An Examination of the Challenges and Strategies of Adaptive Instruction in Junior High Schools in the Jirapa Municipality of the Upper West Region of Ghana

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Abstract

Teachers are challenged to teach for all learners in the classroom to benefit. Teachers are tasked to adjust and modify the teaching and learning essentials to meet learners' needs. The study examined the challenges and strategies of adaptive instruction in Junior High Schools in the Jirapa Municipality of the Upper West Region of Ghana. The study used pragmatists' philosophy, mixed method approach and Cross-sectional research design. Humanistic learning theory developed by Abraham Maslow, Carl Rogers, and James F. T. Bugental in the early 1960's. Data for this study was gathered using interviews, observational protocol and questionnaires. A sample size of 80 learners, 10 headteachers and 0ne Municipal Education Training Officer were selected for the study using purposive sampling method. Qualitative data were analysed using thematic analysis approach whilst the quantitative data was analysed using SPSS version 20. The findings revealed that: teachers were unable to use adaptive instruction effectively because some had inadequate adaptive expertise; time constraint; large class size; overloaded curriculum; multi-grade teaching and poor supervision. Also, on the strategies of responding to the challenges in the classroom, majority of the teachers claimed they used mixed ability grouping; ability grouping; collaborative learning; co-operative learning; inquiring based learning; microteaching; self-directed learning and task analysis approach as adaptive instructional strategies to teaching learners with varied learning needs. Unfortunately, in observing how teachers used the foregoing strategies, it was found that many did not use mixed and ability grouping as a strategy in teaching varied learners in the classroom. Amongst the various strategies, learners rated co-operative learning as the best form of learning strategy for responding to their learning differences.

1. Introduction

Teaching and learning is fast changing and also becoming a complex enterprise between the teacher and the learner in the classroom (Parson, 2012; Insana, 2015; Ikwumelu, Oyibe & Oketa, 2015). This is manifested in the limited time available for teachers in the classroom, limited teaching and learning resources, inadequate adaptations in the classroom, large class size, and overloaded school curriculum for teachers to implement, yet learners have to learn within their own pace. Therefore, the teacher has the responsibility to employ dynamisms, innovations and creative deliveries that will be beneficial to all learners though with their varied learning needs.

The right to education has not made learners to be homogenous, diversity exists amongst them in terms of physical, intellectual, emotional, psychological, geographical, religious, cultural, economic, family and political domains (Narh, 2015). As such, Jahan, Khan and Asif (2017) postulated that classroom teachers should not have a one-fit-all approach to teaching and learning. This underscored the necessity of adaptive instruction as key to responding to learners with varied learning needs in the classroom. Adaptive instruction is the ability of the teacher to use different teaching and learning strategies to meet varied learners' needs in the classroom. This implies that adaptive instruction encompasses a multitude of instructional strategies ranging from specific to general strategies.

A complete paradigm shift is occurring in most classrooms Welker (2017), triggering teachers to introducing responsive forms of teaching and learning strategies. Insana (2015) argued that teachers used adaptive instruction to offer positive classroom outcomes. Adaptive instruction integrates the individual differences of learners in the teaching and learning process in the classroom such that both the advantaged and disadvantaged learners' profit (Bernard, Borokhovski, Schmid, Waddington & Pickup, 2019; Wang, 2010).

Dorgu (2015) noted that varied use of teaching strategies is a must for teachers if teaching and learning is to be effective and efficient in the classroom.

Vygotsky (1978) upheld that the opportunity for guidance from a mentor exist, therefore every learner depends on a teacher to facilitate his or her learning processes. The dilemma on how to provide and promote

individual learning within a classroom environment remains with us even in this century (Tomlinson, 2015). Teachers appear not to have the joy and the choice of reducing their class size to a preferred or ideal number especially teachers in the public schools (Randi & Corno, 2005). A lot of learners are currently being funneled into schools as a result of government policies causing classrooms to have large class size (Burkett, 2013).

All learners are expected to benefit from the teachers' teachings in the classroom of Junior High Schools in the Jirapa Municipality despite the availability of varied range of learning needs and talents as well as societal conditions.

A case study conducted by Insana (2015) to investigate adaptive instruction in an elementary classroom viewed it as a complex adaptive system. The study indicated the following findings: (a) successful adaptive instruction occurred when the teacher recognized the unpredictability of the classroom settings, and appreciated that the classroom comprised of working parts that required responding in varied ways that adapted to learners' social and academic choices, needs, and interests, and (b) there was a link between proficiency in teaching content with the teacher's confidence level. These findings affirmed that adaptive instruction may be an ideal approach to meeting the varied learning needs in most classrooms.

Bachari, Abelwahed and Adnani (2012) maintained that each learner has a preferred learning style that facilitates learning for him or her, some learn best by seeing or touching, others prefer group learning, or individual learning. The learner has to be aware and identify his or her learning preferences that make it easy for him or her to construct meaningful teaching and learning.

All learners are "special," and teachers are to be responsible for getting to know the needs of each learner and for providing classroom instructions that promote meaningful and successful learning of all learners in the classroom (Wang & Zollers, 2016; Tomlinson, 2015).

Implementing adaptive instruction has the propensity of making classroom teaching and learning a multifaceted and dynamic setting. The classroom has composition of learners from different backgrounds with varied learning needs (Insana, 2015). This implies that the teaching and learning environment may become favorable for most learners when teachers use learner-appropriate teaching strategies.

The classroom may become instructionally sophisticated for teachers who lacks immediate adjustability skills (Wang & Zollers, 2016; Parson, 2012). However, every classroom instruction should move towards providing effective pedagogical content and knowledge to learners. This can be done by offering creative and innovative teaching strategies that meet the varied learning needs of the learners (Organisation for Economic Co-operation and Development [OECD], 2018). Any teaching and learning in the classroom that is short of these is what ushers in the traditional teaching methods which offer the grievous learning impediments to the learners.

