Primary School Teachers' Perceptions of Differentiated Instruction (DI) in Awi Administrative Zone, Ethiopia

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Abstract: A sequential mixed methods design was employed to investigate primary school teachers' perceptions of DI. Data were collected from randomly selected 492 primary school teachers of Awi administrative zone via questionnaire, semi structured interview and FGD. Data were also analyzed quantitatively using mean, standard deviation, one sample t-test, independent samples t-test and one-way ANOVA and qualitatively through descriptions and narrations. The quantitative data analysis revealed that the majority of primary school teachers' perception regarding the overall relevance of DI was high. In terms of variables, female teachers' perceptions in all the components of DI are higher than that of male teachers. Similarly, teachers who obtained in-service training were found to have better perceptions in the overall perceptions of DI and more specifically in process differentiation than those teachers who did not obtain training. However, no significant difference was noted based on teaching experience. The qualitative data garnered also revealed differences in teachers' perceptions based on sex, in-service training and teaching experience. Thus, the study concluded that teachers' perceptions in the overall DI and its components (content, process, learning environment and product differentiations) differ. Despite their difference in their understanding of DI, teachers perceived DI as time consuming and challenging owing to: lack of materials, lack of knowledge, work load, lack of commitment, lack of leadership support, lack of conducive environment for differentiation and the presence of diverse student populations. The study highlights the need to re-visit the primary school teachers' perceptions across the country and in the Amhara Region and provide continuous capacity building trainings to assist the diverse academic achievements of students at each grade level.

Keywords: Differentiated instruction, content differentiation, process differentiation, product differentiation, instructional strategies

INTRODUCTION

At present, educational trends across the globe reflect significant changes in student populations (Roy, Guay & Valois, 2013). Walking into the general primary classrooms of today one can see a 'mosaic' of students with varying backgrounds and abilities (Abbati, 2012; Tomlinson & McTighe, 2006). School students differ widely in pace of learning, culture, gender, readiness, interest and learning profiles (Dee, 2010; Kanevsky, 2011; Landrum & McDuffie, 2010; Santangelo & Tomlinson, 2012); and teachers of different countries are teaching under these diversified conditions using a 'one-size-fits-all' approach (Koeze, 2007; Santangelo & Tomlinson, 2012). As a result, schools and educators more than

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ever are confronted with the problems of how to accommodate differences of individual learners (Rodriguez, 2012). To address these challenges, scholars recommend that the instruction is differentiated. Hence, adapting instruction to individual differences through differentiated instruction [DI] has been recognized as a promising approach (Cox, 2008; Dee, 2010; Roy et al., 2013).

DI refers to a philosophy of teaching and a proactive student-centered approach for teaching diverse learners in a supported and heterogeneous environment in which assessment drives the instruction (Hellman, 2007; Suprayogi, 2017; Tomlinson, 2014). It is a teacher mindset that all learners respond to instruction differently. Teachers who utilize DI take into consideration three personal characteristics of students – readiness, interest, and learning profiles (Tomlinson, 2001). Student *readiness* refers to students' preparedness for the ability, skill and concept for a given subject (Tomlinson, 2005). Student *interest* also refers to the attention, curiosity and involvement of a student in a given topic (Tomlinson & Imbeau, 2010). Whereas, *learning profile*, which embraces gender, culture, learning styles, multiple intelligences and learning preferences of students, involves a preference for taking in, exploring, or expressing content (Tomlinson & Imbeau, 2010). Each of these preferences contributes to how a student learns most proficiently and efficiently.

After understanding how students best learn, the teacher can differentiate any or all of the following: content, process, product and learning environment or affect (Bender, 2012; Levy, 2008; Roy et al., 2012; Santanglo & Tomlinson, 2012; Tobin & Tippett, 2013; Tomlinson, 2014; Tomlinson & Imbeau, 2010). *Content* is what students are to learn from the instruction and what teachers teach and want their students to learn (Tomlinson, 2005; 2010). *Process* constitutes how teachers teach and how students learn, come to understand and integrate facts, concepts, or skills (Bender, 2012; Cox, 2008; Tomlinson, 2010). *Product* refers to the medium through which students demonstrate what they know, understand and are able to do, based on their investigation of a specific topic (Bender, 2012; Cox, 2008; Levy, 2008; Tomlinson, 2010). Finally, *learning environment* – physical and psychological – emphasizes the way the classroom feels and functions safe and stimulating (Chamberlin & Powers, 2010; Santangelo & Tomlinson, 2012).

According to Tomlinson and Imbeau (2010), DI is based on the following set of assumptions: (a) students who are at the same age differ in their readiness to learn, their interests, their styles of learning, their experiences, and their life circumstances; (b) differences are significant enough to impact what students learn, the pace at which they learn, and the support they need from teachers; and (c) students learn best when connections can be made between the curriculum and their interests or life experiences. With the growing popularity of such guiding principles, it is generally believed that teachers have to understand the need for students to learn and to respond proactively to these needs.

However, teachers have different understandings of the nature of DI, which are formed in part by differences in their beliefs about teaching and learning (Tomlinson, 2005). Teacher belief can also correlate with instructional strategies and techniques (Freedman, 2015; Prestridge, 2012). The notion of effective differentiation is grounded in teachers'

understanding of, and appreciation for, student's unique needs and interests. Their actions are largely based on their attitudes (Santangelo & Tomlinson, 2012). Teacher preparation also affects teachers' perceptions and their attitudes and confidence in differentiating instruction (Wan, 2017). Findings from these aforementioned studies revealed that teachers of different countries have different perceptions or beliefs on DI.

STATEMENT OF THE PROBLEM

Despite the fact that DI is extensively acknowledged in addressing diversified interest of learners, most schools of the world look much the same today as they did a generation ago, and many teachers of the world feel insufficiently prepared to meet the diverse needs of today's learners (Schleicher, 2016). To use differentiation as one method to meet the needs of all students, teachers' willingness is crucial (Welch, 2011). Meanwhile, Santangelo and Tomlinson (2012) indicate that teachers have minimal differentiation during their student teaching experience due to low perceptions of teachers and students towards DI. Other scholars (e.g., Chien, 2015; Roy et al., 2013; Tobin & Tippett, 2013), similarly, point that general education teachers of different countries face growing challenges in addressing students' various needs in the classrooms since teachers lack the knowledge and skills in DI and fail to recognize the relevance of such an approach (Santangelo & Tomlinson, 2012). Teachers' perception differences on DI, can also be attributed to the inadequate teacher preparation in colleges and universities as well as the lack of diversity training in professional development for teachers already in service (Reiter & Davis, 2011). As a result, many schools could have a number of teachers who are ill-prepared and less sensitive for such a diverse student body. Maddox (2012) observes that little direction is found in the literature to provide evidence on how teachers perceive differentiation based on professional development or training and experience. Thus, there is a gap in understanding how teachers perceive DI and what they do with this knowledge (Maddox, 2015). Furthermore, educators lack a general understanding on how to uniformly address erroneous beliefs about DI and how to address diversity within the public-school system (Roy et al., 2013). The same authors also expound that, little is known about teachers' perceptions of differentiation in the classroom. Writers documented the success of differentiation but did not state the nuances of teachers' knowledge and perceptions of the strategy (Maddox, 2015; Roy et al., 2013).

