This study is conducted during a period teachers’ competence is called into question by the general public, parents, and politicians. The competence of the regular primary and junior high school (JSS) teachers is widely criticized due to students/pupils’ poor performance and failure of the Basic Education Certificate Examination (BECE), the nation-wide final year examination for the JSS students (Ghana Ministry of Education [MOE], 2009, 2010; Ghana Ministry of Education, Science and Sports [MOESS], 2007, 2008; A. B. Kuyini, 2010; A. A. A. Kuyini & Abosi, 2011). The fundamental conception of the situation of pupils with learning difficulties (LDs) is often that teachers do not effectively address the needs of pupils with LDs in the regular classroom (Dotse, 2012; Gyasi, 2011; Henne, 2013; Thomas, 2012). On the contrary, teachers also attribute LDs to pupils’ deficiencies, inadequacies, disabilities, and the lip services the Government of Ghana (GoG) pays to basic school teachers. Often, some teachers exclusively blame certain learners and, at times, subject them to severe punishment for failing to comprehend what is taught in school. They do this with the intention of motivating pupils to work harder than they presently do (Agbenyega, 2006; A. A. R. Kuyini, 2013). Usually, they do not see something wrong with the curriculum, the teaching methods, and the medium of instruction used in school. Likewise, teachers often do not reflect on teaching and learning materials (TLM) and the communication styles used in the classroom (Bartolome, 1994; Gyasi, 2011; A. A. R. Kuyini, 2013; A. A. R. Kuyini & Abosi, 2011; Westwood, 2004). Recent thinking suggests that some learners, especially those with LDs, do not benefit from teaching methodologies and materials used in the regular classroom (Agbenyega & Deku, 2011; M. Avoke & Avoke, 2004). Countries such as Ghana are, therefore, urged to enhance their teacher training programs by adopting inclusive education policy. To do this, teachers need to change their classroom practices by using adaptive instructional practices (Agbenyega, 2006; Agbenyega & Deku, 2011; Bartolome, 1994; A. A. R. Kuyini & Abosi, 2011; A. B. Kuyini & Desai, 2008; UNESCO, 1994; Westwood, 2004).

In this article, we discuss Ghana’s inclusive education policy in the light of children with LDs, the concept of LD, its causes, and adaptive instruction based on a study on adaptation of instructions in schools.
Context: The GoG’s Inclusive Education Policy

The primary aim of the GoG’s inclusive education policy is to provide the most suitable and relevant education for the Ghanaian children to succeed in school and to develop their potentials to become productive citizens. Central to GOG’s policy objectives are access and quality teaching for all learners (MOE, 2003). Access and quality teaching, which are among the cardinal issues of the inclusive education policy (UNESCO, 1994), have been part and parcel of the GoG’s education policy initiative. For instance, Gadagbui (2008) argues that the policy of inclusive education is not a new development in Ghana education system. It dates as far back to the Accelerated Development Plan (ADP) of 1951. The ADP makes basic primary education accessible and universal to all Ghanaian children independent of their abilities or disabilities. From then on, various education acts and legal frameworks have been put in place to take care of the educational needs of Ghanaian children. Those acts and frameworks include the 1961 Education Act, the 1992 Constitution of Ghana, the Free Compulsory Universal Basic Education (FCUBE) Policy, the GoG’s Education Strategic Plan (ESP) 2003-2015, the National Disability Policy of 2000, the Special Educational Needs (SEN) Policy Framework of 2005, Persons With Disability Act (PDA) 715 of 2006, and the Education Act (778) of 2007 (Agbenyega, 2007; Anthony, 2009; Casely-Hayford, Quansah, Tetteh, Adams, & Adams, 2011). All these acts and frameworks reiterate the need for the Ghanaian child, especially those with disabilities and from disadvantaged backgrounds, to have equal educational rights and opportunities (access and quality educational provisions) without discrimination in any form.

More specifically, PDA 715, 2006, clearly stipulates that the minister of education, by legislative instrument, shall choose some schools in each of the 10 regions of Ghana. He or she shall provide those schools with the required facilities and equipment to enable the provision of inclusive instruction for children with SEN. In addition, it emphasizes that the GoG shall offer free education and sets up special schools to take care of the education and needs of children who have severe disabilities and cannot benefit from the formal schools system. The PDA goes further to stress that under no circumstances a child with disability shall be refused admission into any school/institution in the country, unless the child has a severe disability that requires special attention in special schools/institutions. As part of the requirement, schools and public places shall be made disability friendly to facilitate the inclusion of persons with disability in all spheres of public and social events or activities. Per the PDA, parents, guardians or custodians, and teachers/school administrators, who flout the PDA shall be deemed to have committed a serious offence and shall be penalized accordingly (PDA, 715, 2006).

Although the PDA has a very strong message to parents, teachers, and people in authority about the educational inclusion of children with disabilities, the implementation of this objective is yet to be realized. For instance, Agyare-Kwabi (2013) asserts that since the passage of the PDA in 2006, children with disabilities have not experienced much change in their educational and social life. Children with disabilities still encounter problems in getting admissions to public schools, accessing public places, free and quality health care, and accessible transport (appraisal of Ghana’s Education Sector Plan 2010-2020, 2012; A. A. R. Kuyini, 2013). In the regular classroom, the needs of children with SEN are not accommodated (Agbenyega & Duku, 2011; A. A. R. Kuyini, 2013; A. B. Kuyini & Desai, 2008; A. A. B. Kuyini & Mangope, 2011).

This notwithstanding, Casely-Hayford et al. (2011) find that the GoG has made significant progress in her attempts to make education inclusive for all Ghanaian children. The GoG, in 2003, started a pilot program for inclusive education implementation in 2 of the 10 regions of Ghana (the Central, Eastern, and Greater Accra Regions). This program is currently extended to eight regions of the country. Other important initiatives by the GoG include the FCUBE, aimed to make education inclusive for all children since 1992. In addition, various education programs and policies have been implemented to enable children with disabilities, the girl child, and the disadvantaged children in the society to have access to formal education (Casely-Hayford et al., 2011). For instance, the GoG has introduced the Capitation Grant (CG) and the Ghana School Feeding Programme (GSFP) in 2004 and 2005, respectively. These programs are aimed to strengthen the existing educational policies and to encourage enrolment and school retention (Casely-Hayford et al., 2011). The aim of the CG and the GSFP are to ensure that children, who are at risk of dropping out of school and those vulnerable in the communities, are provided free food while they are in school. Currently, the GoG provides free exercise books, school uniforms, graph sheets, and technical drawing books for children from disadvantaged communities. These provisions are intended to get rid of schools under trees in most rural and semi-urban centers (Casely-Hayford et al., 2011; GES, 2011).