It seems there is a linking gap owing to the fact that Ghanaian teachers in the Ghanaian perspective are mandated to prepare lesson plans and follow the planned activities systematically during lesson delivery in the classroom. This is against the fundamental principle of adaptive instruction which acknowledges teachers' ability to respond and adjust to an unanticipated learner contribution, a diversion from the already prepared lesson plan (Parson, 2012).

The need for adaptive instruction in the classroom teaching and learning can occur at any point in the lesson delivery depending on the situation and state of the individual learners at a time. The crux of the challenge is that it is not a single subject that needs adaptation, all the subjects that are been taught must be modified for the various levels of learner ability (Kreitzer, 2016).

2. Literature Review
2.1 The Challenges of Adaptive Instruction to the Teacher
Ackerman, Mette and Biddle (2018) stated that adaptive challenges are unpredictable, complex, and ambiguous in nature. The authors maintained that solution to this type of challenge usually require teachers to learn new ways of adjusting to teaching and learning. Teacher needs to have the ability to change their attitudes, values, and norms to fit every situation in the classroom. This implies that in an adaptive instructional classroom certain setbacks and hindrances that emanate during teaching and learning might be temporal and not permanent since the teacher is flexible in shifting teaching and learning activities to suit the existing challenge as early as the challenge is detected.

Education for All Global Monitoring Report (2015) is of the view that curriculum reform requires teachers to obtain adaptive expertise to be able to adequately meet the changes in the classroom teaching and learning. This indicates that teachers coming out from the Teacher Training Colleges and teachers who are already in the profession need to receive some amount of training to enable the teachers meet classroom demands.

INSET Sourcebook (2012) affirmed that pre-service training at the Colleges of Education alone cannot provide teachers with the knowledge and skills necessary for a lifetime teaching at schools. It is necessary to have both quality pre-service training and a coherent process of continuous professional development (CPD) to keep teachers' knowledge and skills required in classrooms up-to-date. This means that there should be regular training for teachers to enable them teach to meet the varied learners' differences in the classroom. Scott (2002)

suggested that pre-service and in-service training need to address not only the issue of providing teachers with a broad knowledge based in the area of reading but also need to address teaching style, teacher belief and teachers' ways of knowing.

Alhassan and Abosi (2014) observed that teachers possess limited adaptive or no adaptive expertise at all in the classroom. This may be as a result of little or no appreciation of adaptive knowledge as a teacher. The adaptive classroom teacher may be handicapped with adaptive skills especially amongst the untrained and newly trained teachers. It will therefore be difficult blending the needs of all sorts of learners in the classroom within every single lesson (Bachari, Abelwahed & Adnani, 2012). This implies that each adaptive teacher is to be flexible when addressing learners' needs in the classroom teaching and learning.

Bachari, Abelwahed and Adnani (2012) submitted that it is extremely cumbersome for a teacher to determine the best learning style for each learner in the same classroom. Even if the teacher is able to identify each learner learning style, it will still be extremely difficult to apply multiple teaching strategies in a real teaching environment. This assertion if maintained implies that it might be impossible meeting the learning needs of each learner in a single classroom instruction.

Valiandes and Neophytou (2017) and Haddad and Kalaani (2014) found that lesson delivery in the classroom is really confronted with insufficient time when the teacher must help each learner to achieve. Taylor (2017) affirmed that time affect teachers' delivery in classroom because they require extra time and effort, to break instructional tasks and assessments since such are very complex.

Wang and Walberg (1983) also submitted that there is the need to increase the amount of time spent by individual learners on suitable tasks. However, teachers' inability to get maximum time to teach to learners' suitability on task may serve as a serious constrain to adaptive teachers in the classroom (Wang & Walberg, 1983); Geel, Keuning, Frèrejean, Dolmans, Merriënboer and Vissch (2019) and Valiandes and Neophytou (2017) affirmed that teachers are aware of the need to differentiate in class though it is difficult and time consuming.

Class size has the tendency of influencing teaching and learning in the classroom. According to Ministry of Education (2019) any class size at the Junior High School that exceeds 30 learners is considered a large class size.

Alshammari (2016) argued that in a traditional classroom setting, adaptive instruction may be limited because of the large class sizes. To this effect, teachers seldom get enough time, resources and ability to assess the knowledge level, application ability and content understanding levels of each learner for the teacher to adjust his or her teaching approaches accordingly. This assertion is affirmed by Alhassan and Abosi (2014) who were of the view that teaching a class with large size in the urban and semi urban schools is often characterized with difficulties including instilling effective classroom management. Sustaining learners' attention, effective monitoring and assessment of progress during teaching becomes challenging (Alhassan & Abosi, 2014).

The school curriculum epitomizes the kind of knowledge, skills and values that teaching and learning should be anchored on. The curriculum ought to address questions such as what, why, when and how learners should learn (UNESCO, 2016).

Ikwumelu, Oyibe and Oketa (2015) noted that current global trending issues such as HIV/AIDS, gender disparity, substance abuse, human trafficking, child labour, child abuse, hunger, and prostitution have propelled curriculum designers to include these elements in school curriculum so as to educate the learners on the unbearable effects.

Education for All Global Monitoring Report (2015) argued that the curriculum can turn out to be a barrier to teaching and learning when it is a must document for teachers to cover certain amount of the syllabus within a particular period, regardless of comprehension. If the school curriculum covers too much, and fails to consider teachers' ability to deliver, then learners will fall behind (Beatty & Pritchett, 2012). The overriding issue here is that the pace at which the curriculum is taught should be within the range of most learners (Ikwumelu, Oyibe & Oketa, 2015).

Adedeji and Olaniyan (2011) agreed that supervision is a forward-looking process that enable teachers to select the most appropriate strategies the classroom. However, teachers who lack the essential principles for supervision may encounter classroom management challenges.

Scott (2002) affirmed that the level of supervisory support in a school system can affect the effective implementation of an adaptive instruction in the classroom.

2.2 Strategies of Responding to the Varied Learners' Differences in the Classroom

Tools for Schools (1998) and Wang (2010) agreed that a universal framework for all forms of educational programs designed to meet the diverse social and academic needs of learners in classrooms is the Adaptive Learning Environment Model (ALEM). This is what Narh (2015) termed as Universal Design for Learning (UDL).

