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Primary School Teachers' Knowledge, Attitude and Practice of Differentiated Instruction: The Case of In-Service Teacher-Trainees of Debre Markos College of Teacher Education, West Gojjam Zone, Amhara Region, Ethiopia

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Abstract

This study explored primary school teachers' knowledge, attitude and practice of differentiated instruction. The target population of this study was primary school (Grades 1-4) teachers of the Amhara Region who were attending summer in-service diploma level training at Debre Markos College of Teacher Education in 2017 academic year. To this end, questionnaire and FGD were used as data collection instruments. The findings of the study revealed that there was a general level of understanding of differentiated instruction among primary school teachers. Though there was a seemingly adequate level of understanding of differentiated instruction by primary school teachers regarding the ways to support each group of students (i.e., fast learners, medium learners, and slow learners), teachers lacked knowledge of specific strategies to manage mixed ability classrooms in a way that engages each group of students during classroom hours simultaneously. The findings also indicated that there was a lower degree of implementation of differentiated instruction as compared to their level of understanding. It was also found that differentiation of content was the lowest practiced area. The data revealed that teachers were not regularly differentiating instruction in their classrooms due to lack of knowledge of specific strategies, the time constraints to prepare differentiated instructional lessons, and lack of relevant resources. Some teachers mentioned that large class size also obstructed their attempt of implementing differentiated instruction. They also do not usually have adequate opportunities to plan ahead and reflect on their work due to extremely high work load. To alleviate these problems, the researcher has forwarded relevant recommendations in the paper.

Keywords: *Interest; Readiness; Differentiated Instruction; Learning Profile*

1. Introduction

1.1. Background of the Study

Scholars around the globe have suggested curriculum differentiation as one way of tackling equity related problems in the education system. Nevertheless, curriculum differentiation

has been conceptualized and practiced in different ways. For instance, curriculum differentiation was equated with tracking or streaming, where students are grouped according to their varying abilities. This has been done either in separate classes as part of the formal operating structure of the school, or informally by means of special homogeneous instructional grouping within their respective classes (Ansalone, 2010). Early proponents of tracking argued that it facilitates individualized instruction and eliminates the probability of boredom experienced by advanced students due to the participation of slower ones. Similarly, it helps slow learners to benefit from instruction that considers their ability levels.

Streaming for relatively fixed groups of children is common educational practice all over the globe. In Germany, for instance, students are streamed and selected into different school types according to their ability starting from age 10 (Terwel, 2005). Nevertheless, this fixed notion of curriculum differentiation in the context of tracking and fixed notions of ability-grouping has been contested by many educators from the socio-cultural camp. They argued that tracking represents a "veiled attempt to reproduce and legitimate the stratification system" which offers inferior educational opportunities to children of the lower streams (Ansalone, 2010, p.17). As Ansalone further argues, there is also little support available for the assumption that tracking improves the academic achievement of all students.

Moreover, several studies have indicated that streaming is related to social disadvantage and reinforces social exclusion. It provides less opportunity for social integration and academic success across race and class (Caro, 2009; Schutz, et. al., 2008). In England and the United States, for instance, it was found out that students who were placed in the lower streams were more likely to be from low socio-economic backgrounds and ethnic minorities (Johnston & Wildy, 2016). Hence, streaming only legitimizes the structural inequalities of marginalized communities with the mainstream ones.

One of the reasons might be because students in low ability streams may have less access to positive role models and high achieving students have fewer leadership opportunities (Johnston &Wildy, 2016). Also, lower ability streamed students have less opportunity to learn from their higher-achieving peers when streamed, and conversely higher ability students have less opportunity to develop leadership skills through opportunities to mentor lower streamed students (Ibid).

When streaming is used to meet the needs of low ability students, teachers develop lower expectations of these students (Rubie-Davies, 2010). This can result in students being offered less homework, a slower pace of instruction, and less challenging tasks (Johnston & Wildy, 2016). This, in turn, results in self-fulfilling prophecies (Rubie-Davies, 2010). In other words, if teachers have ideas that their classes are homogenous in ability, the

expectations that they form for this ability level will affect student outcomes even more than any ideas they hold about the ability of individual students in the class. Also, there is a tendency that more experienced, qualified, and better-prepared teachers are commonly assigned to higher sets, where they cover more challenging material at a faster pace. Low-level classes are more often afflicted with interruptions and student misbehavior, while teachers emphasize seatwork instead of oral interaction with students.