When it comes to diversity, Ethiopia is not an exception. According to the Ministry of Education [MoE] (2015), with a population of over 95 million and home to more than ninety ethnic and linguistic groups, Ethiopia is truly a land of diversity. Nevertheless, in a milieu of the diversity of the Ethiopian society, education was entangled with complex problems of relevance, quality, accessibility and equity (MoE, 2015; UNESCO, 2013). The target set in Education Sector Development Plan IV [ESDP IV] was not achieved in terms of quality, efficiency and equity (MoE, 2015; 2016a). The country still has a rigid and inflexible curriculum structure with less qualified and less motivated teachers at all levels (MoE, 2015; 2016b) that do not address the diverse interests of students in their learning.

As in other parts of the country, in the Amhara Region, the achievement of primary school students in the General Primary School Completion Exam (GPSCE) is low (i.e, 86 pass rates

as compared to the 88 national pass rate) (MoE, 2016a). A study conducted by the Amhara Regional Education Bureau [AREB] (2016), drawing data from 9,332 sixth grade students in the region also revealed that 80.1% of grade six students scored less than the 50% pass mark in every subject. Furthermore, a three year (2006-2008 E.C.) analytical inspection conducted in the Amhara Region has shown that 86.99% of the primary school teachers and principals did not utilize appropriate learner centered teaching methods that enhance all students' learning participation (AREB, 2017).

With all the aforementioned problems, it seems challenging to address learners' diversity in learning. Nonetheless, in order to address learners' learning differences using DI, quality teachers who have the knowledge and the vigor to practice it are highly demanded. To this end, local researchers (e.g., Workneh & Tassew, 2013) and policy documents (MoE, 2015; 2016b) have emphasized the importance of teachers for quality education. Despite such policy backings, however, in many schools of Ethiopia, diverse students are being taught the same lesson through the same method – "one-size-fits-all" approach – whereby every child is subjected to learn the same material in the same way (Joshi & Verspoor, 2013; Tesfaye, 2014).

Joshi and Verspoor (2013) also added that there is little evidence of active student learning, inquiry processes, opportunities for creativity and formative continuous assessment; yet, teachers use traditional or teacher centered instructional approaches (Joshi & Verspoor, 2013; MoE, 2015; 2016b). This can be related to the insufficient knowledge and skills Ethiopian teachers received during their training (Fekede & Fiorucci, 2012) or to the low commitment and interest of teachers to their profession (Tadesse, Getachew & Yalew, 2014). Various studies on the subject also conclude that quality of teachers (both in terms of attitude, skills and knowledge) and quality of education particularly at primary level needs reconsideration and call for reforms on the existing primary teacher preparation programs (Shoeb-Ahmed, 2013; Tesfaye, 2014; Workneh & Tasew, 2013). Joshi and Verspoor (2013) also made the observation that in Ethiopia, teachers' knowledge, commitment and perception to address the students' learning diversity was not significantly investigated. Moreover, the practical experiences gained from teachers and school principals during the DI training sessions in the last three years in the different zones of the Amhara Region (mainly Awi administrative zone, West Gojjam and Bahir Dar City Administration), indicated that teachers have different level of understandings regarding DI.

Particularly, the experiences gained in Awi administrative zone, where both Amharic and *Agewgena* speaker students are learning together in the same classroom by the same teacher, was markedly different. As Stewart (2016) stated teachers in identical teaching situations may have totally different perceptions and therefore may answer differently; likewise, during the training sessions in this zone it was observed that teachers' perception of DI and the need to accommodate students' differences were diverse and sometimes contradictory. Besides, little information was known about teachers' perceptions of differentiation in the classroom. These observations served as the impetuses for this particular study.

PURPOSE OF THE STUDY

The main purpose of this study is to investigate primary school teachers' perceptions of DI in Awi administrative zone. The study seeks to address the following two major questions: *(1) how do primary school teachers in Awi administrative zone perceive DI in terms of addressing students' readiness, interest, learning profiles? (2) Is there a statistically significant difference in the perceptions of DI among primary school teachers as a function of demographic variables (sex, training exposure, and experience?)*

METHODOLOGY

Research Design and Approach

A mixed methods approach with explanatory sequential mixed methods design was utilized. The complementary nature of quantitative and qualitative research calls for a mixed methods research approach having its own philosophical worldview: pragmatism (Creswell, 2012; Miles, Huberman & Saldana, 2014). Engaging multiple approaches to social inquiry can provide a fuller picture of the subject under investigation, and improve the validity and credibility of the results than the use of a single approach (Saldana, 2011).

In this mixed methods design, the quantitative approach was used to generate data through a questionnaire from a wide number of sources about the respondents' perceptions of DI. Whereas, the qualitative approach was employed to collect evidence that capture the different dimensions of the local participants' experiences, personal perspectives, feelings and conceptions from the inside (Miles et al., 2014; Saldana, 2011).

Among the different mixed methods designs, the explanatory sequential mixed methods design was applied for this study. Explanatory sequential mixed method is one in which the researcher first conducts quantitative research, analyzes the results and then builds on the results to explain them in more detail with qualitative research (Creswell, 2012). Hence, the researcher places a priority on quantitative data (QUAN) collection and analysis followed by in-depth qualitative (qual) collection and analysis. The purpose of this design (QUAN→qual), therefore, is used to obtain quantitative results from a population in the first phase, and then refine or elaborate these findings through an in-depth qualitative exploration in the second phase (Creswell, 2012).

Data Sources and Sampling Techniques

The target populations of the study were primary school teachers, school principals, students, and *woreda* education experts of Awi administrative zone. The study employed a multi-stage random sampling technique. In using multi-stage random sampling, the researcher first selected Awi administrative zone purposely from the Amhara Region administrative zones and then, four *woredas* in the zone using simple random sampling technique. These *woredas* were: Fageta Lekoma, Banja, Guagusa Shikudad and Dangela town. Among the 93 general primary schools found in the four *woredas*, 30 general primary schools were again selected

using simple random sampling technique. Out of the 1,069 teachers in these primary schools, 535 teachers were selected through simple random sampling.