ALEM is based on the premise that learners learn in different ways and at varying rates and each will need different varied instructional support through adaptive instruction (Narh, 2015; Tools for Schools, 1998). The

ALEM allows teachers to build their capacities and use adaptive strategies in responding to the individual differences amongst learners in the classroom.

Group work is an approach to accommodating and reaching out to individual learning needs in regular classroom teaching (Alhassan & Abosi, 2014; Wang & Walberg, 1983). Group work is an instructional adjustment where learners can be put in differentiated groups and task assigned them differently. Which means varied tasks can be assigned to various groups depending on the knowledge or familiarity (Francis & Gould, 2014). This suggests that in grouping learners' strengths and weaknesses are considered significantly.

OECD (2018) and Tomlinson (2015) observed that grouping learners can be based on ability grouping and mixed grouping. This ensures that learners whether in ability grouping or mixed ability groupings get to fully participate and profit from the classroom teaching and learning opportunities (OECD, 2018; Hannah, 2013).

Ability grouping places learners in groups based on their academic achievements (Bolick & Rogowsky, 2016). The common purpose of ability grouping is to allow teachers to provide instruction that is appropriate for learners and their individual needs. However, OECD (2018) argued that grouping learners with similar learning abilities seem to disadvantage the low achievers in terms of group exercise within the class. These learners are often not being sure of the contributions to offer the group, for the fear of uttering wrong statements. As such, they prefer to work independently on their books, even when they are providing the wrong answers (OECD, 2018). This means that high achievers get to like group exercise as each particularly the outspoken is often confident and sure of dominating with right answers. So, in this case, setting learning indicators for a whole group may disadvantage some of the learners. Westwood (1997 as cited in Tomlinson, 2015) and Alhassan and Abosi (2014) then confirmed that group working is a valuable strategy in a single classroom teaching and learning process. This means teachers who employ group working in their classroom teaching and learning in the Jirapa Municipality will be responding to adaptive challenges in such classrooms.

The question is why are teachers required to state the learning indicators in lesson plan that teachers are expected to prepare? With differentiated groupings approach in mind? It is not possible that some groups or individuals within the groups may not meet their learning needs in the entire teaching and learning process?

Mixed ability grouping allows the teacher to create an enabling environment and respect for differences in learners (Iloanya, 2014). A teacher can deliberately group learners with different learning abilities together. This will allow learners that need help, more individual attention, as well as provide an opportunity for learners with higher academic performance to relearn the material by teaching it (Hannah, 2013). So, in this grouping, the learners capitalize on the strengths and weaknesses of their colleagues or get to know of the differences in each group member. Therefore, the teacher may regulate or the respective group members may enforce self-regulation to aid the pace of independent learning competencies. Mixed ability groupings advantage lower achieving learners and has no harmful effect on the achievements of more able learners (Row, 2016). This means that gifted learners lose nothing in this type of grouping.

A study conducted by Row (2016) on an investigation into the experiences of learners in ability and mixed ability grouping in an independent secondary girls' school at the College of Business, Arts and Social Sciences Department of Education Brunel University, London, indicated that mixed grouping allowed learners to feel more relaxed and confident. However, the study stated that there were instances where learners reported that they felt anxious about trying to keep up with others or feeling frustrated about having to wait for others to catch up. This means that mixed grouping permits the learners to learn within their own pace though some regulations may set in either from teachers or their own colleagues within the grouping.

According to Le, Janssen and Wubbels (2017) and Gokhale (1995) the term collaborative learning refers to the form of teaching and learning approach in which learners work together in small groups towards achieving a common goal. The learners are directly responsible for their own learning and it does promote critical thinking and sustainability of learner's interest in the teaching and learning process (Le, Janssen & Wubbels, 2017). Inferring from this, it means collaborative learning is a supportive learning amongst small groups within a whole class.

Collaborative learning behaviours or elements that can be observed in an adaptive classroom include: positive interdependence, individual and group accountability, interpersonal and small group skills, face-to-face promotive interaction, and group processing (ElMohamad, 2017; Laal & Laal, 2011). These collaborative learner characteristics when exhibited and demonstrated effectively may lead to learner success in the classroom.

Gokhale (1995) maintained that collaborative learning allows teachers to throw classroom teaching that traditionally would have been the responsibility of the teacher back to the learners to construct and discuss the learning process actively within their own understanding and ability level.

The potency of collaborative learning is affirmed by research conducted by Corbin (2017) on assessing differences in learning styles: age, gender and academic performance at the tertiary level in the Caribbean. The findings suggested that collaborative learning was the most preferred learning style based on the mean scores of Grasha-Riechman rating norms. To whether teachers in the selected Junior High Schools in the Jirapa Municipality are able to decipher and apply this as an adaptive strategy is yet to be ascertained.

Wang and Zollers (2016) argued that the school curriculum should make provision for learners to exercise collaborative learning. This offers assistance in pursuing individual and group goals. So, teachers in the classroom should endeavour to inculcate in learners the attitude to work in small groups.

Hanover Research (2018) and OECD (2010) state that all forms of co-operative learning involve having learners to work in small groups or teams to help one another learn academic content and material. The learning complements and lessens the burden of teachers in the classroom since that provides an opportunity for the learners to discuss information or practice what is taught them (OECD, 2010). Ikwumelu, Oyibe and Oketa (2015) further argued that this adaptive strategy creates an interactive platform for learners. Through this, the learners acquire co-operative values and attitudes. Attah-Asamoah, Doe, Tekpetey and Boham (2014) argued that in co-operative learning classroom, learners are required to work on tasks in small groups. Through these rewards, recognition and any form of outcomes are based on the group performance. This consciously internalizes in members, and they tend to then let the work reflect in the contribution and competencies of the entire membership. This is the implicit group coercion which ensures that if the whole group is succeeding, all members succeed, but, if the entire group is failing, all members fail.