Nowadays, it is generally accepted that average and remedial learners do not benefit from homogeneous grouping (Van Houtte & Stevens, 2009). However, for more talented students, ability grouping does show beneficial effects (Muijs & Reynolds, 2005). Consequently, scholars argued for a greater clarity into understanding curriculum differentiation as requiring flexible grouping of students according to their learning needs as opposed to the static and permanent grouping of students that defines streaming. Consequently, it was believed that setting high academic standards in mixed ability classrooms alleviates inequalities in curriculum and instruction and brings excellence by requiring all students to demonstrate higher levels of achievement and by providing all students with equal educational opportunities. Hence, providing a similar curriculum to all students irrespective of their ability differences was thought to solve the problem for granted.

However, de-tracking or mixed ability classrooms alone cannot bridge the achievement gaps among students. This is because, as Schutz, et al., (2008) argued, providing all students with equal educational opportunities do not mean providing them with identical educational opportunities. Educational needs are specific to particular learners, and academically advanced, or slower learners with diverse learning needs will not benefit from the equal educational opportunities extended to all students solely by means of de-tracking. As a result, educators came to feel that more is needed than de-tracking schools. Schutz, et al., (2008) argued that students with different abilities, interests and motivational levels should be provided with differentiated instruction to meet their unique learning needs. Moreover, they contend that it is not grouping per se that matters in the classroom, but it is what happens in the group (Solomon, 2015).

Hence, tracking and grouping are regarded as two quite different concepts. Tracking is the general and usually permanent assignment of students to classes that are taught at a certain level and with whole-group instruction (Schutz, et. al., 2008). Grouping is defined as a more flexible, less permanent arrangement of students that takes into account factors in addition to ability, such as motivation, interests, instructional levels, and student effort. This; therefore, distinguishes between curriculum differentiation, which involves the flexible grouping of students in a classroom and needs-based curriculum decisions that are reviewed from time to time, from tracking, which involves the permanent assignment of students to classes that tend to adopt whole-group, non-differentiated teaching

approaches. Scholars such as Tomlinson (2003) termed the condition where students are grouped into separate, relatively homogeneous loops where they are offered an adjusted curriculum (i.e., tracking) as an external form of differentiated instruction. In contrast, internal differentiation is used as an umbrella term for the multiplicity of strategies within the classroom that pay attention to the individual capacities and educational needs of learners (Adami, 2004).

Thus, the conceptualization of curriculum differentiation has shifted away from that of tracking to flexible grouping. Some educators prefer to use 'differentiated instruction' than 'curriculum differentiation' when they want to refer to classroom organization which consists of mixed ability students within the same class. Differentiated instruction takes cognizance of student variance by allowing the teachers to plan their content and process, supporting diverse learning styles (Lawrence-Brown, 2004). As Tomlinson (2001) contends, "in differentiated classrooms, teachers provide specific ways for each individual to learn as deeply as possible and as quickly as possible, without assuming one student's road map for learning is identical to anyone else's" (p. 2). As such, differentiated instruction refers to "a set of strategies that will help teachers meet each child where they are, when they enter a class and move them forward as far as possible on their educational path" (Levy, 2008, p. 162).

In a differentiated classroom, teachers have an understanding that culture, gender, socioeconomic status, and life experiences affect how and what students will learn (Van Garderen & Whittaker, 2006; Tomlinson, 2001). Today, curriculum differentiation is defined as "the process of modifying or adapting the curriculum according to the different ability levels of the students in one class" (UNESCO, 2004, p.14). However, this does not mean that curricular standards and expectations are compromised for slow learners. Rather, it means providing multiple opportunities and scaffolding for all students to meet or even exceed standards. As such, differentiated instruction has "balanced emphasis on individual students and course content" (Tomlinson & Imbeau, 2010, p. 14). In this regard, it supports the learning process of children so that each individual learner in the classroom can develop his/her individual capabilities and limitations. Differentiated instruction is a response to student academic readiness, interest and learning profile in academically diverse classrooms (Tomlinson & Eidson, 2003).

Generally, it is on this background that the current study tried to explore primary school teachers' knowledge, attitude and practice of Differentiated Instruction.