At the classroom level, teachers are encouraged to adopt child-centered pedagogies in teaching and learning processes. They are encouraged to adopt the National Literacy Accelerated Programme’s (NALAP) approach to inclusive education. The NALAP teaching and learning philosophy is that effective teaching and comprehension of lessons take place if learners are taught in their mother tongue using inclusive teaching strategies such as group work, activity-based teaching, and participatory pedagogies (Casely-Hayford et al., 2011; A. A. R. Kuyini, 2013). In addition, teachers are recommended to use local languages (L1) as media of instructions at the lower primary school, whereas English (L2) is used in the upper primary school. All these
developments are to ensure that the needs of all children, in particular, those with LDs and disabilities are accommodated in the regular classroom. However, A. A. R. Kuyini’s (2013) study on inclusive education in the northern region reveals that only few teachers get training opportunities on NALAP and other inclusive teaching approaches.

Despite the above-mentioned policy provisions, pupils with disabilities still encounter challenges in accessing formal education and completion of compulsory basic education. In addition, repetition and dropout rate of children with LDs are quite high and prevalent in the three northern regions of Ghana and among girls (GES, 2011; A. A. R. Kuyini, 2013; Special Attention Project [SAP], 2011). One of the reasons for this problem is that most pupils find it difficult to understand what is taught in schools. Recent studies reveal that one of the major problems facing Ghana education system is that there are a growing number of children who experience difficulties in learning at the basic school levels. Such children are at risk of dropping out of school before the completion of Primary 6 and JSS (Akyeampong, Djangmah, Oduro, Seidu, & Hunt, 2007; A. R. Kuyini, 2010; A. A. R. Kuyini & Abosi, 2011; MOE, 2003; SAP, 2011). The situation, as it currently stands, indicates that GoG is unlikely to achieve her policy of inclusive education without, among other things, equipping teachers with the requisite competence in adaptive instruction to meet the needs of all pupils, especially those with LDs in the regular classroom.

**LD**

LD is relatively new among African educators, although “slow learners” or occurrences of “children with LDs” are not (Abosi, 2007; Aro, Jere-Folotiya, Hengari, Kariuki, & Mkandawire, 2011). It is noted that African experts in the field of special and inclusive education do not have their own definition of LD (Abosi, 2007). However, they have their own local terminologies describing individuals who exhibit characteristics and symptoms of LDs (Agbenyega, 2007; M. Avoke, 1997). In Ghana, for example, children with LDs and disabilities in the Ewe and Ga communities (Agbenyega, 2003; M. Avoke, 1997) are often referred using terminologies such as Asotowo and Buluus (idiots or fools, and reduced intellectual abilities). Among the Dagbambas and some communities in the northern region of Ghana, Zu’kpinglana and Zuuku (deadhead and empty-head) are used for children who manifest difficulties in learning basic social skills, basic calculations, difficulties in organizing their daily activities, and adjustment difficulties.

Abosi (2007) states that pupils with LDs in Africa are those generally and frequently referred to as slow learners or underachievers. (p. 197)

Likewise, using the definition of the Australian National Health and Medical Research Council (1990), Westwood (1997) states,

. . . the term is applied to students whose difficulties are not directly related to a specific intellectual, physical or sensory disability, although students with disabilities often do experience problems in learning and in social adjustment. Students who have, in the past, been referred to as “slow learners,” “slow achievers,” or simply “the hard to teach” certainly fall within the category “learning difficulties.” (p. 1)

It is clear from the definitions that “learning difficulty” is a generic term describing learners who exhibit developmental and academic problems or challenges irrespective of the origin of the problems (Julie & Peter, 2005; Kavale & Forness, 2000; Westwood, 1997). Several issues can cause LDs in children. For instance, Abosi (2007), Aro et al. (2011) and A. A. R. Kuyini and Abosi (2011) point out that apart from biological and physiological causes of LD, school factors such as teaching methods, teacher factors, culture and language of instruction, home related factors, factors within the child and the school systems are potential causes of the LD in schools. Children who experience LDs often fail class exercises, perform poorly, and lose respect from their peers, and at times, from teachers who ought to have protected and supported them.

To meet the needs of such children in the regular classroom, several adaptations need to be made to facilitate their understanding of lessons. On one hand, curriculum needs to be adapted to suit the specific characteristics and ability levels of the children. On the other hand, the instruction must also be modified to meet the variety of personal and academic needs of the learners. One of the essential adaptations that require to be made is instruction. Adaptive instruction is an important component of effective teaching, although, in practice, many teachers find it difficult to teach adaptively or modify teaching approaches to meet the diverse learners’ needs in the regular classroom (A. A. R. Kuyini, 2013; Westwood, 2004).