However, out of 535 sample teachers, 43 teachers who were unable to properly fill and return the survey questionnaire timely were deliberately excluded and the direct respondents for the final analysis were 492 teachers. Besides, qualitative data were also obtained from teachers via interviews and FGDs.

Methods of Data Collection

The study focused on assessing the perceptions of study participants on DI. For this, multiple data collection methods such as questionnaire, interviews, and FGDs were utilized.

Questionnaire

For the quantitative data, the researcher collected data through close ended questionnaire. Whipple's (2012) *Teacher Survey on Differentiated Instruction* was adapted and utilized for the purpose. The questionnaire was divided into two sections. The first section consisted of questions that are related to demographic information. The items in the second section focused on perceptions of teachers about DI and its components. In this part, twenty-seven scaled item questions were utilized. Of these, five items constituted content differentiation and eight items process differentiation. Product differentiation consists of five items and learning environment differentiation has seven items. In order to make communication easier with the primary school teachers the questionnaire was translated into Amharic by language experts. Besides, the face validity of the questionnaire was also checked and edited by experts in the field. Furthermore, the translated questionnaire was pilot tested by a non-sample of fifty participant teachers of Kossober primary school in Enjibara and its reliability was checked using Cronbach's alpha test. The alpha value for the piloted perception items of DI was 0.895.

Interviews

An interview protocol that focuses on questions pertinent to the perceptions of teachers on DI was developed. Accordingly, individual based face-to-face semi-structured interviews were held with participants on related issues which required further explanation. Questions were designed to generate details about how teachers perceive DI techniques and strategies. As well, participants were asked a variety of 'how' questions that probed their perceptions. Thus, a total of ten teachers were interviewed. Interviews were tape-recorded with the consent of the participants.

Focus Group Discussions (FGDs)

This study also employed FGDs in order to triangulate the collected data on individual basis and to capture teachers' shared understanding and perceptions of DI. Therefore, a group of teachers from different departments that range from four to six were selected for the discussions. A total of four teacher FGD groups were established in the targeted schools of the study. To make the data more comprehensive teachers who participated in a one-to-one

interview were not involved in the FGDs. Their interviews again were tape-recorded with their accord.

Data Analysis

Since the QUAN-Qual model of the mixed methods design was applied in this study, both the collection and analysis of data were sequential in procedure. Primarily, the quantitative data collected through questionnaire were gathered and analyzed quantitatively, then, it was followed by qualitative descriptions and narrations. For the quantitative research, mean, standard deviation, one sample *t*-test, independent samples *t*-test, effect size test, and one-way ANOVA were applied.

One sample *t*-test was used to determine the status of the conceptions of primary school teachers on DI and its components. Whereas, the independent samples *t*-test was used to compare the mean scores between different groups (sex and training differences) of primary school teachers up on their perceptions of DI. Comparisons were also made within groups. For this purpose, one-way ANOVA was utilized to see if there was significant difference in teachers' perceptions of DI based on their teaching experience. Five percent ($\alpha = 0.05$) was taken as a standard level of significance throughout the study to determine whether groups of scores are significantly different. Besides level of significance, effect size test (Cohn's *d)* has been conducted to measure the strengths of the differences between the mean scores of groups at all levels. Moreover, the data collected through interviews and FGD were analyzed qualitatively through descriptions and narrations.

RESULTS AND DISCUSSION

This section focuses on the analysis of data so as to make sense of the information provided by individual participants in the study. Quantitative and qualitative data gathered in a sequential manner from different sources at different times are analyzed using both statistical tools and descriptions, which demonstrates the perceptions of primary school teachers on DI.

Participant Characteristics

Table1 presents the result from the analysis of the background data of primary school teachers involved in the quantitative data collection, together with their *woredas*, schools, sex, teaching experience and their training exposure on DI.

Table 1

Characteristics of Teacher Participants

		Participants (N=492)	Responses	
			Frequency	Percent
1	Woredas	Fageta Lekoma	141	28.7
		Guagusa Shikudad	114	23.2
		Banja	116	23.6
		Dangila	121	24.6
2	Sex	Male	237	48.2
		Female	255	51.8
3	Teaching Experience	0-5 years	105	21.3
		6-10 years	104	21.1
		11-15 years	99	20.1
		16-20 years	95	19.3
		>20 years	89	18.1
4	In-service Training Exposure	Obtained training on DI	209	42.5
		No training obtained on DI	283	57.5

Table1 demonstrates that in the four *woredas* of Awi administrative zone, out of 492 participant teachers, 51.8% and 48.2% of the sample teachers were females and males respectively. In terms of teaching experience, 21.3% and 21.1% of teachers had 0-5 years and 6-10 years of experience in teaching respectively. Moreover, 20.1%, 19.3%, and 18.1% of teachers had teaching experiences of 11-15, 16-20 and above 20 years successively. From these sample teachers, 42.5% have taken in in-service trainings on DI, whereas, 57.5% of them did not obtain any in-service training on DI.

Overall Perceptions of teachers on DI

The result of the one sample *t*-test (see Table 2) demonstrates that teachers' perceptions toward the relevance of DI in addressing the diversified needs, interests and learning profiles of students was high i.e., the obtained mean (3.42) is higher than the expected mean (3) (t=13.89, df = 491, $p< 0.05$). Likewise, teachers' perceptions of the relevance of DI in content, process, product and learning environment differentiations were also greater than the expected mean (in this case 3).

Table 2

One sample t-test in the overall perception of teachers on DI & its components

Variable	N	Expected Mean	Observed Mean	SD	Mean Dif.	df	*t*	p
Overall perceptions of teachers on DI	492	3	3.42	.66	0.42	491	13.8	.000
Content Differentiation	492	3	3.46	.80	0.46	491	12.7	.000
Process Differentiation	492	3	3.36	.85	0.36	491	9.46	.000
Product Differentiation	492	3	3.23	.90	0.23	491	5.78	.000
Environment Differentiation	492	3	3.58	.88	0.58	491	14.7	.000

Even though the quantitative data revealed a high perception of teachers on DI, the evidence garnered from the interview and FGD reports demonstrated marked differences among participants. For instance, interviews made with two teachers (TR2 &TR3) concur that the perception of teachers towards the use of DI in addressing students' learning diversity was high. Nevertheless, other teachers did not agree on the high perception of teachers on DI. According to interviewee teacher (TR8) teachers have low perceptions of DI due to a number of demotivating factors such as: knowledge gap of teachers, large class size, lack of resources, and poor leadership support in the schools. Similarly, other teacher respondents also revealed that primary school teachers' perception on DI were low due to: the time consuming nature of DI, lack of learning interest of students, shortage of instructional materials, and lack of motivation and commitment of teachers (TR1, TR6 & TR8).