1.2. Statement of the problem

The implementation of differentiated instruction in daily classroom practice seems to pose a challenge for many teachers (Holloway, 2000). This might be one of the reasons for

teachers' reliance on the didactic, technocratic and positivist way of teaching. Supporting this point, researchers (e.g., Daniels & Bizar, 2005; Tomlinson & Eidson, 2003) noted that though most teachers understand the importance of differentiated instruction, the majority of them do not differentiate instruction. The researchers underscored that while many teachers acknowledge the presence of diverse learners in their classrooms, most teachers do not engage in differentiated or academically responsive instruction and plan and teach for learner variance. While the causes might be of different kind, many scholars underscore that teachers' expertise, commitment, and supportive school environment are regarded as the major ones. This is because, as Pettig (2000) noted, differentiated instruction requires from teachers a persistent sharpening of their teaching skills in addition to encouraging significantly changing their classroom practices. Also cited is the way teachers are trained in teacher training institutes (Tomlinson, 2014; Holloway, 2000), which falls short of capacitating them for the hard and complex reality of teaching in differentiated classes.

Therefore, it is not enough for teachers to believe that all children can learn if they do not know how to enable diverse students to engage in challenging material successfully. It is important for teachers to be prepared as diagnosticians, planners, and leaders who can make informed, needs-based curricular decisions to meet the needs of diverse learners. As such, the teacher, who entails the key to a successful differentiated instruction, is challenged to facilitate learning for students of different readiness level, interests, learning profile (Tomlinson, 2003), socio-economic and cultural capital and psycho-emotional characteristics, all features that can affect the construction procedure of new knowledge (Caro, 2009).

Though the idea of differentiation has been duly recognized in various documents, the practice of differentiation seems to be not yet fully practical. The MoE of Ethiopia admits that there is a lack of flexibility in the primary school's curriculum. In line with this, the MoE states that there is a need to introduce "some flexibility to the curriculum, to enable differentiation so that teachers can target curriculum content at learners and select a pace depending on their level, needs and preferences" (MoE,2015, p. 64). It was believed by the MoE that such flexibility will further improve the relevance of the curriculum for all students, including those with special educational needs. In its five years sector-wide program known as the ESDP V, the MoE puts "Designing a strategy for curriculum differentiation, including due attention to the needs of all children" as one of its major goals (MoE, 2015, p. 65). In spite of this attempt, there was no specific strategy for differentiating instruction so far that this study is hoped to bridge in.

Nevertheless, the MoE has earnestly worked on the utilization of the constructivist approaches to teaching in all tiers of the education system. Equally emphasized is the need for making classrooms more inclusive, catering the needs of each learner. Despite these

efforts, recent studies on the status of students' performance at primary grades revealed that the efforts might have fallen short from their targets. For instance, a recent nation-wide reading assessment known as the Early Grade Reading Achievement (hereafter EGRA) indicated that 34% of the students in Grade 2 were unable to read a single word of a grade-level relevant story; 48% of the students were unable to answer a single comprehension question on a reading comprehension test prepared to the level; and only 5% of the students were able to read 60 words per minute in reading fluency (MoE, 2015). This could be attributed to the inadequate utilization of differentiated instruction in primary grades.

Planning to differentiate instruction requires adequate knowledge of the students and the contents for which the teacher is responsible, as well as a firm understanding of classroom management skills and pedagogical strategies. It also requires teachers' unreserved commitment to attentively assess and look for individual differences among students and thoughtfully designing alternate strategies. However, teachers nowadays are not that responsible to invest much mental energy that could help them take care of all these requirements (MoE, 2008). Hence, there is the need to study the extent to which primary school teachers understand and practice differentiated instruction in their classrooms.

1.3 Objectives of the Study

The purpose of this study was to explore the knowledge, attitude and practice of differentiated instruction among primary school (Grades 1-4) teachers who were enrolled in Debre Markos College of Teacher Education for Diploma level in-service training during the 2017 academic year cohort.