Attah-Asamoah et al. (2014) further opined that co-operative learning in classrooms work best when learners possess the following characteristics; heterogeneous groups consisting of two to six members, when there is a genuine feeling of positive interdependence amongst group members and since each individual is accountable for the learning outcome of the group, learners teach one another to succeed. This is what Ikwumelu, Oyibe and Oketa (2015) confirmed that when there is a genuine feeling of positive interdependence amongst group members, each individual is accountable for the learning outcome of the group where learners teach one another to succeed.

Though co-operative learning and collaborative learning are sometimes used interchangeably by non-educationist, in the professional realm, there are distinctions between the two approaches. Ismail and Allaq (2019) outlined that participation in co-operative learning is usually structured and led by the instructor with a clear learning outcome, whereas, collaborative learning is more flexible in respect with the emphasis being more on group abilities and contributions.

So, co-operative learning strategy in the classroom in Jirapa Municipality may require teachers to facilitate the learning task by moving between workgroups to observe and intervene when necessary. However, in collaborative learning teachers need not actively monitor the groups, but rather, provide encouragement when the need be. Consequently, teachers in an adaptive classroom environment in the Jirapa Municipality need to utilize these approaches effectively as far as they suit individual learning needs and preferences in the Municipality.

Ikwumelu, Oyibe and Oketa (2015) asserted that inquiry learning as an adaptive instructional strategy involves the learner as an active agent in discovering concepts, principles, ideas and generalizations. Thus, each learner critically customized the learning problems or tasks and find answers, draw appropriate conclusion.

Ismail and Elias (2006) opined that in inquiry learning, learners are shown how knowledge is constructed and transmitted and how they can acquire the knowledge and skills necessary to become life-long learners. This means that fundamentally, learners embark on personal discovery to grasping concepts and principles of teaching and learning.

It can therefore be maintained that inquiring based learning is a participatory teaching and learning strategy in the classroom.

Teachers need to play that motivational role in this strategy in order to unearth every learner's talent. The various disciplines taught in schools are constantly expanding and changing, and so teachers need to develop their skills and nurture the inquiring attitudes necessary for the generation and examination of knowledge of learners in the classroom (Exline, 2004). The challenge of learners in inquiry learning as an adaptive strategy in the classrooms of selected Junior High Schools within the Jirapa Municipality will not be on the availability and accessibility of information but rather the relevance and credibility of the information in this 21st century.

Also, the inquiring abilities of learners may be undermined in the classrooms where the teacher is often right in using the cane and threats to intimidate learners. This may not easily allow the learners to ask questions and/or investigate the content taught them to aid lifelong learning (Adedeji & Olaniyan, 2011).

Another adaptive strategy is microteaching. This lexicon was first introduced in the 1960s at the Stanford Teacher Education Program as a way to prepare learners and get them ready for their clinical experiences (Saban & Coklar, 2013). It is popularized and a requirement in most initial teacher training institutions, known as *On Campus Teaching Practice (OCTP)* (Francis & Gould, 2014) in Ghana.

Saban and Coklar (2013) stated that microteaching model is cyclical in nature since it involves planning, practicing, observation, critiquing followed by the repetition of the same steps, after the whole process is reviewed. Microteaching exposes the teaching and learning content bit by bit, in a more intense form by learners' own colleagues (Giurgiu, 2017; Francis & Gould, 2014). As a result, in microteaching, mini lessons are presented within short duration (5-20 minutes) and the number of the learners are few, not more than 20 (Francis

& Gould, 2014; Saban & Coklar, 2013). Subsequently, learners tend to teach their peers based on one's own understanding of what has been taught and learnt. The one delivering the teaching is also observed by the peers. Francis and Gould (2014); Saban and Coklar (2013) affirmed that microteaching provides a platform for the learner teacher to transfer the theoretical knowledge and skills acquired into practice, and thus, bridging the gap between the theory and practice.

A study carried out by Saban and Coklar (2013) to examine microteaching practices on teacher qualifications and teaching experiences indicated that pre-service teachers believed that microteaching allows them to evaluate their strengths and weaknesses in teaching. The study concluded that microteaching made pre-service teachers to manage timing, planning, questioning, and classroom management, using different materials and examples, and improvement of physical appearance during the teaching process. Also, Saban and Coklar (2013) affirmed that microteaching imbibes self-confidence, ability to contain shortcomings and learning differences in teaching and learning process. Gokhale (1995) agreed that this approach retains content longer in learners even including the quiet individuals in the classroom. Learners share their learning experiences by engaging in discussion and other explorative learning.

The challenge is that the novice peer-teacher may not deliver the desired content within the specified time or may tend to rush to finishing the content. This assertion is supported by Valiandes and Neophytou (2017) who stated that even though teachers recognize the need to teach for individual to benefit in the classroom, it is difficult and time consuming. Valiandes and Neophytou (2017) further contradicted Gould (2014) and Saban and Coklar (2013) when they stated that teachers often admit that they really don't know how to translate the theory of differentiated instruction into practice in the classroom. This, when not managed well, may affect the learning outcome of those being taught (Giurgiu, 2017).

According to Matei and Gogu (2017) the teacher as the pivot of teaching and learning employs various forms of teaching in an adaptive classroom. This is to avert the diversities existing amongst learners in the classroom from not performing. This is to enable many learners' benefits from the instruction in an individualistic pace in the entire class.

Ikwumelu, Oyibe and Oketa (2015) explained self-directed learning approach as the teaching and learning approach where learners are actively engaged in the learning process. This leads to the acquisition of higher-order thinking skills (Adedeji & Olaniyan, 2011) where learners construct their own understanding, meaning, reasoning critically about the content delivered (Ikwumelu, Oyibe & Oketa, 2015). This makes learners in the selected Junior High Schools within the Jirapa Municipality to go the extra mile to reorganize teaching and learning from their own perspective: based on their way of thinking and own prior knowledge.

Adedeji and Olaniyan (2011) observed that this teaching strategy can be employed by teachers in rural schools on learners who demonstrate a high level of independence, enjoy working on their own, and have the ability to initiate plans for their own learning. Teachers often use classroom activities such as project exercises, questions and answers, discussion techniques to shift the responsibility of learning to the learners (Mentz & Oosthuizem, 2016).