**Adaptive Instruction**

Adaptive instruction is a way and form of responding to different learning needs of learners during instruction. Tomlinson (2000) says,

. . . differentiation consists of the efforts of teachers to respond to variance among learners in the classroom. Whenever a teacher reaches out to an individual or small group to vary his or her teaching in order to create the best learning experience possible, that teacher is differentiating instruction. (p. 1)
This means that adaptive instruction requires not only some competence but also a sound reasoning to be able to use those actions during instruction. Fenstermacher (cited in Shulman, 1987) asserts that teachers are trained “to reason soundly about their teaching as well as to perform skillfully” (p. 13). In the same way, adaptive instruction requires sound reasoning, a process of thinking about what to adapt (curricula content, textbooks, teaching material, methods, and learning environment) and how to adapt it (instruction and explanation) and with what to adapt (by using their knowledge base, facts, principles, beliefs, and experiences of inclusive practices), to provide good and valid reason for any choice made, actions, and inactions taken during instructional adaptation (Shulman, 1987). For instance, Westwood (1997) claims that group work and whole class activities can be used in the regular classroom as part of instructional adaptations provided that different learning outcomes are expected for different learners. He says,

Within a whole class, one child may write three pages of his or her own thoughts unaided; another child may manage only three sentences with much help from the teacher; yet another may manage only a picture. All these responses are acceptable. A classroom activity is “inclusive” if it allows every child to make an attempt, and to achieve some degree of success alongside with others. (p. 7)

This may appear to be one of the easiest ways of explaining adaptive instruction. Yet, not all education systems permit this system of adaptation in the regular classroom. Likewise, Tomlinson (2000) observes that in every regular classroom, there are pupils with diverse learning abilities. There are pupils, who perform extremely well in the class; others perform as expected, whereas some pupils perform far below their age. This happens due to individual differences, characteristics, and learning. With this in mind, Tomlinson (2000) suggest that teachers should make instruction accessible, meaningful, and challenging to meet the diverse learning needs and interest found in the classroom. Furthermore, they argue that teachers who do not adapt instruction automatically exclude certain learners from active participation in the learning environment. In addition, the European Agency for Development in Special Needs Education (2011) notes that active participation in learning is an essential element of inclusion. Against this backdrop, adaptive or differentiated instruction is crucial in meeting the needs of pupils with LDs in the regular classroom.

Previous Studies on Adaptive Instruction in Ghana

One of the recent investigations on instructional adaptation for children with disabilities in the regular classroom in Ghana is that of A. B. Kuyini and Desai (2008). A. B. Kuyini and Desai (2008) investigate teachers’ instructional adaptation in the regular classroom using 37 teachers. The results of their study show that teachers make limited instructional adaptation, and in some cases, they make no adaptation at all to support children with disabilities found in the regular classroom. Likewise, Agbenyega and Deku (2011) investigate the current Ghanaian teachers’ pedagogical practices in the regular classroom. The data for the study were generated from a focus group discussion with 21 teachers. The study concludes that the current teaching practices in the regular classroom in Ghana are prescriptive, inflexible, mechanistic, and do not value variety of learning styles of pupils.

In addition, A. A. R. Kuyini and Abosi’s (2011) study on inclusion of street children in the regular classroom is of relevance to the current study. The study reveals that most street children in Accra dropout of school because teaching and learning are not adapted to their learning needs. The street children find lessons difficult to understand and are caned if they do not understand lessons. This practice culminates in some children not thriving in school. The study also finds that provision of learning needs of street children such as feeding and school related needs is a strategy that should be adopted to encourage school attendance and retention of street children in schools. Finally, A. A. R. Kuyini and Abosi (2011) indicate that adaptive teaching strategies such as explicit teaching, cooperative learning, and social skills instruction enhance learning outcomes of street children and should be adopted for other categories of children with SEN.

Another important study on adaptive teaching is that of Agbenyega (2006). Agbenyega’s study deals with corporal punishment in the inclusive classroom in Ghana. The study investigates the practice of corporal punishment using more than 100 participants in 10 schools. His study reveals that although schools are supposed to be one of the safest places for children, some children, especially those with LDs, might find school unsafe because of corporal punishment and other abusive pedagogies used in the teaching and learning processes. He concludes that teachers use corporal punishment as an effective means of motivating and as a disciplinary measure for children who perform poorly in school. A recent study in the Northern Ghana also finds that majority of teachers consider caning as one of the methods that motivates children with LDs to learn (A. A. R. Kuyini, 2013).

The main objective of the current research is to examine teachers’ competence in adapting instruction to teach pupils with LDs in the regular classroom in Ghana. Specifically, the study aims to achieve the following research objectives:

1. To examine teachers’ pedagogical competencies in adapting instruction for pupils with LDs in regular classrooms.
2. To assess whether competence in adaptive instruction is associated with teachers’ pedagogical competencies in teaching pupils with LDs in the regular classrooms.
3. To find out whether teachers’ competence in adaptive instruction differs significantly due to their background variables (gender, age, qualification, training in special education, teaching experience, class size, and location of school).
Method
In this study, mixed-design strategies (descriptive and correlational survey design strategies) were combined to solicit data to address the above-mentioned research objectives. The methodological framework shaped and guided all decisions made on the development of research instruments, sampling design, administration of questionnaires, and observation.

Sampling Design and Sample Size Determination
The sampled teachers \( (n = 387) \) for the study were carefully selected using a multi-stage sample strategy. To do this, the entire population of regular primary school teachers in the 10 regions of Ghana \( (N = 198,403; \) Ghana National Association of Teachers [GNAT] & Teachers and Educational Workers Union [TEWU] of Ghana Trades Union Congress, 2009) was grouped into regions. Then the northern region, which had a teacher population of 11,538 (The Northern Region Education Directorate–Statistics Unit [EMIS], 2012), was randomly selected. The sample size \( (n = 387) \) was then determined using the following formula: \( n = N \times (1 + \frac{Ne^2}{a^2}) \) (Carteron & Gonzales, 2010). Thus, \( n = 198403 \times (1 + \frac{198403 \times 0.08}{0.83}) = 387 \).

Although the appropriate sample size for the population of teachers in the region is 387, a total of 463 questionnaires were sent to the field to prevent low response rate. This decision was informed by Erbynn (2009). He argues that in determining a sample size, it is crucial to take into consideration respondents’ attrition and mortality rate. That is, it is possible that some respondents may not return or complete the questionnaires, which may result in low response rate, thereby, reducing the sample size drastically. To prevent such a situation, the actual sample size \( (n) \) was calculated using an expected response rate \( (err) \) based on A. A. B. Kuyini and Mangope’s (2011) research on inclusion in Ghana and Botswana, which had a response rate of 83.6%. To do this, we used the following formula: \( n_a = n \times err \) (Erbynn, 2009), where \( n = 387, \) \( err = 8.36\% = 0.836 = n_a \) (actual sample size). Thus, \( n_a = 387 \times 0.83 = 463 \). Therefore, 463 questionnaires were sent to the field.