Specifically, the study tried to achieve the following research objectives:

- Assess primary school teachers' knowledge of differentiated instruction
- Examine primary school teachers' attitude to differentiated instruction
- Examine the extent to which primary school teachers practice differentiated instruction
- Ascertain the relationship between knowledge, attitude and actual practice of differentiated instruction

1.4 Research Questions

The study aimed to answer the following basic research questions:

- To what extent do primary school teachers understand differentiated instruction?
- What is the attitude of primary school teachers towards differentiated instruction?
- To what extent do primary school teachers practice differentiated instruction in their classrooms?
- To what extent is the practice of differentiated instruction related to primary school teachers' knowledge and attitude to differentiate instruction?

1.5 Significance of the Study

Teachers should be well equipped with their pedagogical skills thereby they could accommodate the learning needs of students with different intelligence, profiles and other academic and social needs. To this end, they must be given continued opportunities to deepen and expand their knowledge. Accordingly, this study might help to identify the status of the knowledge and attitude primary school teachers have regarding differentiated instruction as well as their practice. This may help teacher educators of the college to adjust curricular contents in a way that capacitate primary school teachers in this regard. It may also help to identify the types of supervisory and administrative supports primary school teachers need to receive in order to effectively differentiate instruction and design supportive mechanisms.

1.6 Scope of the Study

The study was delimited to the investigation of primary school teachers' knowledge, attitude and practice of differentiated instruction. To this end, in-service teacher-trainees of Debre Markos College of Teacher Education were taken as a sample. The respondents were the would-be graduates of the 2017 academic year cohort.

1.7 Limitations of the Study

There were certain limitations to this study. First, because all the participants were from one college of teacher education, findings may not be generalized to the situation within the Amhara Region. Second, the study was completed with primary school teachers who were on the verge of completing their diploma level in-service training in Debre Markos College of Teacher Education through a data collected using self-administered questionnaire and Focus Group Discussion. Thus, there was no formal attempt made to determine how effective classroom teachers actually were at differentiating instruction because observations of teaching practices were beyond the scope of this study.

2. Method

2.1 Research Approach and Design

The study employed a mixed research approach since it offers a better understanding of a phenomenon. Such an approach also enables to capitalize on the strengths and to minimize the weaknesses of quantitative and/or qualitative methods. In line with such an understanding, this study specifically adopted a QUAN – qual approach with a more quantitative focus.

2.2 Research Participants and Sampling

The target population of this study was primary school (Grades 1-4) teachers of the Amhara Region who were attending summer in-service diploma level training at Debre Markos College of Teacher Education in 2017 academic year cohort. In so doing, one

hundred fifty teachers were selected from the total population (3500) of primary school teachers in Amhara Region using stratified random sampling technique.

2.3 Instruments of Data Collection

Questionnaire and Focus Group Discussion (hereafter FGD) were used as data collection instruments. From 150 questionnaires distributed to the participants, 135 were returned and used in the final analysis. To supplement the quantitative data and understand the issue in-depth, six teachers were selected on purpose for the FGD.

The questionnaire was originally developed in English Language and later translated to the local language (Amharic) to ensure better understanding. The questionnaire was pilot-tested by collecting data from 30 primary school teachers who were not included in the actual survey. The collected data was analyzed for its reliability. Accordingly, the Cronbach alpha coefficients for the three scales viz. Knowledge (7 items), attitude (6 items) and practice (23 items) was α=.76, α=.85 and α=.75, respectively. The Cronbach alpha coefficients for the three subscales of the survey were greater than .7, which suggested that the items have high internal consistency (Fink, 2013). The data gathered through questionnaire items were analyzed using mean, one-sample t-test and Pearson correlation using SPSS 20. In addition, narration through relevant themes was employed to analyze the qualitative data gathered through the FGD.

3 Results

3.1 Demographic Information

Table 1: Demographic characteristics of sampled Respondents of the study (n=135)

Category	Variable	N	%
Gender	Male	79	58.5
	Female	56	41.5
Age	18-24	39	28.9
	25-35	67	49.6
	>35	29	21.5
Teaching Experience	2-3 Years	39	28.9
	4-6 Years	79	58.5
	7 years & above	17	12.6
Education Status	Grade 10/12 Completer	41	30.4
	Certificate	94	69.6

From the total of 135 sampled respondents, 79 (58.5%) of them were male, while the remaining 56 (41.5%) were female. In terms of age, almost half, i.e., 67 (49.6%) of them were between the age of 25 to 35. More than half, i.e., 79 (58.5%) of them had teaching experience ranging between 4 to 6 years. While the majority, i.e., 94 (69.6%) had earned certificate in teaching, about 41 (30.4%) were tenth-grade completers. This suggests that a significant number of the respondents started the teaching career without having the necessary qualification.