Sumuer (2018) also explained that in self-directed learning as an adaptive strategy, learners are initiators and responsible for their learning. Thus, learners tend to appreciate their needs, set their learning goal, determine appropriate resources, decide on their learning strategies, and evaluate their learning outcome. The learners have the opportunity to take charge of their own learning. As a result, Malison (2018) explained that in this millennium, learners search for knowledge on internet and the social media at their own pace and comfort for their learning purposes.

Al Ju'beh (2017) argued that there is an increase in access to information in this century making self-directed learning easier than before. This means that Junior High School learners in the Jirapa Municipality especially those who have access to internet services can have access to all forms of learning materials. Sumuer (2018) upheld that self-directed learning offers the opportunities for learners to be creative and self-independent. This will demystify learners seeing their teachers as reservoir of knowledge instead of facilitators in the classroom.

Dumont (2017) explained that in an adaptive classroom, the teacher transmits different content to each learner, with different tasks given to each learner at the same time. Thus, some working independently, others engaged in learning with peers, and others are being introduced to new subject matter by the teacher. This illustrates that different learners are given tasks that are significance and thoughtful of their learning standards. The adaptive instruction accords the teacher with the opportunity to distinguish and separate the learners for the required guidance and structured support where necessary particularly to low-achieving learners than high-achieving learners (Tomlinson, 2014). Self-directed learning does not mean that learner's study in isolation (Ohashi, 2018) rather learners make decisions based on self-knowledge, assume responsibility for completing their work at an acceptable level and in a timely manner, seek and articulate problems and determine a method for solving them, and evaluate their own teaching and learning in the classroom.

According to Sherman and Wildman (1980) the emphasis on task analysis has shifted from behavioral

outcomes to the analysis of cognitive processes. This means that task analysis approach can be employed to breakdown curriculum content into smaller units and presented in bits for learners to understand.

Bloom (1971, as cited in Murray and Pérez, 2015) theorized that achievement gaps between learners could best be addressed by differentiating instruction. To this end, Bloom propounded the instructional strategy theory known as Mastery Learning. The theory professed that content and skills to be learned are organized into individual units from the known to unknown and concrete to abstract (Corbin, 2017). Thus, the learning task is structured from narrow or surface content to broader or deeper content. This makes the content easier for the learner to absorb rather than the vice versa.

Therefore, Sherman and Wildman (1980) were of the view that task analysis approach assists the classroom teacher and the learner to understand the content to be taught and how to present it in a simplify form. Corbin (2017) concluded in his paper that more consideration needs to be given to teaching styles that match learners' learning styles. Teachers bid to adapt teaching and learning supposed to integrate these strategies in delivering lessons. The classroom is a composite environment with varied learner, therefore attaining the desired teaching and learning outcomes require an adaptive expertise from the classroom teacher.

2.3 Theoretical Basis
The humanistic theory of teaching and learning is anchored on the premise that teachers should teach to meet the total wellbeing of each learner in the classroom (Nath, Kumar & Behura 2017; DU Jingna, 2012). Rogers and Freiberg (1994) are of the assumptions that every learner is basically good and capable of achieving the best when the ideal learning environment is produced. Rogers and Freiberg maintained that each learner needs to take responsibility for his or her own learning. The learner learns through self-evaluation techniques and motivations from the teacher. Therefore, when teachers are able to identify and utilize teaching and learning strategies that are of appropriate to each leaner in the classroom, maximum learning outcomes may be achieved. Adaptive instruction appears to be a panacea if teachers are to teach to meet learners' needs in the world of work.

3.   Purpose of the Study
The main purpose of this study was to investigate adaptive instructional challenges and strategies in Junior High Schools in the Jirapa Municipality of the Upper West Region of Ghana?

4.   Research Questions
1.   How does adaptive instruction pose challenges to teachers teaching varied learners?
2.   What are the strategies of responding to the varied learners' differences in the classroom?
3.   What are the learners Perspective about the strategies of responding to varied learner's differences in the classroom?

5.   Methodology
The philosophical assumptions of the study rooted from the pragmatists' point of view. According to Kaushik and Walsh (2019) and Creswell (2018) Pragmatism derives from the work of Peirce, James, Mead, and Dewey as well as from the work of Murphy, Patton, and Rorty. These authors believed that pragmatism as a philosophical worldview arises out of actions, situations, and consequences rather than antecedent conditions. Mixed method approach was used for the study. This type of approach rides on the assumption that collecting different types of data will best provide a more complete understanding of a research problem than either quantitative or qualitative data alone (Creswell, 2018).

The study used cross-sectional survey as a design. The research design is a blueprint that articulates what data is required, what methods are going to be used to collect and analyze the data, and how all of this is going to answer the research questions in this study (Amedahe & Gyimah, 2018).

Data for this study was gathered using interviews, observational protocol and questionnaires. To achieve the research questions a semi-structured interview was conducted to headteachers. One headteacher each from the 10 circuits in the Jirapa Municipality were purposively chosen to be part of the study. The headteachers were chosen because of their in-depth knowledge and supervisory role each plays in their schools towards effective and efficient teaching and learning.

The Municipal Education Training Officer who is responsible for organizing professional development programs for teachers in the municipality was also purposively selected to be part of the study. This was because it is only one officer who occupies that portfolio in the education offices.

Observational protocol form was used to gather information on teachers' mode of delivering lessons in the classroom. According to Creswell (2018; 2014) observational protocol allows the researcher to use a single page with dividing lines down the middle to separate descriptive notes from reflective notes.

Purposive sampling method was used to select and observe once a double period lesson, one each in all 10 circuits. The school characteristics such as the teachers and learners are similar, therefore for convenient seek the

first school in each circuit, a class was observed. Purposive sampling was also employed to allow the researcher to evenly observe all subjects taught in the Junior High Schools.

The observational protocol form was divided into section A, B and C.