In terms of content, process, product and learning environment differentiations too, differences were recognized in participants' responses. Two teacher interviewees (TR5 & TR9) perceived that in order to address learners' diversity in learning, differentiating the methods of teaching (process differentiation) and the learning environment are important. However, amid students' differences in their readiness, interests and learning profiles, these teachers perceived that differentiating the content (lessons learnt) and the product (assessment differentiation) for the individual learner is impossible and at the same time biased. Hence, according to the respondents, all students should learn the same lesson and the assessment (product) should also be the same. They further believed that "if we differentiate the contents and the assessment for each student, they themselves will not accept us."

While many teachers have positive perceptions about the classroom learning environment, interviewee teacher (TR2) elucidated that "the schools' scarce resources, non-conducive classroom seats (fixed classroom chairs and tables), dusty classrooms, and the like can affect the feelings of teachers in differentiating instruction." Under this condition, teacher (TR2) extended, "creating conducive psychological and physical learning environment is not tenable."

However, there are also teachers who perceived DI as vital and even not a new approach to our country. An interviewee teacher elucidated that "DI has been practiced long time ago in the Church and Quran schools of our country and still such practice continues. In those traditional schools, students with different abilities are learning together by the same teacher (*Priest or Shek*) and based on their pace and competence of learning, promotion is also allowed to the next level" (TR5). The teacher's view was also upheld by another teacher (TR7). Thus, the teacher (TR7) perceived DI as "*pace learning* and *competence-based learning*." Besides, another teacher interviewee (TR10) also surmised that "this philosophical approach (DI) enables each learner to achieve the learning competence expected at each grade level [*temariewochen mabqat*] and this can be realized if teachers' perception is positive to it."

As Based on the analysis of the quantitative data, this study establishes that teachers' perception to the overall DI is high. Consistent to this finding, the findings of Nicolae (2014) revealed that to differentiate instruction, teachers should have strong beliefs on DI since their needs towards DI arises from their beliefs. Moreover, teachers' beliefs and perceptions in turn could also affect their instructional decisions (Freedman, 2015; Wan, 2017). However, the analysis of the qualitative data in this study has shown that teachers' perceptions of DI differed due to various reasons. Such perception differences, or sometimes contradictory views, were due to differences in beliefs, and variations in contexts and environments. In line with this, Stewart (2016) stated that teachers in identical teaching situations may have totally different perceptions and therefore may have answered differently. Findings from other international research also revealed that there can be inconsistencies between teaching beliefs of teachers on DI (Dole & Sinatra, 1998 cited in Wan, 2017). Studies have confirmed that, if teaching beliefs or perceptions of teachers toward DI was high, it can have positive implications to their practice too. Wu, Wan and Wong (2015) underscore that teaching beliefs are crucial in influencing classroom behaviors that affect teachers' efforts, persistence, and resilience when faced with difficulties with students. Recent studies by Freedman (2015) also shown that teacher belief correlates with instructional strategies in a sense that positive beliefs are associated with the willingness of teachers to embrace DI (Hertberg & Brighton, 2005 in Suprayogi, 2017).

As revealed in the qualitative data, teachers' low perceptions to DI is due to a number of prevailing factors such as: time consuming nature of DI, knowledge gaps, large class size, lack of resources, poor leadership support, lack of commitment of teachers and lack of learning interest on students side. Consistent to this finding, the findings of Kanevsky (2011) and Tobin and Tippett (2013) disclosed that as the diversity among students and class sizes increase and resources diminish, teachers' perception to DI and its implementation can be overwhelming. The lack of knowledge and skills in adapting the curriculum material for learners' different learning styles and getting ready to act accordingly is also a common problem to primary schools (Chien, 2015; Nicoale, 2014; Roy et al., 2013; Tobin & Tippett, 2013). Lack of relevant strategies and knowledge of teachers on DI, lack of preparation time, teachers' heavy workload, low payment and lack of motivation were identified as the major

constraints for teachers' low perception of DI and their belief to effectively motivate their mentally diverse students (Nicolae, 2014; Tomlinson, 2004).

The qualitative result revealed that teachers' perceptions vary regarding the concepts of content and product differentiations. In principle, students are given various activities or lessons to learn and the way they are demonstrating what they have learnt should also vary. However, differentiating the content and the product is perceived by some teachers as treating students unequally. They believe that all students have to learn the same contents in the same manner and assessment should also be similar. These teachers further perceived that students also hate to be treated differently. Consistent to this finding, a study by Santangelo and Tomlinson (2012) found out that a fixed and standardized curriculum is a challenge for content and product differentiations. The findings of Freedman (2015) have also shown that students do not like when their classmate's papers look different as assessment and summative tasks are differentiated (Freedman, 2015).

Yet, for other scholars, as students are different, their content and product (assessment) should be different. Levy (2008) elucidates that content differentiation does not mean students learn different curriculum. Rather, in the standardized curriculum the content area each student is taught may be quantitatively or qualitatively different. Santangelo and Tomlinson (2012) and Rodriguez (2012) reiterate that DI mainly allows for variation in content without losing sight of the national or state curriculum to which all children are entitled to learn. What is central is, first, teachers must have positive feelings on DI and then they have to deliver the curriculum in ways that are responsive, compelling and flexible to students' diverse characteristics (Tomlinson & McTighe, 2006).

Vis-à-vis learning environment, even though the perception of some teachers was positive, the lack of safe and stimulating learning environment for students can adversely contribute for and diminish teachers' perceptions of DI. To maintain differentiation in the classroom, teachers always have to build a safe and stimulating learning environment (Kanevsky, 2011; Santangelo & Tomlinson, 2012). In addition to indoor space, learning and teaching can also occur outside of the classroom and teachers can also plan in this way (Goldman & Schmalz, 2003 in Freedman, 2015). Teachers can also vary the classroom environment in regard to seating arrangements and accessible placement of materials and resources by considering lighting, different group settings, and the noise level (Chamberlin & Powers, 2010).

Perception differences of teachers on DI and its components based on sex

Regarding the perceptions of teachers on DI based on sex, as indicated in Table3, significant difference was identified in the mean scores between female teachers and male teachers (t = -10.198, df = 490, p = .000, d = -0.93). Thus, female teachers' perception on the relevance of DI was higher than that of male teachers.