3.2 Teachers' Knowledge about Differentiated Instruction

Table2: Teacher-trainees' knowledge of Differentiated Instruction (n=135)

Items	Mean	SD	t	Sig. (2-tailed)
Adapting lessons to meet the needs of remedial learners	3.68	1.26	6.276	.000
Assessing where students are and designing appropriate lessons	3.32	1.17	3.164	.002
Adapting instruction to meet the needs of gifted learners	3.09	1.16	.889	.376
Accommodating varying levels of ability in a class	2.85	1.08	-1.590	.114
Identifying gifted, talented and slow students	3.36	1.13	3.658	.000
Identifying students with special needs	3.61	.95	7.391	.000
Adapting instruction to meet the needs of students with special needs	3.35	1.07	3.790	.000
Grand Mean	3.32	.66	5.652	.000

As clearly depicted in the table, the respondents had above average knowledge in adapting lessons to meet the needs of remedial learners (X=3.68, SD=1.26), designing appropriate lessons (X=3.32, SD=1.17), identifying gifted, talented and slow learners (X=3.36, SD=1.13), identifying students with special needs (X=3.61, SD=.95) and adapting instruction to the needs of students with special needs. The finding also indicated that the respondents had slightly above average knowledge of accommodating instruction to satisfy the needs of gifted learners (x=3.09, SD=1.16).On the other hand, the result revealed that the respondents knowledge of accommodating students of diverse abilities (fast learners, medium learners, and slow learners) within the same classroom is below the mean (X=2.85, SD=1.08). This had been confirmed during the FGD where the discussants indicated that they usually faced difficulties to manage students of varied readiness level within the same classroom during instructional hours. The mean score for the knowledge scale is X= 3.32, SD=.66, which is statistically significant (t= 5.652, p<.05). The result suggested that the respondents had above average knowledge about differentiated instruction. The discussion revealed that their knowledge is largely about supporting each type of learners separately, however, they were usually uncertain about managing the diverse needs of learners simultaneously.

3.3 Teachers' Attitude towards Differentiating Instruction

Table3: Teacher-trainees attitude towards Differentiating Instruction (n=135)

Items	M	SD	t	Sig. (2-tailed)
Each student has his/her own unique intelligence that I, as a teacher, should help him/her to develop.	3.29	1.15	2.915	.004
I should acknowledge the differing learning rates and styles of students and adjust my lessons accordingly.	3.73	.88	9.653	.000
I should begin instruction from where the students really are, even though it might require additional time.	3.27	1.40	2.214	.029
While it is appropriate for students to work on different assignments corresponding with their ability levels, the means of assessment should be the same for all students.	3.50	1.32	4.431	.000
If pre-assessment indicates that groups of students in my class have already mastered basic skills of the lesson at hand, I should plan content that meets their readiness level.	3.04	1.37	.377	.707
If pre-assessment indicates that a student lacks basic skills to understand a lesson at hand, I should support the student until mastery is achieved even if it may be re-teaching lower grade contents.	3.07	1.33	.650	.517
Grand Mean	3.32	.79	4.68	.000

As presented in table 3, the respondents showed agreement on most of the statements aimed at measuring their attitude towards differentiating instruction. They believed that each student has his/her own intelligence and the responsibility to foster their potentialities rests upon the teachers (X=3.29, SD=1.15). In this regard, the discussants of the FGD confirmed that they want to help learners by identifying their multiple intelligences. But according to the discussants, they did not really know how to identify which intelligences are dominant among their students. They did not know how to do so. They also showed agreement with the statement 'Teachers should acknowledge the differing learning paces and styles of students and adjust their lessons accordingly'. Their response to this statement averaged X= 3.73 with SD=.88. The SD indicated that the respondents had little variance on this statement. The respondents also showed agreement on the fact that teachers should begin instruction from where their students really are, even though it might require additional time (X= 3.27, M= 1.40). The mean score for the attitude score is X= 3.32, SD= .79 which is statistically significant (t=4.680, p<.05). The result suggested that the respondents had a positive attitude towards differentiating instruction.