Having had the actual sample size, the population of teachers in the northern region was again clustered into 26 districts, and 20 districts were randomly selected. At the district level, a proportionate stratified sampling technique was used to draw the sample \( (n = 463) \) from the population of teachers in each of the selected districts. This was to ensure that all teachers in the districts were properly represented. At the district level, teachers were again sampled and stratified based on the characteristics of the population.

Instrument
To achieve the research objective, we used survey questionnaire and observation checklist to capture data for the study. Both instruments were developed by the researchers. The survey questionnaire (the appendix) has three sections: demographic variables (Section A), adaptive instruction and teaching children with LDs (Section B), and competency scale for adaptive instruction (Section C). Questions in Section A (e.g., age, gender, and class size) were aimed to gather data to address Research Objective 3 (which attempts to find out whether teachers’ competence differ significantly due to their background variables). Section B of the survey questionnaire was intended to collect data to address Research Objective 2. Research Objective 2 sought to find out whether there was significant association between competence in adaptive instruction and teachers’ competence in teaching pupils with LDs in the regular classroom. Adaptive instruction is the independent variable, whereas teachers’ competence in teaching pupils with LDs is the dependent variable in this case. To obtain data for this objective, teachers were asked to use a scale of 1 to 3 to respond to their competence and skill levels in teaching pupils with LDs. The scale for the independent variable is interpreted as 1 = poor skill, 2 = good skills, and 3 = very good skills. Similarly, the dependent variable is interpreted as 1 = limited competence, 2 = moderate competence, and 3 = adequate competence. Teachers were asked to show their competence level by choosing one of the numbers.

Finally, Section C of the questionnaire was aimed to generate data to respond to Research Objective 1 (to explore the pedagogical competencies teachers have in adapting instruction for pupils with LDs in the regular classrooms). The questionnaire has a self-developed Teachers’ Competence Scale for Adaptive Instruction (AI Scale), which is made up of nine items and describes adaptive teaching practices in the regular classroom. It embodies a collection of effective teaching practices and behaviors, which were carefully identified from inclusive education literature. Current thinking suggests that those teaching practices/behaviors produce better inclusion of pupils with diverse learning needs in the regular classroom (A. B. Kuyini & Desai, 2008). The literature used to develop the instruments included A. B. Kuyini & Desai, 2008; Ainscow & Goldrick, 2010; Forlin, 2010; Abosi, 2007; Shulman, 1987; Stainback, Stainback, & Moravec, 1992; Lipsky & Gartner, 1997, Bartolome, 1994; and Agbenyega & Deku, 2011. The AI Scale contains self-assessment items, measured on four-point Likert-type statements aimed to measure teachers’ competence in adaptive instruction. Examples of the items are presented below:

1. Adjusting learning task for pupils with LDs: 1, 2, 3, 4.
2. Pacing lesson for pupils with LDs in regular classroom: 1, 2, 3, 4.

In addition, the scale is interpreted as 1 = no competence, 2 = limited competence, 3 = moderate competence, and 4 = adequate competence. In addition, the same items were used as observation checklist to observe teaching sessions in the classroom. The observation checklist was designed to
crosscheck the responses teachers provided on the AI Scale. This gives one the opportunity to comment as to whether teachers use their perceived competence on the AI Scale in their actual teaching practices in the regular classroom.

Reliability and Validity

After developing the research instruments, a group of experts in the field of special/inclusive education (one university lectures, two teacher educators, and three regular teachers) were tasked to carefully scrutinize and assess the instruments for their relevance, content, cultural, face, and construct validity. The feedback from the experts recommended that some of the items needed to be removed, whereas others were to be included in the instruments. In the end, 47 items were reduced to 24, which were further reduced by reliability test to nine items, suggesting a very good sign of data reduction and consistency.

Thereafter, a pilot study was conducted to check the reliability and validity of the instruments. The pilot test was also aimed to see whether the instruments were feasible to obtain the relevant data needed. In all, 31 regular primary school teachers participated in the pilot study. The result of the reliability test showed a Cronbach’s alpha coefficient of .86, indicating that the instrument was very good and reliable (Cronbach, 1975). In addition, factor analytic approach, which measures the commonalities of items, was applied. To do this, the principal component factor analysis with Varimax Kaiser Normalization was used to examine the commonalities among the items. The result of this test showed that items/factors ranged from 1 to 3 with coefficient of .51 to .82. Most of the items scored above .70, implying that the research instrument was good, consistent, and reliable. The reliability of the observation data was assessed using inter-observer scorers to measure the consistency of the data. In doing this, inter-observers or raters were carefully trained on how to score the observation checklist during observation.

Data Collection

We began the data collection process by seeking permission from the Northern Regional Director of Education. After the permission was granted, 463 questionnaires were administered to teachers in 20 districts of the region. The service of two research assistants was engaged to support in the distribution of the questionnaires. After the distribution, it took 4 months (May 7, 2012, to August 29, 2012) to receive all the administered questionnaires. In the end, 95 questionnaires were received from teachers in the Tamale metropolis, which had the highest teacher population at the period the data were collected. In addition, we received 27, 24, 22, and 20 questionnaires from teachers in the Tolong-Kumbungu, Savulugu-Nantong, Bunkpurugu-Yunyoo districts, and Yendi Municipality, respectively. Furthermore, teachers in the Mamprusi West and Nanumba North districts returned 19 questionnaires each, whereas 17 questionnaires each were filled by teachers in the Nanumba South and East Gonja districts. Whereas teachers in the Zabzugu-Tatale, West Gonja, and Kpandai districts got 15, 14, and 13 questionnaires, respectively, their colleagues in the Sawla-Tuna-Kalba, Bole, Gushiegu, and Mamprusi East districts got 12 questionnaires each. In all, of the 20 districts visited, Saboba, Karaga, Central Gonja, and Chereponi had the lowest teacher population. We administered 11 questionnaires each to teachers in Saboba and Karaga Districts, whereas 10 and 9 questionnaires were answered by teachers in the Central Gonja and Chereponi districts, respectively.