Table 3

t-test comparing male and female teachers' perceptions of DI (N=492)

Variable	Sex	N	Mean	SD	df	t	p	Cohn's d
Overall perceptions of teachers on DI based on sex	Male	237	140.81	32.34	490	-10.198	.000	-0.93
	Female	255	166.04	21.89				

Similarly, there was statistically significant difference between female and male teachers in the sub-components of DI. As Table4 displays, there was a statistically significant difference between female teachers and male teachers in their perceptions of differentiating the content (t =-7.804, df = 490, p=.000, d=0.69) and differentiating the process (t =-7.578, df = 490, p=.000, d = 0.63). Moreover, significant differences were noted between female and male teachers in their perceptions of learning environment differentiation (t =-6.967, df = 490, p=.000, d = 0.71), and product differentiation (t =-6.918, df = 490, p=.000, d = 0.56). This reveals that female teachers' perceptions of differentiating the content, process, learning environment and product surpasses that of male teachers and the effect size ratio in all cases was moderate.

Table 4

t-test comparisons between male & female teachers on components of DI

Sex	Statistic	CD	PD	PRD	LED
Female teachers	Mean	18.55	18.03	13.86	27.10
	SD	3.27	3.65	3.38	4.86
Male teachers	Mean	15.96	15.49	11.95	22.99
	SD	4.25	4.43	3.56	6.74
	df	490	490	490	490
	t	-7.804	-7.578	-6.918	-6.967
	p	.000	.000	.000	.000
	d	0.69	0.63	0.56	0.71

*Where: **CD**= Content differentiation, **PD**= Process differentiation, **PRD**= Product differentiation, **LED**= Learning environment differentiation.*

In order to triangulate the quantitative results, qualitative evidence was collected and analyzed. The qualitative results indicated variations between male and female teachers' perceptions on the components of DI. In this regard, for instance, interviewees (TR3 & TR4) opinioned that significant difference was observed between male and female teachers. They added that female teachers' approach and treatment of their students seemed better than that of male teachers. Other interviewee teachers (TR9 & TR10) also shared the same feelings. These teachers disclosed that female teachers were more effective in encouraging and motivating their students than male teachers. They are more likely to be sensitive to the needs of the students than male teachers may be due to their feeling of motherhood.

In contrast to the above teachers' responses, another teacher interviewee (TR2) believed that female teachers' perceptions to their students tend to be low, perhaps because they lack confidence in their knowledge of the subject matter. Another interviewee teacher (TR5) also believed that in many ways male teachers' commitment and taking responsibility for students' success predominates. Besides, three other teacher interviewees elucidated that it is difficult to differentiate the perception differences between male and female teachers on the relevance of DI to the diverse students in the classrooms (TR1, TR5 & TR8). The FGD participants [teachers] also explained that they are in the same school doing the same routines. So, there is no significant difference observed between male and female teachers in the perceptions of DI to address learners' learning diversity.

As highlighted above, even though the results from the analysis of the qualitative data show diverse perceptions, the quantitative results revealed higher perceptions of female teachers in all the components of DI in ascertaining students' interest, readiness, and learning profiles. Similar to this finding, a study by Basow (1995 in Erickson, 2010) revealed that female teachers are more sensitive and considerate of student ideas than male teachers. A similar study by Singer (1996 in Erickson, 2010) also found that female teachers were more likely than males to motivate their students; to spend greater time to encourage and allow student participation (Statham & associates,1991 in Erickson, 2010); and to value and use effective educational practices (Kuh et al., 2004 cited in Erickson, 2010). Similarly, Chliwniak (1997) and Lad (2000) have noted that female teachers were better than males in encouraging and motivating students, coordinating curriculum, employing desirable teaching methods, and promoting professional development. Rosener (1990) also acknowledged that females demonstrate more friendly, caring, supportive, sensitive, and empathic behaviors than their counterparts.

Perception differences of teachers on DI and its components based on training

Comparisons using *t*-test were made between trained and untrained* teachers to analyze teachers' perceptions based on training exposure. Hence, as shown in Table5 the study found statistically significant difference between the mean scores of trained and untrained teachers on their perceptions of DI (t = 2.815, df = 490, p=.005, d = 0.26). This entails that those trained teachers, teachers who obtained in-service capacity building training on DI, have better perceptions than untrained teachers on the relevance of DI.

**Trained teachers refer to those primary school teachers who obtained a five days in-service training on the concept of DI, its major sub-components and strategies whereas, untrained teachers refer to those who did not take any training on DI and its applications.*

Table 5

t-test comparing trained and untrained teachers on the perceptions of DI (N=492)

Variable	Training	N	Mean	SD	df	t	p	Cohn's d
Overall perceptions of teachers on DI based on training	Trained	209	158.31	31.79	490	2.815	.005	0.26
	Untrained	283	150.62	28.52				

Concerning teachers' perception differences of DI components based on training, Table 6 discloses that there is a significant mean score difference between trained and untrained teachers in their perceptions on process differentiation (t =2.191, df = 490, p=.029, d = 0.20). This implies that trained teachers' perception of differentiating the methods of teaching is higher than that of untrained teachers. On the other hand, as shown in Table 6, no statistically significant differences were noted between the mean scores of trained and untrained teachers on their perceptions on content differentiation (t =1.573, df = 490, p=.125, d = 0.12), product differentiation (t =1.758, df = 490, p=.079, d = 0.16) and learning environment differentiation (t =2.638, df = 490, p=.09, d = 0.24).

Table 6

t-test between trained and untrained teachers' perceptions on components of DI (N=492)

Training	**Statistic**	**CD**	**PD**	**PRD**	**LED**
Trained teachers	Mean	17.62	17.29	13.27	25.97
	SD	4.15	4.35	3.74	6.11
Untrained teachers	Mean	17.06	16.45	12.69	24.49
	SD	3.86	4.12	3.47	6.18
	Df	490	490	490	490
	T	1.573	2.191	1.758	2.638
	P	.125	.029	.079	.009
	D	0.12	0.20	0.16	0.24

*Where: **CD**= Content differentiation, **PD**= Process differentiation, **PRD**= Product differentiation, **LED**= Learning environment differentiation.*

Besides, qualitative data were obtained from both trained and untrained teachers on their perceptions of DI. The interview results of teachers who have taken the in-service training on DI (TR4 & TR6) depicted that their perception towards addressing students' learning diversity was utterly changed after they gained a five days' intensive in-service training on DI. Cognizant of the relevance of the in-service DI training on how it changed his perceptions, the teacher interviewee (TR7) further explained "previously, I was teaching students without realizing their prior gaps, interests, learning styles and learning preferences. But, after gaining the training, I grasped that tailoring instruction to the students' diverse learning needs is a necessity."