3.4 Teachers' Practice of Differentiated Instruction

Table 4: Teacher-trainees' practice of differentiating content (n=135)

Items	Mean	SD	t	Sig. (2-tailed)

When it is necessary, I modify textbook content according to student readiness level.	2.19	.91	-10.308	.000
I use multiple materials other than the standard textbook as instructional resources when I teach my students.	2.34	.89	-8.599	.000
I deliberately design easier tasks so that students can be more satisfied with their accomplishments.	2.24	.87	-10.140	.000
I use texts which are at varied difficulty levels based on each student's ability.	2.25	.82	-10.640	.000
I differentiate lesson contents by pre-assessing student skills and understandings, then matching learners with appropriate activities.	2.27	.79	-10.736	.000
I give fast learners additional resources that match their levels of understanding.	2.56	.88	-5.881	.000
I deliberately plan to pre-assess student readiness so that I can make appropriate content.	2.95	1.14	-.528	.599
I adapt the content to the needs of slow learners by serving them through tailored tasks during the regular class hours.	2.83	.94	-2.100	.038
Grand Mean	2.45	.45	-14.004	.000

As indicated in table4, the mean score for teachers practice of modifying textbook contents according to student readiness level is below average (X= 2.19, M= .91). Teachers' use of multiple materials other than the standard textbook as instructional resources is severely limited (M=2.34, SD=.89). The practice of designing easier tasks for students to help them become more satisfied with their accomplishments averaged X= 2.24 with SD=.87. Teachers' use of texts which are at varied difficulty levels based on each student's ability (X=2.25, SD=.82), pre-assessing student skills and understandings then matching learners with appropriate activities (X=2.27, SD=.79), providing fast learners with additional resources that match their levels of understanding (X= 2.56, SD=.88), pre-assessing student readiness to make appropriate content (X=2.95, SD= 1.14), adapting the content to the needs of slow learners by serving them through tailor made tasks during the regular class hours (X=2.83, SD=.94) all items were below the expected mean. Moreover, the overall mean score of the respondents' practice of differentiating content is below the expected level (X=2.45, SD=.45) which is statistically significant (t=-14.004, p<.05). The result is indicative of the fact that teachers solely rely on textbooks prepared by the regional educational bureau for their respective grade levels. As some of the discussants of the FGD put it boldly, there is a severe shortage of textbooks let alone having supplementary teaching materials in their schools.

3.5 Differentiating Process

Table 5: Teacher-trainees' practice of differentiating process (n=135)

Items	Mean	SD	t	Sig. (2-tailed)
I design activities that require students to do something with their knowledge (apply and extend major concepts and generalizations).	2.70	.91	-3.885	.000
I provide students with options and choices regarding how they are going to learn.	2.90	.82	-1.367	.174
I use a variety of instructional strategies simultaneously within a single lesson.	2.99	.90	-.192	.848
I employ alternative and multiple representations of lesson contents through audio, visual and audio-visual materials.	2.79	.88	-2.733	.007
I ensure that the learning activity provides opportunities for students to relate the key concept or topic to their own experiences or understanding.	2.98	.88	-.295	.769
I employ ongoing, diagnostics assessment so that I can adjust my instruction to help students understand the lesson well.	2.85	.80	-2.161	.032
I intentionally inquire about students' personal strengths, preferences, and interests and incorporate these into planning.	2.78	.93	-2.783	.006
I plan and encourage students to help other students and solve problems.	2.83	1.00	-1.986	.049
I make certain that pace of instruction varies based on individual learner needs.	2.76	1.05	-2.635	.009
I allow students to work, discuss, explore, wonder, and question collaboratively.	2.93	.96	-.897	.371
Grand Mean	2.82	.42	-4.900	.000

As portrayed in table 5, primary school teachers reported that they design activities that require students to do something with their knowledge (apply and extend major concepts and generalizations) (X=2.70, SD=.91). They also provided students with options and choices regarding how they are going to learn (X= 2.90, SD=.82). Respondents' use of a variety of instructional strategies simultaneously within a single lesson averaged X=2.99 with SD=.90. Respondents also reported that they employed alternative and multiple representations of lesson contents through audio, visual and audio-visual materials (X=2.79, SD=.88). Teachers' practice of providing opportunities for students to relate the key concept or topic to their own experiences or understanding averaged X= 2.98 with SD=.88. The mean score for utilization of ongoing, diagnostics assessment to adjust instruction to help students understand the lesson well is X=2.85, SD=.80. The practice of inquiring about students' personal strengths, preferences, and interests and incorporate these into planning is below average (X=2.78, SD=.93). Though it is relatively higher than the mean score for differentiating content, the overall mean score of the respondents' actual practice of differentiating process is below the expected level (X=2.82, SD=.42) which is statistically significant (t=-4.900, p<.05).