Section A: This contained demographic information about the date, time, form, teacher's gender, number of learners, subject, and the topic to be observed. However, this demographic information was not used in the analyses process.

Section B: Observation from this section was based on the challenges of adaptive instruction to the teacher. This was observed on three statements, thus, whether the teacher demonstrated adaptive competencies, effective utilization of instructional time, and effective classroom management.

Section C: The observation on this section focused on teacher's ability to use multiple teaching and learning strategies in responding to varied learners' differences in the class. The statements to check include whether the teacher employs or facilitates the following strategies during teaching: (a) group work (b) collaborative learning (c) co-operative learning (d) inquiring based learning (e) microteaching (f) self-directed learning, and (g) task analysis approach. Statements that are observed was also ticked yes and those not observed ticked no. Any other relevant issue was written on the remark's column.

Questionnaires were also administered to learners. Item 1-8 required learners to rank selected teaching and learning strategies. The responses were used to validate the responses from teachers and headteachers. Purposive sampling method was used to select 80 learners. The four (4) Junior High Schools in each of the 10 circuits that the researcher visited, two (2) form two (2) learners were chosen to respond to the questionnaire, that is the class prefect and assistant class prefect. In all, eighty (80) Junior High two (2) class prefects and assistants responded to the questionnaires. The class prefect and assistant class prefects were purposefully selected for this study because they might be regular in class since they are the class leaders and maybe able to provide the researcher the most information needed for the study.

To improve the validity and reliability of the instruments, they were given to experts in the field of education to study and judge each item in the context of clarity, generality and ambiguity. In addition, a pilot test was conducted using 10 trained teachers, 2 headteachers and 10 learners in the Wa Municipality. After the pilot testing, the result shows a Cronbach's alpha reliability coefficient of 0.725, indicating that the instruments were very good and reliable for data collection (Cronbach, 1975). Before the field work, an introductory letter and ethical clearance letter was sought from the Department of Basic Education and the Institutional Review Board University of Cape Coast respectively. Upon arriving in each school, permission was sought from the headteacher and then the researcher interacted with the teachers. On the field, a permission letter was collected from the Jirapa Municipality. The administration of the instruments was done in one month. The respondents were assured of the necessary ethical issues such as confidentiality, anonymity and right of participation. All the 80 questionnaires were completed and collected. The data was coded into SPSS for cleaning and checking of errors.

Turkson (2011) was of the view that when embarking upon descriptive research the researcher can apply both qualitative and quantitative research techniques and methods. As a result, interviews and observations were conducted alongside the administration of the questionnaires.

5. Results

5.1 Research Question 1: How does Adaptive Instruction Pose Challenges to Teachers?

This section sought to examine, headteachers, the Municipal Education Training Officer and from the observational protocol views on the challenges teachers are likely to encounter using adaptive instruction in responding to varied learners needs in the classroom.

On the challenges that adaptive instruction poses to teachers, the interview responses gathered from the informants again revealed that;

With respect to inadequate pre-service and in-service training; some headteachers perceived teachers as hardly received periodic in-service training and even if it happens, in most times hardly do the education directorate get qualified personnel to train teachers adequately.

According to a headteacher;

> *most teachers in my school do not have enough training on adaptive instruction. This is a setback hampering effective adaptive teaching and learning hence the need for periodic workshops and training for teachers...even amongst those who may have some form of training, some teachers are also ill- trained and do not know how to balance the classroom for all categories of learners (Headteacher 3).*

According to one headteacher, he could not use adaptive instruction to complete his lessons in the classroom because;

> *the time allocated for a subject like mathematic on the time table was not enough for teachers to use more than two teaching strategies in a single lesson...and frankly speaking, adaptive*

> *instruction involves a lot of preparation and require enough time, therefore not easy to go with (headteacher 9).*

According to some headteachers many schools in the Jirapa municipality have the challenge of large class sizes which do not create room for adaptive instruction. For example, one headteacher said, "in my JHS 3 class, the learners are 65…how can I teach for all learners to understand in this type of class?" (Headteacher 4).

With regard to poor supervision, it was revealed in an interview with the Municipal Training Officer who said;

> *poor supervision is one big challenge that make teachers not practicing adaptive instruction in classroom. For example, he said, "the amount of work and the responsibility with which adaptive instruction comes with makes most teachers overlook it except they are aware they are monitored closely by the headteacher and or circuit supervisor…but that has always been ineffective due to poor supervision.*

From the observation protocol in the classroom, it was found that, six (6) out of the ten (10) of the selected teachers observed truly did not have adequate expertise in applying adaptive instruction to meet varied learners needs. Throughout the lessons, teachers did not take into consideration any measure that considered varied learners' difference but taught topics in a more generic manner.

Also, on time constraint, the observation protocol, amongst the selected teachers showed that truly seven (7) of the teachers could not complete their lesson within the scheduled time.

That notwithstanding, it was interesting to note that amongst the ten (10) classes observed, there was no teacher who taught in a multi-graded class thus justifies teacher's perception that was a huge challenge that affects teachers use of adaptive instruction in the classroom.

Also, one other challenge that affected teachers not to use adaptive instruction in classroom was the class size. Out of eight (8) teachers' classes observed, the class exceeded the recommended thirty (30) class size recommended by the Ghana Education Service.

Finally, with regard to supervision, it was observed amongst the selected teachers, seven (7) out of the ten (10), their lesson notes were not timely supervised by the circuit supervisor's and some headteachers.

5.2 Research Question 2: What are the Strategies of Responding to Varied Learners Differences in the Classroom?

This research question sought to examine the strategies of responding to varied learners' differences in the classroom.

Some of the informing thoughts sought from headteachers suggested teachers used collaborative learning as a strategy of adaptive instruction for varied learners' by grouping the learners to learn through participation, social grounding, performance analysis and group processing, application of active learning conversation skills, and promote interactions. Often learners are allowed to investigate more without restrictions.

Also, from a headteacher perspective,

> *a task analysis is reflected mostly on the scheme of work,   where   teachers show   weekly*
and daily lessons in an orderly and sequential manner. Also, task analysis is   done   when   lesson   is
> *broken into subunits and presented systematically to   learners,   so   they   could   understand   the*
concept very well (Headteacher 10).