Another interviewee (TR3) further articulated that "identifying students' problems and helping them to achieve their learning can enhance their motivation and commitment. Nonetheless, the lack of enabling environment to help teachers develop positive expectations about the success of all students was a challenge." Similarly, teachers who participated in the FGD also acknowledged the absence of encouraging and supporting environment in their schools as a constraint to address the needs and interests of all students. These FGD discussants [teachers] also revealed that once teachers are graduated from teacher education institutions, in-service capacity building trainings were not widely given in schools. This inhibited them from updating themselves with the current thoughts of DI. This, in turn, affects their perceptions on how committed they are to support their students. According to the FGD participants many of the trainings given are not needs- based and hence, do not motivate teachers to enhance the effectiveness of the teaching- learning process.

Consistent to the above findings on the relevance of training or staff development, recent evidence suggests that regular continuous training events and workshops can help teachers infuse diverse teaching strategies in their lessons (Shymansky & associates, 2012 in Maddox, 2015). Other scholars also favored training on DI as crucial for teachers to change their perceptions (Goodnough, 2010; Hobson, 2008; Rodriguez, 2012; Subban, 2006). Thus, opportunities for training is also a facilitator for the perception of effective DI (Smit & Humpert, 2012). In addition, according to Reis, McCoach, Little, Muller, and Kaniskan (2011), teachers enjoyed using DI because they discussed the satisfaction of teaching the same content using multiple processes and procedures day-to-day after they obtained the necessary training.

Conversely, in a study that looked into the training provided in teacher education programs and the teachers practice gaps, Hobson (2008) discovered a disparity between what teachers actually needed to teach students of different backgrounds and what skills their pre-service programs had prepared them for. As a result of this mismatch in training, Ernest et al. (2011) noted, some teachers perceive DI as a fad and were not willing to invest time into learning necessary strategies. Dee (2010) also reminds that due to lack of continuous needs-based trainings, many teachers often continue to use the same practices of teaching and consequently they will have discouraging feelings about DI. In this regard, Tomlinson (1999) further identifies the limits of teacher education training as a barrier for DI, as she posits that many teacher education programs do not adequately prepare pre-service teachers for teaching students with a diverse range of needs. As Tomlinson and her colleagues (2003) assert, pre-service teachers often do not receive sufficient training in using DI, nor is there sufficient emphasis on how to teach diverse students.

Therefore, in order to make DI effective, the type and nature of training matters to influence teachers' perceptions of DI. Trainings on DI should not be given for the sake of reports; rather they have to base on the needs assessment of teachers and their identified gaps so as to enable them effectively implement DI. To this effect, Luschei and Zubaidah (2012) suggest that the content of the training should be matched to the current context of a teacher's classroom reality. Finally, to enhance the effectiveness of DI, Holloway (2000 in Erickson,

2010) advocated that teacher education programs should provide pre-service teachers with a full understanding of the tenets of DI.

Perception differences of teachers on DI and its components based on teaching experience

Comparisons were also made to examine whether teachers' perceptions of DI differ based on teachers' experiences in teaching that were categorized into 0-5 years, 6-10 years, 11-15 years, 16-20 years and over 20 years. Accordingly, as summarized in Table 7 is the study found no statistically significant difference among teachers of varying teaching experiences in the overall perceptions of DI ($F_{4, 487}$) = .964, P > 0.05).

Table 7

One-way ANOVA comparing perceptions of teachers on DI based on experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3510.153	4	877.538	.964	.427
Within Groups	443220.699	487	910.104		
Total	446730.852	491			

Moreover, qualitative data were again garnered from participants to further probe the overall perception differences of teachers based on teaching experience. Regarding the perceptions of teachers based on experience differences, a teacher interviewee (TR5) revealed that the interest and motivation of many teachers to their profession is low. The interviewee further elaborated that "the low social status bestowed to him as a teacher, as compared to health officers and agriculture extension workers, made him to be dissatisfied with his profession." Another interviewee teacher (TR8) supplemented that "as a teacher in this particular age, I have little pride in my career due to its low pay and low reverence by the society. Hence I always think about how to leave the profession." Teachers in the FGD also mentioned that the majority of teachers [mainly novice teachers] lack the dedication and consider teaching as a *'waiting station'* until they get another opportunity.

As the analysis of the quantitative data revealed, this study found no statistically significant difference among teachers of varying teaching experiences in the overall perceptions of DI. This is consistent with various other research findings (such as Donnell & Gettinger, 2015; Al-Natour,2016; and Hilyard, 2004). Donnell and Gettinger (2015), for instance, found no significant relation between teaching experience and teachers' perceptions of DI. Likewise, Siam and Al-Natour's (2016) research on teachers' DI perceptions in Jordan based on teaching experiences revealed that no significance statistical differences. Hilyard's (2004) study also concluded that no significant differences existed between novice and experienced teachers in their perceptions of their understanding of or use of DI.

On the other hand, even though the quantitative data showed no significance difference, the qualitative results revealed that novice teachers, compared to experienced teachers, have no virtuous perceptions on the relevance of DI. Therefore, these teachers' motivation, initiation

and commitment to support their students appear to be low. International experiences also show that scholars maintain diverging views about teaching experience and its influence on teachers' perceptions of DI. A study by Rodriguez (2012) reported that experienced teachers had the ability to discern the different instructional strategies as compared to novice teachers. According to Freedman (2015) experienced teachers see themselves as committed to student success and achievement and are more likely to adapt the educational activity in accordance with the needs of all students (Unianu, 2012). Also, compared to novice teachers, experienced teachers in Affholder's (2003) study favored DI, because they were familiar with the curriculum they taught and had received extensive training on DI before implementing these instructional methods and strategies in the classroom. Previous research by Craig, Kraft & DuPlessis (1998) has revealed that beginning teachers have difficulty in creating learning-filled classrooms due to their poor understanding of content-specific pedagogy. Casey and Gable (2011) also observed that beginning teachers' pre-existing beliefs about teaching and learning presented challenges when attempting differentiation than that of experienced teachers.

CONCLUSIONS AND IMPLICATIONS

The conclusions and implications that can be drawn from the findings of this study are presented as follows.

