), teaching process with M = *2.82 (SD = 0.75)* and assessment strategies with *M =2.9* (*SD = 0.86*).

The results showed that JHS teachers generally agreed to the statements and are therefore knowledgeable on DI based on the various sub-concepts they were assessed on. This confirms the findings of Whipple (2012) who indicates that teachers were knowledgeable on various sub-

concepts of DI. This study found that, J.H.S teachers possess fair knowledge in DI. The results however contradict the findings of Woods (2014) which indicates that teachers have high knowledge of DI because they were given special training on DI. This study however found that teachers possess knowledge of DI though they did not receive any special training on it.

This led to the classroom observation of selected teachers to observe how they implement DI in their classroom teaching based on lesson content, delivery and assessment. The results from the observation showed that, Junior High School teachers in Kwadaso Municipality of the Ashanti Region of Ghana generally do not adequately differentiate the content of their lessons (See Table 8). In terms of lesson delivery, the total mean of the six indicators was 40 which indicate that showed that, Junior High School teachers in Kwadaso Municipality of the Ashanti Region of Ghana scored below average in differentiating their lesson delivery.

It was further observed that, the overall mean rating of the 10 teachers on the five indicators in lesson assessment was 29.5. This means that the teachers showed minimum evidence of differentiated their lesson assessment.

Traditional classroom teaching strategies based on one size-fits-all approach have proven to be ineffective means of instruction (Tomlinson et al., 2003). This calls for teachers to adjust their instructions to support the individuality and uniqueness of learners to ensure effective instruction and high quality learning. This is because, according to Kameenui and Carnine (1998), that do not accommodate the uniqueness learning needs of students can expose them to risk of school failure. The results from classroom observation showed that, despite teachers' knowledge of sub-concepts of DI, they do not teach to meet the diverse needs of learners. This means that learners are at greater risk of school failure.

Conclusions and Implications for Practice

Differentiated instruction (DI) explains how to meet the needs of diverse learners within a homogeneous setting. According to Anderson (2009), teachers need to differentiate instruction because our classrooms are filled with students with a variety of needs and come to school with a wide range of experiences. There is a need to educate all students such as those students who are at risk of school failure, have cultural and language differences, are disadvantaged, slow learning, gifted and talented learners, involved in special education, have race, ethnicity, and socio-economic differences, and students with different educational histories, and family values (Nordlund, 2003 cited by Anderson, 2009). Therefore, Junior High School teachers in Kwadaso Municipality should differentiate their instruction to meet the diverse needs of all these group of student in their classrooms. The results showed that majority of the teachers generally have high knowledge of the various sub-concepts of DI. It was also found that Junior High School teachers did not employ differentiate instructions in their teaching practices. It was also found that there were few traces of DI in their classroom teaching in terms of content of their lessons, teaching strategies and assessment.

Recommendations

Based on the findings, it has been recommended that Kwadaso Municipal directorate of the Ghana Education Service should organize in-service programmes, workshops, seminars and short courses on the differentiated instructional strategies to give teachers hands-on training on DI.

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