3.5 Differentiating Product

Table 6: Teacher-trainees' practice of differentiating Product (n=135)

Items	M	SD	t	Sig. (2-tailed)
While assessing my students, I design to allow students multiple ways of demonstrating progress.	2.56	1.03	-4.946	.000
I use assessment techniques such as portfolios, observations, and skills checklists, oral and written reports.	2.45	.90	-7.047	.000
I use multi-option assignments for assessing students' understanding.	2.63	.87	-4.945	.000
I allow for a wide range of product alternatives (e.g., oral, visual, kinesthetic, musical, written, spatial, creative, practical, etc.).	2.59	.66	-7.278	.000
I give assignments that differ based on individual (or group) readiness, learning profile and/or interest.	2.49	1.00	-5.944	.000
Grand Mean	2.53	.58	-9.399	.000

As depicted in table 6, teachers' practice of differentiating product is below the expected level. In all the five items included to measure product differentiation, the respondents' score is below the expected mean (i.e., 3). Teachers' use of varied assessment techniques such as observation, portfolios and skills checklists (X=2.45, SD= .90), allowing students multiple ways of demonstrating progress (X=2.56, SD= 1.03), use of multi-option assignments for assessing students' understanding (X=2.63, SD=.87), allowing for a wide range of product alternatives (e.g., oral, visual, kinesthetic, musical, written, spatial, creative, practical, etc.) (X=2.59, SD=.66), giving assignments that differ based on individual (or group) readiness, learning profile and/or interest (X=2.49, SD=1.00) all were below the expected level. The overall mean score of the respondents' practice of differentiating process is below the expected level (X=2.53, SD=.58) which is statistically significant (t=-9.399, p<.05), suggesting that product differentiation is the least practiced component of differentiated instruction by primary school teachers. As the participants of the FGD indicated, they were mostly required to follow similar school made assessment procedures which are deemed necessary to be the same for all teachers who teach the same grade levels.

Table 7: One sample t-test results of knowledge, attitude and practice of Differentiated Instruction

Scales	Mean	SD	t	Sig. (2-tailed)	Mean Difference
Knowledge of Differentiated Instruction	3.32	.66	5.652	.000	.32169
Attitude to Differentiated Instruction	3.32	.79	4.680	.000	.31852
Overall Practice of Differentiated Instruction	2.63	.32	-13.220	.000	-.36715

Table 7 presents the overall knowledge, attitude, and practice of differentiated instruction by primary school teachers. As can be observed in table 7, the respondents' score on general knowledge about differentiated instruction (M=3.24, SD=.68) is above the expected mean value and it was significant (p<.05). By the same token, the mean scores for the attitude

scale indicated that the respondents had a positive attitude towards differentiated instruction (X=3.32, SD=.79) which is statistically significant (t=4.680, p<.05). However, practice of differentiated instruction, as reported by the respondents, is below the expected mean. The mean score for this subscale is X=2.63, SD=.32, which is significantly below the expected mean value (t=-13.220, p<.05).

Table 8: Pearson correlation analysis among knowledge, attitude and practice of differentiated instruction

		Knowledge	Attitude	Practice
Knowledge	Pearson Correlation	1	.566**	.177*
	Sig. (2-tailed)		.000	.039
	N	135	135	135
Attitude	Pearson Correlation	.566**	1	.446**
	Sig. (2-tailed)	.000		.000
	N	135	135	135
Practice	Pearson Correlation	.177*	.446**	1
	Sig. (2-tailed)	.039	.000	
	N	135	135	135