As the quantitative results revealed, the overall perceptions of teachers in the relevance of DI and its components is high. However, perception difference was noted in the qualitative data in terms of the perceptions of teachers in content differentiation, process differentiation, product differentiation and learning environment differentiation. The majority of the participants perceived that differentiating the content (lessons learnt) and the product (what students demonstrated the way they have learnt) for the individual learner is not tenable. Based on their perceptions, all students should learn the same lesson in the same way and assessment should also be the same. Thus, in order to significantly change and improve the perceptions of teachers towards differentiating the content, product and also learning environment, intensive, continuous and needs-based stimulating and motivational capacity building trainings should be provided for the in-service program teachers. Besides, pre-service training programs should also take into account the relevance of DI to empower the would-be teachers on how to address the diverse learning needs, interests and learning profiles of the students.

As the quantitative data revealed concerning perception differences based on sex and training or professional development, there is a significant difference between female teachers and male teachers and trained teachers and untrained teachers. That is, female teachers' perceptions of DI and its components are greater than male teachers'. Similarly, trained teachers' perceptions of DI are greater than that of untrained teachers. However, there is no statistically significant difference in the perception of DI based on teaching experience. However, in the qualitative results, variations are observed in teachers' perceptions based on experience in which experienced teachers have better feelings of DI than novice teachers.

Hence, special attention should be given for female teachers during teacher placements in the primary schools. Moreover, attention should also be given to provide in-service training on the value of DI for primary school teachers to change their attitudes toward accommodating the diverse interests of their students. Before assigning novice teachers to teach, proper support by experienced teachers and school principals and also induction training for them on how to address students' needs and interests should be provided in a planned and strengthened manner.

A number of factors inhibit teachers not to positively perceive differentiating instruction using content, process, product and learning environment differentiationssuch as: lack of knowledge on DI, scare resources and facilities, lack of need based in-service training, absence of conducive learning environment in many schools, lack of school leadership support, large class size and/or workload, lack of incentives for effective teachers, fixed or inflexible curriculum, loose interest of students for learning, etc. were mentioned, which directly or indirectly affect teachers' positive perceptions to the relevance of DI. Therefore, special emphasis should be given from the concerned bodies (teachers, school principals, *woreda* and zone education officers, regional education bureau, teacher training institutions, the ministry of education and policy makers) to resolve the aforementioned problems accordingly.

REFERENCES

Affholder, L. (2003). *Differentiated instruction in inclusive elementary classrooms.* Unpublished doctoral dissertation, University of Kansas, Kansas.

Agezo, C. (2010). Female leadership and school effectiveness in junior high schools in Ghana. *Journal of Educational Administration, 48*(6), 689 – 703.

Bender, W. (2012). *Differentiating instruction for students with learning disabilities: New best practices for general and special educators* (3rd ed.). Thousand Oaks, CA: Crowin.

AREB. (2016). *An overview of regional and national examination achievements, 2009E.C.* Curriculum Design and Implementation Core Process, Bahir Dar, Ethiopia.

AREB. (2017). Amhara National Regional State Education Bureau the three years (2006-2008.E.C) general education inspection result analysis]. Bahir Dar.

Casey, M. & Gable, R. (2011, October 19). Beginning teachers' perceptions of preparedness to differentiate instruction for diverse learners. Paper presented at the 42nd annual meeting of the Northeastern Educational Research Association, Rocky Hill.

Chamberlin, M. & Powers, R. (2010). The promise of differentiated instruction for enhancing the mathematical understandings of college students. *Teaching Mathematics and its Applications*, *29*(3), 113-139, doi:10.1093/teamat/hrq006

Chien, C. (2015). Influence of differentiated instruction workshop on Taiwanese elementary school English teachers' activity design. *Theory and Practice in Language Studies*, *5*(2), pp. 270-281. doi: http://dx.doi.org/10.17507/tpls.0502.06

Chliwniak, L. (1997). Higher education leadership: Analyzing the gender gap. ASHE–ERIC Higher Education Report, 25(4), 1-97

Cox, S.G. (2008). Differentiated instruction in the elementary classroom. *Education Digest: Essential Readings Condensed for Quick Review, 73*(9), 52-54.

Craig, H., Kraft, R., & DuPlessis, J. (1998). *Teacher Development: Making an impact*. Washington, DC: Agency for International Development and the World Bank.

Creswell, J. (2012). *Educational Research: Planning, conducting and evaluating research* (4th ed.). Boston: Pearson Education, Ltd.

Dee, A. L. (2010). Pre-service teacher application of differentiated instruction, *The Teacher Educator*, 46(1), 53-70, doi:10.1080/08878730.2010.529987

Donnell, L. A., & Gettinger, M. (2015). Elementary school teachers' acceptability of school reform: Contribution of belief congruence, self-efficacy, and professional development. *Teaching and Teacher Education, 51*, 47-57. doi: 10.1016/j.tate.2015.06.003

Erickson, C. (2010). Differentiated Instruction: Applying the Work of C.A. Tomlinson in the Primary Literacy Classroom. University of Victoria.

Fekede T. & Fiorucci, M. (2012). Examining quality issues in primary schools in Ethiopia. Implications for the attainment of the Education for All Goals. *ECPS Journal*, 5, 129-150

Freedman, R. (2015). *Teaching to Multiple Intelligences. Enhanced possibilities for teaching and learning: A whole school approach to incorporating multiple intelligences and differentiated instruction.* Unpublished master's thesis, Ontario Institute for Studies in Education of the University of Toronto.

Goodnough, K. (2010). Investigating pre-service science teachers' developing professional knowledge through the lens of differentiated instruction. *Research in Science Education*, *40*, 239-265, doi: 10.1007/s11165-009-9120-6

Hellman, D. (2007). *Implementing differentiated instruction in urban, Title I schools: Effects of facilitated support groups and program fidelity on student achievement.* Unpublished doctoral dissertation, University of South Florida

Hilyard, V. (2004). *Teachers' understanding and use of differentiated instruction in the classroom.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3134972)

Hobson, M.L. (2008). *An analysis of differentiation strategies used by middle school teachers in heterogeneously grouped classrooms.* Unpublished master's thesis, University of North Carolina, Wilmington.

Joshi, R. & Verspoor, A. (2013). *Secondary education in Ethiopia: Supporting growth and transformation.* Washington DC: The World Bank.

Kanevsky, L. (2011). Deferential differentiation: What types of differentiation do students want? *Gifted Child Quarterly, 55*(4), 279-299. doi: 10.1177/0016986211422098

Koeze, P. (2007). *Differentiated instruction: The effect on student achievement in an elementary school.* Unpublished doctoral dissertation, Eastern Michigan University

Lad, K. (2000). Two women high school principals: the influence of gender on entry into education and their professional lives. *Journal of School Leadership, 12,* 663 – 689.