The returned questionnaires were more than the determined sample size ($n = 387$). And to avoid using excessive or inappropriate sample size, the researchers stuck to the determined sample size ($n = 387$) for the analysis. Out of the 387 sampled teachers, 50 respondents were also observed using the observation checklists to crosscheck the responses provided in the survey questionnaires. The observation was conducted in 25 primary schools with the assistance of inter-observers (inter-rate or scorer). The inter-observers’ main role in the observation was to observe whether teachers were demonstrating the skills listed in the observation checklist and score them accordingly. The observation of every teaching session lasted for 35 to 45 min, the time scheduled for each subject in the school timetable. At the end of every observation session, the researchers and the inter-observers met to compare scores and determine final scores for each observation conducted.

Data Analysis

The collected data were analyzed using SPSS Version 17.0. The analytic tools adopted in analyzing the data included descriptive statistic and correlation. These analytic strategies were used to analyze the data obtained to address Research Objective 1. In addition, whereas chi-square ($\chi^2$) test of independence (cross-tabulation) was used to analyze data collected to achieve Research Objective 2, $t$ test and ANOVA were used in analyzing data solicited for Research Objective 3.

Results

Background Variables

The result of teachers’ background variables shows that 53.7% (208) of the sampled teachers ($n = 387$) are rural schools teachers, whereas 179 teachers (46.3) are urban teachers. Female teachers are 74 (19.1%), whereas their male colleagues are 313 (80.9%). Three hundred fifteen (315) teachers are trained, whereas 72(18.6) are untrained. In all, 198
have training in special needs education, and 189 (48.8%) do not have any training in special needs education. In total, 203 teachers teach small class sizes (45 and fewer pupils), whereas 184 (47.5%) teach large class sizes (46 and more). The largest class size observed was 138, whereas 17 being the smallest. Teachers’ qualification ranged from senior high school (SSS) to bachelor’s degree. Majority of them, 54.0% (209) have diploma degree, whereas 16.3% (73), 15.2% (59), 8.3% (32), and 6.2% (24) have degree, SSS, post-middle teachers certificate “A,” and post-secondary teachers’ certificate “A,” respectively. Participants’ ages range from 20 to 54, although they have 6 to 30 years of teaching experience.

**Teachers’ Competence in Adaptive Instruction**

Table 1 shows a descriptive analysis of teachers’ competence in adaptive instruction. Teachers’ competence in adaptive instruction is scored based on the competence mean composite score with 1 = no competence, 2 = limited competence, 3 = moderate competence, and 4 = adequate competence.

With this scale in mind, the total mean score of the sampled teachers in Table 1 is 21.1 (2.34). This suggests that teachers’ competence in adaptive instruction is a little bit higher than “2,” representing “limited competence” in adaptive instruction scale. Furthermore, the result shows that the highest mean scores of teachers on the AI Scale is $M = 2.45$ ($SD = 0.98$), whereas the lowest mean score is $M = 2.01$ ($SD = 0.94$), implying that teachers’ competence in adaptive instruction is between 2.01 and 2.45 (“limited” to “moderate” competence). This level of competence is woefully inadequate because teachers require “adequate” competence in adaptive instruction to effectively teach pupils with LDs in the regular classroom. More specifically, Table 1 shows that apart from Item 6 (Pacing lesson for pupils with LDs in regular classroom) in which teachers have a mean score of 2.45, which is almost “3” (moderate competence), their mean scores of the remaining items are either 2.44 or less than that. The implication is that teachers in this study have limited competence in most of the adaptive teaching practices. They have, therefore, inadequate competence to teach pupils with LDs in the regular classroom.

Similarly, observation of 50 teaching sessions is conducted using observation checklist. The observation checklist has the same items as that of AI Scale (Table 1). The aim is to find out whether teachers are actually using the adaptive teaching practices in the regular classroom to support pupils with LDs. The result, as presented in Table 2, shows that there is positive correlation ($r = .02; p = .91$) between the observation data and teachers’ responses on the AI Scale (Table 1). Furthermore, the result indicates that although there is a positive relationship between the two variables, the relationship is very weak ($r = .02$) and insignificant. This implies that teachers are not making maximum use of adaptive teaching practices (Table 1) to support children with LDs in the regular classroom.

Although the result in Table 2 indicates an insignificant but positive relationship between the observation data and teachers’ responses on the AI Scale, it does not inform of the relationship of individual items of teachers’ adaptive teaching practices in the classroom. To find out about this, items on the AI Scale (Table 1) and observation data are correlated. The results in Table 3 show that Items 2 (Gaining and maintaining pupils’ attention during lesson), 3 (Creating opportunities for pupils to demonstrate their ability), and 8 (Willingness to give enough time for pupils with LDs to complete task) were significantly correlated with the following correlation coefficient values: Item 2 ($r = .28; p = .05$), Item 3 ($r = .88; p = .02$), and Item 8 ($r = −.28; p = .05$). Item 2 shows that although there is a positive relationship between the two variables (observation and AI Scale responses), the relationship is very weak. This means that teachers are, in actual fact, gaining and maintaining the attention of pupils with LDs during lessons. Although the way they do it is very minimal, the result on Item 3 shows that there is a positive

| Adaptive instruction | n  | M   | SD  |
|----------------------|----|-----|-----|
| 1. Adjusting learning task for pupils with LDs | 387 | 2.42 | 0.98 |
| 2. Gaining and maintaining pupils’ attention during lesson | 387 | 2.01 | 0.94 |
| 3. Creating opportunities for pupils to demonstrate their ability | 387 | 2.35 | 0.93 |
| 4. Teaching pupils with LDs learning strategies | 387 | 2.44 | 0.98 |
| 5. Using positive reinforcement effectively during lessons | 387 | 2.44 | 0.98 |
| 6. Pacing lesson for pupils with LDs in regular classroom | 387 | 2.45 | 0.98 |
| 7. Providing immediate and explicit feedback during lessons | 387 | 2.44 | 0.99 |
| 8. Willingness to give enough time for pupils with LDs to complete task | 387 | 2.41 | 0.98 |
| 9. Providing relevant examples during lessons | 387 | 2.41 | 0.92 |

Valid n (listwise) 387

**Note:** LDs = learning difficulties.
and strong relationship between the two variables (observation data and AI Scale responses). This implies that teachers’ response to Item 3 is consistent with the observation data. Teachers are, indeed, creating opportunities for pupils with LDs to demonstrate their ability. The result of Item 8 shows that although there is a significant relationship between the two variables (observation data and AI Scale responses), the relationship is negative and very weak. This indicates that the more teachers say that they are willing to give enough time for pupils with LDs to complete task, the less they implement it to support pupils with LDs in the regular classroom. Surprisingly, Item 9 (Providing relevant examples during lessons; \(r = -.052, p = .72\)) is not significant, suggesting that although teachers say they do not provide relevant examples during instruction, they are observed using relevant examples during teaching.