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

Table 8 indicated that the relationship between the level of knowledge to the level of attitude, level of knowledge to the level of practice and level of attitude to the level of practice of differentiated instruction as reported by the participants. Accordingly, moderately positive relationship (r=. 566, p<.01) was identified between teachers' knowledge of differentiated instruction and their attitude towards it. Similarly, a moderate positive relationship was observed between attitude and practice (r=.446, p<.01). However, it was found out that there was a positive but weak (r=.177, p<.05) relationship between knowledge and practice of differentiated instruction. This indicated that there were other factors that should be fulfilled if teachers are expected to practice differentiated instruction in primary schools. In fact, the participants of the FGD highlighted that they were torn with various responsibilities which were not directly related to their teaching roles. Furthermore, the discussants mentioned the lack of necessary resources such as teaching materials and textbooks as the bottlenecks for implementing differentiated instruction. Some of them indicated the poor incentive packages, unhealthy school climate, ineffective school administration, and large class size as additional challenges.

4 Discussion

The ultimate goal of differentiated instruction is to provide a learning environment that will maximize the potential for student success (Tomlinson, et. al., 2008). Differentiated instruction, as opposed to tracking or streaming, produces less inequality among students of varied abilities and cultural backgrounds. Differentiation promotes the idea of implementing patterns of instruction such as routine small-group teaching, informal

assessments, and multiple teaching modes likely to serve a variety of needs simultaneously (Schutz, et. al., 2008).

Assessment is an integral part of differentiated instruction since it serves as a basis for decisions in differentiated classrooms. When teaching with the philosophy of differentiated instruction, teachers should pre-assess students and provide formative assessments throughout the learning. Differentiated instruction is about supporting groups of students in line with their level of readiness, interest and learning profile.

Two theories particularly form the ground for differentiated instruction. Multiple intelligence theory helps the teacher to understand the innate strengths the child brings into the classroom. By understanding the diversity within a classroom and how cultural differences may impact learning, a teacher can complement his or her instruction to a student preferred way of learning. Different learners can benefit most from varied forms of instruction due to the fact that all individuals possess different strengths in different areas.

Differentiated instruction is equitable by maintaining the core of what students should learn. At the same time, it also encourages excellence by varying how students come to make sense of this core understanding. Differentiated instruction essentially seeks to balance the various needs of students with the requirements of the curriculum. Differentiated instruction provides opportunities for students to learn by engaging them in activities designed to enhance their strengths, learning needs, and preferences through a multitude of instructional formats, and allowing the students to demonstrate their understanding of concepts through a variety of means.

5 Conclusions

The finding of the study revealed that there was a general level of understanding of differentiated instruction among the participants. Nevertheless, there was a seemingly adequate level of understanding of differentiated instruction by primary school teachers regarding the ways to support each group of students (i.e., fast learners, medium learners, and slow learners), teachers lacked knowledge of specific strategies to manage mixed ability classrooms in a way that engages each group during classroom hours simultaneously.

The finding also indicated that there was a lower rate of implementation of differentiated instruction compared to understanding. It was also found that the differentiation of content was the lowest practiced area. The data revealed that teachers were not regularly differentiating instruction in their classrooms because of lack of knowledge of specific strategies, the time constraints to prepare differentiated instruction, and the lack of resources available. Some teachers mentioned that large class size also limited the implementation of differentiated instruction. They also do not usually have adequate opportunities to plan ahead and reflect on their work due to the amount of the job requirements as well as extra responsibilities as a teacher.

6. Recommendations

On the basis of the conclusions made in this study, an attempt is made to forward the following relevant recommendations:

- As to the findings of this study, many teachers do not feel equipped to differentiate for a class of diverse needs and abilities. Therefore, providing concerns based professional development for teachers may increase their ability and desire to differentiate instruction.
- Most teachers reported that they do not have sufficient time to implement differentiated instruction due to class size. Education officials should consider reducing class size so that teachers get an opportunity to work individually with students would significantly increase.
- School should organize ongoing professional development with attention to instruction, materials, and assessments that are especially appropriate for diverse students.
- Schools should use strategies like peer coaching, action research, study groups, and workshops on a continuous basis to their respective teachers.
- It is important to remember that while teachers play the primary role in the utilization of differentiated instruction in the classroom, school principals and supervisors should also understand differentiated instruction and receive training designed to improve staff development practices by higher education officials.
- The researcher also recommends further researches that complement the mentioned limitations of this study like including classroom observations.

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