Whilst according to the Municipal Training Officer, "ability grouping is done where a teacher put learners into specific strength groups during teaching and learning…this is to brings more competition amongst the learners"

According to the Municipal Training Officer, "microteaching is done by sometimes allowing learners to teach each other the content because peers understand one another better sometimes than their teacher…and the most appropriate way of practicing microteaching is allowing learners to do group presentation on a topic in classroom"

From the observation protocols, it was found that four (4) out of the ten (10) selected teachers observed truly practice mixed grouping in the classroom.

This observation also revealed eight (8) out of the ten (10) teachers observed did not practiced ability grouping in the classroom.

Considerably, the observation revealed that indeed, amongst the teachers observed, many of them truly used these strategies in responding to varied learners' differences in classroom.

Thus, the observation showed that amongst the selected teachers observed, many of the teachers truly used microteaching (7) and task analysis approach (10 as strategies for responding to varied learners' difference but unfortunately could not apply same for self-directed learning (4).

Therefore, in the observation, it was realized some teachers engaged their learners in projects where they gather their own information about a particular learning content and presented to their colleagues in class

5.3 Research Question 3: What are Learners Perspective about the Strategies of Responding to Varied Learners Differences in the Classroom?
When learners were asked to rate their best form of teaching and learning strategies that helped them grasp teaching and learning concepts easily in classroom.
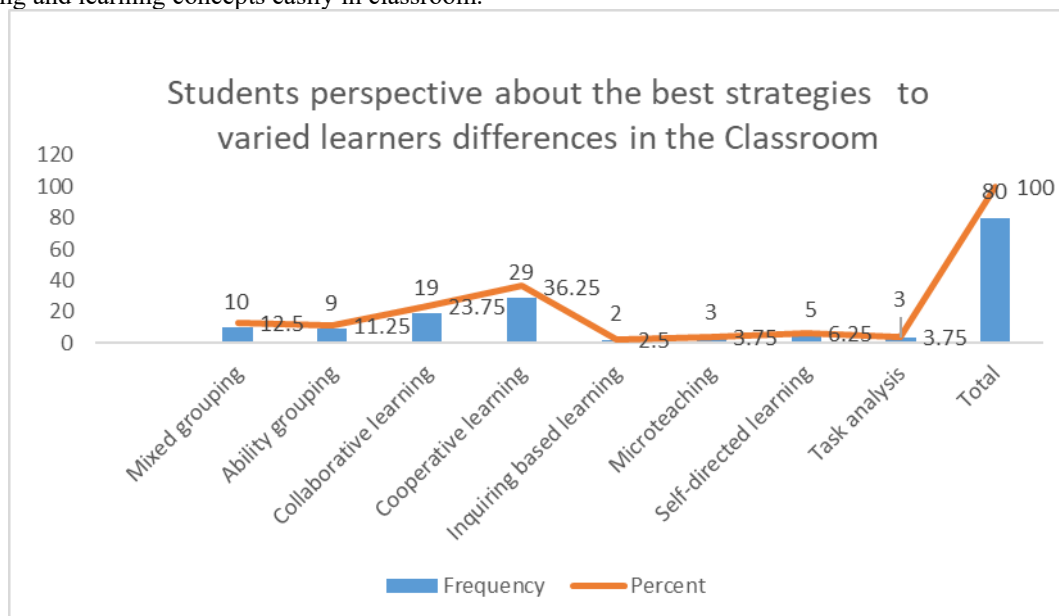

Figure 1-Forms of Teaching and Learning Strategies Learners Liked Best
Source: Field Survey, 2020.

The results in Figure 1, showed that co-operative learning, 29 (36%) was ranked the best form of teaching and learning strategy liked by learners, followed by collaborative learning with colleagues who are more intelligent, 19 (23.7%). Also, mixed ability grouping, 10 (12.5%) and ability grouping, 9 (11.25%) learning was adjudged 3rd and 4th best teaching and learning strategies liked most by learners.

Therefore, from the learners' perspective, co-operative learning was ranked the overall best strategy for responding to varied learning differences by learners. This was because learners thought that, co-operative learning had the ability to boost their intelligence level significantly to a high (45%), very high (20%) and on the average (32%). This projects that, through co-operative learning, the learners acquired co-operative values and attitudes that moved each learner towards learning independently in the classroom to boost one's intelligence level.

5.3.1 Discussions
5.3.2 Research Question 1: How Does Adaptive Instruction Pose Challenges to Teachers?
Ineffective pre-service and or in-service training for teachers: according to the Ministry of Education (2018), institutionalization of in-service training for teachers on the academic time table of schools have not been followed through by many schools and the Jirapa Municipality is no exception. Hence, Scott (2002) suggested that pre-service and in-service training need to address not only the issue of providing teachers with a broad knowledge based in the area of reading but also need to address teaching style, teacher belief and teachers' ways of knowing. This implies, in order for teaching strategy to be adaptive enough to meet varied learners needs, the Ghana Education Service with its other stakeholders have to make pre-service and in-service training of teachers a priority without fail.

Inadequate knowledge/expertise of teachers applying adaptive instruction to meet varied learners needs in classroom: the study findings confirmed the study by Alhassan and Abosi (2014) who also observed that teachers possess limited adaptive or no adaptive expertise at all in the classroom. As a result, Bachari, Abelwahed and Adnani (2012) conferred that it is extremely cumbersome for a teacher to determine the best learning style for each learner in the same classroom. Even if the teacher is able to identify each learner learning style, it still would be extremely difficult to apply multiple teaching strategies in a real teaching environment. This implies that it might be impossible meeting the learning needs of each learner in a single classroom instruction.