### Association Between Adaptive Instruction and Teacher Competence in Teaching Pupils With LDs

Table 4 shows the association between skills in adaptive instruction and teachers’ competence in teaching pupils with LDs in the regular classroom. The adaptive instruction variable is a qualitative variable and is measured on an ordinal scale and categorized as 1 = poor skills, 2 = good skills, and 3 = very good skills.

Table 4 indicates that 29.5% (114) of the sampled teachers \((n = 387)\) who say they have “poor skills” also claim to have “limited competence” in adaptive instruction; 22.3% (86) of them who indicate having “good skills” in adaptive instruction, at the same time reported to have “moderate competence” in adaptive instruction. And those with “very good skills,” 6.2% (24), indicate that they have “adequate competence” in adaptive instruction. This suggests that there is some association between adaptive instruction and teachers’ competence in teaching children with LDs in the regular classroom. To confirm the significance of the association, chi-square test of independence is performed. The result shows that \(\chi^2(df) = 79.317(4), p < .00\). Cramer’s \(V = 0.32\) and \(p < .00\), suggesting a moderate relationship. The result, therefore, implies that there is a moderate statistical association between teachers’ skills in adaptive instruction and their competence in teaching pupils with LDs in the regular classroom.
Table 4. Adaptive Instruction × Adaptive Instruction Cross-Tabulation.

| Pedagogical competence | Adaptive instruction |  |  |  |
|------------------------|----------------------|--------|--------|--------|
|                        | Poor skills | Good skills | Very good skills | Total |
| Adaptive instruction   |            |            |            |       |
| Limited                |            |            |            |       |
| Count                  | 114        | 51         | 16         | 181   |
| % of total             | 29.5       | 13.2       | 4.1        | 46.8  |
| Moderate               |            |            |            |       |
| Count                  | 34         | 87         | 25         | 146   |
| % of total             | 8.8        | 22.5       | 6.5        | 37.7  |
| Adequate               |            |            |            |       |
| Count                  | 18         | 18         | 24         | 60    |
| % of total             | 4.7        | 4.7        | 6.2        | 15.5  |
| Total                  | 166        | 156        | 65         | 387   |
| % of total             | 42.9       | 40.3       | 16.8       | 100.0 |

Source. Survey data, 2013.
Note. Pearson $\chi^2 = 80.159^a(4)$, $p < .000$ (two-tailed). Cramer’s $V = .322$, $p < .000$ (two-tailed).

*a cells (0.0%) have expected count less than 5. The minimum expected count is 10.08.

**Difference in Background Variables**

To achieve Research Objective 3 as to whether teachers’ competence in adaptive instruction differs due to their background variables, $t$ test and ANOVA are performed. The result shows that apart from gender and class size, all other demographic variables in the study are significant.

Table 5 shows that female and male teachers have mean scores of 21.38 ($SD = 6.60$) and 21.03 ($SD = 6.16$), respectively. This suggests that although female teachers’ mean competence score is higher than that of males, the difference in the mean score is statistically not different, $F = .249$, $p = .62$, $t(384) = .44$, and $p > .66$, two-tailed. The 95% confidence interval (CI) for differences between sample mean, $M_1 - M_2$, had a lower bound of $-1.24$ and an upper bound of $1.94$.

Similarly, Table 6 shows that the mean scores of teachers who teach large class sizes ($M = 21.64$, $SD = 6.49$) is higher than that of those who teach small class sizes ($M = 20.60$, $SD = 5.98$). Furthermore, the result reveals that there is no significant violation of equality of variance assumption, $F = 2.44$ and $p = .12$. Therefore, the pooled variances version is used to read $t$ test. The mean competence of teachers who teach in large and small class sizes do not differ significantly, $t(384) = -1.65$, $p > .10$, two-tailed. The 95% CI for the difference between the sample means, $M_1 - M_2$, had a lower bound of $-2.29$ and an upper bound of $0.20$. This suggests that there is no significant difference between the competence level of teachers teaching large and small class sizes.

Table 7 shows that urban school teachers have higher mean scores ($M = 22.65$, $SD = 5.67$) than those of rural school teachers ($M = 19.75$, $SD = 6.41$). However, Levene’s test was used to assess the homogeneity of variance assumption. The result revealed that $F = 7.74$, $p < .01$. Since $p < 0.01$ "equal variances not assumed" is used to read the significance of $t$-test. The result shows that $t$ statistic is $4.73(385)$, $p = .00$. This indicates that there is a statistically significant difference between the mean competence scores of urban and rural school teachers.

Table 8 shows that the mean competence of the trained teachers in inclusive education is $M = 21.77$, ($SD = 6.14$), whereas that of the untrained teachers in inclusive education is $M = 20.38$, ($SD = 6.28$). Assessment of Levene’s test for equality of variances shows no violation of homogeneity of variance assumption ($F = .52$, $p = .47$). This indicates that the mean competence scores of the two groups of teachers differ significantly, $t(384) = 2.20$, and $p < .03$, two-tailed. The 95%
of CI for the sample means, $M_1 - M_2$ had a lower bound of 0.63 and an upper bound of 2.63. This result implies that in terms of competence in including children with LDs in regular classroom, teachers trained in inclusive education have a higher pedagogical competence than the untrained teachers in inclusive education.