Landrum, T. & McDuffie, K. (2010) Learning styles in the age of differentiated instruction, exceptionality: *A Special Education Journal*, *18*(1), 6-17. doi: 10.1080/ 093628 30903 462441.

Levy, H. (2008). Meeting the needs of all students through differentiated instruction: Helping every child reach and exceed standards. *Clearing House:,A Journal of Educational Strategies, Issues and Ideas,* 81(4), 161-164. doi:10.3200/TCHS.81.4.161-164

Luschei, T. & Zubaidah, I.(2012). Teacher training and transitions in rural Indonesian schools: A case study of Bogor, West Java. *Asia Pacific Journal of Education, 32*(3), 333- 350. doi:10.1080/02188791.2012.711241

Maddox, C. (2015). *Elementary (K-5) Teachers' Perceptions of Differentiated Instruction.* Unpublished doctoral dissertation, Walden University

Miles, M., Huberman, M. & Saldana, J. (2015). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Arizona State University. Sage publications

MoE. (2015). *Education sector development program V (ESDP V):* 2015/2016-2019/2020. Addis Ababa: Author.

MoE. (2016a). *Education statistics annual abstract, 2007(2014/15).* Addis Ababa: EMIS and ICT Directorate, Ministry of education.

MoE. (2016b). *Evaluating teacher training practices in Ethiopia across modalities: Focus on primary and pre-primary pre-service program.* Addis Ababa: Author

Nicolae, M. (2014). Teachers' beliefs as the differentiated instruction starting point: Research basis. *Procedia - Social and Behavioral Sciences* 128, 426-431. doi: 10.1016/j.sbspro.2014.03. 182

Prestridge, S. (2012). The beliefs behind the teacher that influences their ict practices. *Computers & Education*, *58*(1), 449-458.

Reis, S., McCoach, D., Little, C., Muller, L., & Kaniskan, R. (2011). The effects of differentiated instruction and enrichment pedagogy on reading achievement in five elementary schools. *American Educational Research Journal*, *48(*20), 462-501. doi: 10.3102/00028312 1038 2891

Rodriguez, A. (2012). *Analysis of elementary school teachers' knowledge & use of differentiated instruction.* Unpublished doctoral dissertation, Olivet Nazarene University.

Rosener, J. B. (1990). Ways women lead. *Harvard Business Review*, *68*, 119-25.

Roy, A., Guay, F. & Valois, P. (2013) Teaching to address diverse learning needs: development and validation of a differentiated instruction scale, *International Journal of Inclusive Education, 17*(11), 1186-1204. doi: 10.1080/13603116.2012.743604.

Saldana, J. (2011). *Fundamentals of qualitative research: Understanding qualitative research*. New York: Oxford University Press, Inc.

Santangelo, T.& Tomlinson, C. (2012) Teacher educators' perceptions and use of differentiated instruction practices: An exploratory investigation, *Action in Teacher Education,34*, 4, 309-327. doi.org/10.1080/01626620.2012.717032

Siam, K. & Al-Natour, M. (2016). Teacher's differentiated instruction practices and implementation challenges for learning disabilities in Jordan. *International Education Studies, 9*(12), 167-181. doi: 0.5539/ies.v9n12p167

Smit, R. & Humpert, W. (2012). Differentiated instruction in small schools. *Teaching and Teacher Education, 28*, 1152-1162. doi: 10.1016/j.tate.2012.07.003

Stewart, A.S. (2016). *Teachers' perceptions of differentiated instruction in elementary reading. Walden University.* Unpublished doctoral dissertation, Walden University

Subban, P. (2006). Differentiated instruction: A research basis. *International Education Journal*, *7*(7), 935-947.

Suprayogi, M. (2017). Differentiated instruction implementation in primary schools: Linking psychological factors in students and teachers to achievement. Unpublished doctoral dissertation, Walden University, Ghent University.

Tadesse, M., Getachew, K. & Yalem E. (2014).The Status, Challenges and Prospects of Teacher Professionalism in the Amhara Region: Implications for Quality of Education. Woldia University.

Tesfaye, S. (2014). Teacher preparation in Ethiopia: a critical analysis of reforms. *Cambridge Journal of Education*, *44*(1), 113-145. doi:10.1080/0305764x.2013.860080

Tobin, R. & Tippett, C. (2013). Possibilities and potential barriers: Learning to plan for differentiated instruction in elementary science. *International Journal of Science and Mathematics Education, 12*(2), 423-443. doi:10.1007/s10763-013-9414-z

Tomlinson, C.A. (2001). *How to Differentiate Instruction in Mixed Ability Classrooms* (2nd ed.). Alexandria: Association for Supervision and Curriculum Development.

Tomlinson, C.A. (2005). *Differentiated instruction: Responding to the needs of all learners.* Upper Saddle River, NJ: Pearson Education.

Tomlinson, C.A. (2010). Differentiating instruction for academic diversity. In J.M. Cooper (Ed.). *Classroom teaching skills (9th ed.)* (pp. 153-187), Wadsworth, Centgage Learning

Tomlinson, C. (2014). The differentiated classroom: Responding to the needs of all learners. ASCD.

Tomlinson, C., & Imbeau, M. (2010). *Leading and managing a differentiated classroom*. Alexandria, Virginia: ASCD.

Tomlinson. C., & McTighe, J. (2006). *Integrating differentiated instruction and understanding by design.* Alexandria, VA: Association for Supervision of Curriculum Development.

UNESCO. (2013). Assessment of teacher training and development needs to ensure education for all (EFA). Needs Assessment Report, Ethiopia.

Unianu, E. (2012). Teachers attitudes towards inclusive education. Procedia-*Social and Behavioral Sciences,* 33(2012), 900-904.

Wan, S.W. (2017). Differentiated instruction: Are Hong Kong in-service teachers ready? *Teachers and Teaching, 23*(3), 284-311.

Wu, C., Wan, S., & Wong, Y. (2015). Exploring Hong Kong secondary school teachers' teaching beliefs on differentiated instruction. *Teaching for Tomorrow Todaay, 158.*

Shoeb, A. (2013). Teacher Education in Ethiopia: Growth and Development: University of Ha'il, Saudi Arabia. AJOTE Vol. 3, No. 3.

Workneh, A. & Tassew, W. (2013). Teacher Training and Development in Ethiopia: Improving Education Quality by Developing Teacher Skills, Attitudes and Work Conditions. Oxford: Young Lives.