On time constraint, this study also confirmed what Valiandes and Neophytou (2017) and Haddad and Kalaani (2014) found that lesson delivery in the classroom is really confronted with insufficient time even when the teacher tries to help each learner to achieve the teaching and learning indicators. Therefore, Taylor (2017) affirmed that time affect teachers' usability of adaptive instruction in delivery of lesson in the classroom, because it requires extra time and effort, to break instructional tasks and assessments and is very complex. This

implies, teachers' inability to get maximum time to teach and meet varied learners' suitability on task served as a serious constraint for teachers to use adaptive instruction in the classroom.

Large class sizes: this affirms Alshammari (2016) assertion that, in a traditional classroom setting, adaptive instruction may be limited because of the large class sizes.

Overloaded curriculum: EFA (2013) maintained that the curriculum is at the heart of all teaching and learning in the classroom and need to be managed well. However, Ikwumelu, Oyibe and Oketa (2015) noted that current global trending issues such as HIV/AIDS, gender disparity, substance abuse, human trafficking, child labour, child abuse, hunger, and prostitution have propelled curriculum designers to include these elements in school curriculum so as to educate the learners on the unbearable effects. These inclusions though relevant seems to have overloaded the curriculum content, thus made teaching and learning difficult couple with limited time to meet varied learners needs.

Poor supervision: the study findings discovered that supervision was a big challenge that affected teachers' use of adaptive teaching and learning strategies in the classroom. This is because it was observed that many teachers often did not get their lesson notes supervised and vetted to ensure inclusion to meet varied learners needs during lesson notes preparation. According to Adedeji and Olaniyan (2011) supervision is a forward-looking process that enable teachers to select the most appropriate strategies in his or her classroom in order to meet most of the learners' learning needs in the classroom. Hence, they affirmed that supervision though a complex process that must play a prominent function in the classroom teaching and learning. This is often short-changed to mean the implementation of adaptive instruction in classroom if it fails to deliver the desired outcome to the learners due to poor supervision (Taylor, 2017). Thus, teachers who may lack the essential principles for supervision may encounter classroom management challenges. This implies, in every school system, the level of administrative support to supervise teachers can affect the effective implementation of an adaptive instruction in the classroom.

5.3.3 Research Question 2: What are the Strategies of Responding to Varied Learners Differences in the Classroom?

From the interview answered by headteachers, it is discovered that varied learners' differences existed amongst learners and teachers employed various strategies to respond to these variations. Thus, the findings confirm the assertion that, amongst all the strategies examined; collaborative learning, co-operative learning, inquiring based learning and task analysis approach were best strategies for adaptive instruction for responding to varied learning differences. These amongst other strategies, supports Saban and Coklar (2013); and Ismail and Elias (2006) findings which found that microteaching and task analysis approach are popularized, commonly practiced, and a requirement in most initial teacher training institutions, known as On Campus Teaching Practice (OCTP) (Francis and Gould, 2014) in Ghana, hence many teachers were familiar of how to use these concepts in teaching varied learners. Thus, this was consistent with Corbin (2017) studies on assessing differences in learning styles at the tertiary level in the Caribbean.

5.3.4 Research Question 3: What are Learners Perspective about the Strategies of Responding to Varied Learners Differences in the Classroom?

From the learner's perspective, the findings suggested that collaborative and co-operative learning was the most preferred learning style chosen by many learners based on the mean scores of Grasha-Riechman rating norms. This corroborates Ikwumelu, Oyibe and Oketa (2015) findings that teachers adapting cooperative learning as adaptive strategy creates an interactive platform for learners to be impressed with their teaching pedagogy.

Though Tomlinson (2015) and Alhassan and Abosi (2014) believe that group working is a valuable strategy in a single classroom teaching and learning process. It is found that teachers often do not like to group learners either mixed or based on their learning abilities because that seem to disadvantage the low achievers in terms of group exercise within the class. According to the OECD (2018) these learners are often not sure of the contributions to offer the group, for the fear of uttering wrong statements. As such they prefer to work independently on their books, even when they are giving the wrong answers.

Therefore, the study findings generally support Gokhale (1995) assertion that collaborative and or cooperative learning allows teachers to throw classroom teaching that traditionally would have been the responsibility of the teacher, back to the learners to construct and discuss the learning process actively within their own understanding and ability level.

6. Conclusions

1. Amongst other challenges, teachers had inadequate pre-service and in-service training; time constraint; large class size; overloaded curriculum; and poor supervision these affect their effective implementation of adaptive instruction in the classroom. This implies that not all learners will always meet their teaching and learning needs in the classroom.

2. In responding to the adaptive instructional challenges in classroom, majority of the teachers claimed they used mixed ability grouping; ability grouping; collaborative learning; co-operative learning; inquiring

based learning; microteaching; self-directed learning and task analysis approach as adaptive instruction strategies to teaching learners with varied learning needs. This implies that teachers were generally aware of the teaching and learning strategies they can employ in the classrooms.

3. Unfortunately, the observation protocol turned out to show that, not all teachers observed adapted to teaching the learners using adaptive instruction. Thus, some teachers could not adapt the right teaching strategies that could help meet some learners' needs.

4. Considerably, not all learners either males or females understood the concepts taught by their teachers because of some teachers' inadequate expertise to use adaptive instruction that will meet all learners' needs in the classroom.

5. The teaching and learning rating scale based on the mean scores of Grasha-Riechman rating norms completed by learners concluded that learners learn best when teachers employ interactive learning platforms. Consequently, teachers should be mindful of choosing instructional strategies that would encourage every learner in the classroom to be an active learner than a passive learner a during teaching and learning.

7.   Recommendations/Implications

1.   It is recommended that, teachers' expertise on the concept of adaptive instruction should be more anchored from the initial teacher training institutions than now.

2. It is further recommended that headteachers of schools should conduct regular needs assessment on both teachers and learners. This will allow them provide adequate support to the teachers and learners in the classrooms.

3. Teachers should be encouraged to always stimulate learners' interest to learn and understand teaching and learning outcomes that will enable each learner fit for purpose in the world of work.

4. Policy makers and curriculum developers should develop policies and school curricula that are learner-based and outcome-oriented aim at preparing learners as lifelong learners.

5. Further research should be conducted on the use of gendered adaptive instruction and the impact on academic achievements in schools.

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