**Teaching Experience**

Table 9 indicates that teachers who have 16 to 20 years of teaching experience have the highest mean scores ($M = 24.06, SD = 5.26$). Teachers who have 6 to 10 years of teaching experience have mean scores of 23.24 ($SD = 5.84$). This is followed by teachers who have 11 to 15 ($M = 22.95, SD = 6.11$) and 21 and above ($M = 22.61, SD = 5.26$) years of teaching experience. Likewise, ANOVA test indicates that the overall F is statistically significant, $F(382) = 8.05$, $p < .00$. The results have a 95% CI for each group mean. In addition, all possible pairwise comparisons by Scheffe’s procedure are performed. The result shows that apart from teachers with less than 5, 6 to 10, and 11 to 15 years of experience, no significant difference is found among all possible comparisons.
teaching pupils with LDs in the regular classroom. The Ghana Education Service (GES) should encourage its teachers to do more instructional adaptation, if the needs of pupils with LDs are to be met in the regular classroom. The study, however, shows that 6% (65) of the sampled teachers (n = 387) have “very good skills” and “adequate” competence in adaptive instruction. Majority (29.5%) of them rather have “poor skills” and “limited competence” in adaptive instructions. This result is not surprising because teachers’ mean scores on the AI Scale (Table 1) indicates that teachers have “limited to moderate” competence in most of the items linked to adaptive instruction. This finding is consistent with studies in Ghana, Vietnam, and Albania, which report that children with LDs often dropout of school because teachers neither adapt instruction to pupils’ needs nor pay attention to them during instruction (Agbenyega & Deku, 2011; Hido & Shehu, 2010; A. A. R. Kuyini, 2013; A. B. Kuyini & Desai, 2008; Mukhopadhyay, Johnson Nenty, & Abosi, 2012; Peters, 2004; SAP, 2011).

Finally, the study is also aimed at examining whether teachers’ competence to teach children with LDs in the regular classroom differ due to their background variables such as gender, class size, school location, and teaching experience. The result shows that with the exception of gender and class sizes, teachers’ competence in adaptive instruction differ significantly due to school location, experience, and level education and training.

School Location

The result reveals that locations of schools (urban or rural) increasingly have some influences on teachers’ competence in adapting instruction for pupils with LDs in the regular classroom. The results of t-test, t=4.73(385), p < .00, suggest that there is a significant difference between the competence level of urban teachers and that of the rural teachers. The result presages that the rural school teachers were more unlikely to have reasonable competence in meeting the needs of pupils with LDs in regular classrooms than their colleagues in the urban centers due to urban-rural dichotomy. A combination of factors might be responsible for the differences. First, GNAT & TEWU of Ghana Trades Union Congress (2009) finds that teachers in the rural and semi-urban areas live under hard economic and social conditions. For example, they lack clinics, portable drinking water, electricity, and good roads. In addition, teachers and learners often overwork themselves by commuting long distances to schools. Under unfavorable weather condition, they often skip or report to school late for reasons of distance and lack of effective supervision. In addition, rural teachers often teach more than one class because most schools are understaffed and lacked trained teachers and basic facilities. Without a doubt, the combined effects of rural issues are likely to have some effects on rural teachers’ competence in preparing for instruction, let alone adapting instruction to meet the needs of pupils with LDs, especially in an over-crowded regular classroom. Under such conditions, rural teachers are more unlikely to have adequate competence to teach effectively than their colleagues in the urban centers. As a consequence, it is the poor rural child who suffers. The suffering becomes worse if the child has LDs.

Gender and Class Size

Interestingly, there is no significant difference found between female and male teachers’ competence level in adapting instruction to meet the needs of pupils with LDs in the regular classroom (0.35 [−1.24, 1.94], p = .66). Similarly, the result of the study shows that there is no significant difference between the competence level of teachers teaching large (more than 45 pupils) and that of teachers teaching small (less than 45 pupils) classes. This result implies that the two background variables (gender and class size) do not have any influence on teachers’ competence in adapting instruction to teach children with LDs in the regular classrooms.

Although the study finds no significant differences between competence level of teachers in large and small class sizes, teaching a class with high population is often associated with difficulties to manage. In the urban and semi-urban schools, for instance, the population of pupils in one of the classes was as high as 138 pupils with a single teacher responsible for teaching, marking exercises, and attendance register. In such a class, teachers are bound to face challenges in terms of gaining and maintaining pupils’ attention, effective monitoring and assessment of pupils’ progress during teaching, and effective class control. Under such circumstances, teachers are likely not to teach adaptively due to the population in the class. This finding points to the fact that large class size has tremendous effects on the inclusion of children with LDs. In the same way, A. B. Kuyini and Desai (2008) reveal that teachers teaching in large class sizes find teaching challenging given the fact that there are no teacher assistants or peripatetic teachers to assist the regular class teacher in the classroom. That problem becomes complicated in a situation where there are limited resources and TLM. Clearly, with the issues raised above, teachers may find it difficult to support children experiencing difficulties in the regular classroom.

This finding notwithstanding, there are few studies that find large class size teaching useful. For instance, O’Sullivan (2006) finds that large class size teaching is not perfect but good. That it only becomes extremely difficult when teachers have to handle extremely large class sizes coupled with infrastructural problems and lack of TLM, as well as high teacher attrition. In addition, results of recent studies on inclusion of pupils with LDs find that teachers are frustrated
by extra workload and time constrains created by the large class sizes. Teachers are not only unable to adapt learning materials effectively or use differentiated instructions and peer-assisted teaching techniques but are also unable to interact effectively with learners in large class sizes. As a result, teaching in large class sizes exacerbates the already tense situation and makes it hard for teachers to meet the needs of all learners in the regular classroom (A. A. R. Kuyini, 2013; Mukhopadhyay et al., 2012). Although the United Nations Educational, Scientific and Cultural Organization’s (UNESCO, 2006) offers a holistic approach and practical guidelines for teaching large class sizes, the question is how many teachers in developing countries have access to this information.

All arguments notwithstanding, the results of this study indicate that large class sizes have some kind of influence on teachers’ pedagogical competence in adapting instruction for children with LDs in large class sizes (A. A. R. Kuyini, 2013; Mukhopadhyay et al., 2012). This study, then suggests that despite the benefits large class sizes may have as O’Sullivan (2006) contents, they have some deleterious effects on teacher’s pedagogical competence in including pupils with LDs in the regular classroom (Abosi, 2007; Mukhopadhyay et al., 2012; UNESCO, 2006).

**Experience**

In terms of teaching experience, the result of the study indicates that there is a significant difference between the competence level of teachers who have 11 and above years of teaching experience and that of teachers who do not have such experience, $F(382) = 8.05$, and $p < .00$. Collectively, the finding suggests that teachers with many years of teaching experience are more likely to have competence in addressing the needs of pupils with LDs in the regular classroom than inexperienced teachers. This means that teaching experience plays a crucial role in the effective teaching of pupils with LDs in the regular classroom.

The finding is also congruent with Mukhopadhyay et al. (2012). They find that teachers who have no teaching experience and no training in inclusive teaching practices encounter difficulties to manage learners with disabilities in the regular classroom in Botswana. In view of the challenges teachers experienced in using inclusive teaching practices, there is the need for the GoG to re-examine the pedagogical competences of trained and the untrained teachers in the regular classroom. Similar concerns have been reiterated by the European Agency for Development in Special Needs Education for other European countries (Watkins & Meijer, 2010). For instance, Watkins and Meijer, (2010) contend that if the goal of inclusive education is to be achieved, teachers need to be trained in inclusive teaching practices that incorporate adaptive instructional strategies, corporative learning strategies, collaborative problem solving, and heterogeneous grouping techniques.

**Conclusion and Recommendations**

The main objective of the study is to examine teachers’ pedagogical competencies in adapting instruction to meet the needs of children with LDs in the regular classroom in Ghana. The results of the study show that regular teachers have limited to moderate competence in adaptive instruction. However, teachers need to have adequate competence in adaptive instruction to be able to address the growing needs of children with LDs in the regular classroom setting. In addition, the study indicates that an adaptive instruction is an important competence domain for any effective inclusion of pupils with LDs in the regular classroom. Furthermore, it is concluded that teachers’ background variables have some sort of impact on their capacity to adapt instruction to meet the needs of children with LDs in the regular classroom. For instance, the study reveals that school location, teachers’ teaching experience, educational level, and training in inclusive education have tremendous influence on teachers’ competence in adapting instruction for children with LDs in the regular classroom in Ghana.

**Recommendations**

To enhance the competence level of teachers in adaptive instruction to address the needs of children with LDs in the regular classroom, the GES needs to organize special training in adaptive instruction for its teachers. In particular, the training should involve teachers in the rural and semi-urban centers. In addition, this type of training should favor both genders because there is no significant difference between the competence level of female and male teachers. And such training should include the following components of adaptive instructions (Lee & Park, 2008):

a. Macro-level adaptive instruction. Teachers should be trained to develop skills in using or setting up alternative instructional goals; adapting curriculum content and delivery systems to accommodate the needs of children with LDs in the regular classroom.

b. Specific instructional procedures and strategies. Teachers should be trained in how to use specific instructional procedures that are suitable for some specific student’s characteristics. This component of instructional adaptation requires training in how to identify relevant learner characteristics (or aptitudes)
for instruction and the selection of instructional strategies that best suit the learning process of students with those characteristics. It is based on aptitude–treatment interaction (ATI).

c. Micro-level instructional adaptation. Teachers should also be trained to develop skills in how to diagnose students’ specific learning needs during instruction and how to provide instructional prescriptions for such needs concurrently. For instance, knowledge of and skill in intelligent tutoring systems (ITSs) and adaptive hypemedia systems (AHSs) are common examples of this approach. This approach is capital and resource intensive, and therefore, more resources should be provided in the schools to allow teachers and pupils to benefit from these sorts of teaching approaches.

d. Adaptive pedagogical approaches. Teachers should be trained in special education proven pedagogical approaches that blend constructivist and instructivist approaches to teaching such as child-centered and explicit instructions (Lee & Park, 2008; Westwood, 1997).

Appendix A

Section A

Demographic information

Instructions: Please provide or tick [✓] a response that best describes your background.

1. Gender: Female [ ] Male [ ]. 2. Age: _________. 3. Class/grade you teach? ________. 4. Class size: _________. 5. School location: urban [ ] rural [ ]. 6. Is your school public or private? Public [ ] private [ ]. 7. Experience: __________________________ 8. Please circle your current qualification:
   a. SSS, “O” Levels/ “A” Levels
   b. 4-year teachers’ Cert “A”
   c. 3-Post Secondary teachers’ Cert “A”
   d. Diploma
   e. Degree
   f. Masters
   g. Others, please specify __________________________
9. Do you have any training in special education/inclusive education? Yes [ ] No [ ]
10. If yes, in what specialty:
   a. Learning Difficulties/Disabilities (LDs; slow learners)
   b. Mental retardation
   c. Visual impairment
   d. Hearing impairment
   e. Others, please specify __________________________
11. Do you have experience in teaching pupils with LDs? Yes [ ] No [ ]

Section B

Competence in adapting instruction for pupils with LDs

1. By using a scale of 1 to 3, please show your competence level in adaptive instruction.

| Key competencies | Limited competence 1 | Moderate competence 2 | Adequate competence 3 |
|------------------|----------------------|-----------------------|-----------------------|
| Adaptive instruction |                       |                       |                       |

2. By using a scale of 1 to 3, please show your skills level in adapting instruction for children with LDs in your class:

| Key skills | Poor skills 1 | Good skills 2 | Very good skills 3 |
|------------|---------------|---------------|-------------------|
| Adaptive instruction |             |               |                   |
Section C

Competency scale for classroom teachers

Instructions: Please circle one of the numbers on the far right of the table that best corresponds to your opinion about the current level of your competency in adapting instruction for pupils with learning difficulties in your school.

| Competency | No competency | Limited competency | Moderate competency | Adequate competency |
|------------|---------------|--------------------|---------------------|-------------------|
| Scale (figure) | 1 | 2 | 3 | 4 |

| No. | COMPETENCY IN ADAPTIVE INSTRUCTION | Level of competency |
|-----|------------------------------------|---------------------|
| 1   | Adjusting learning task for pupils with LDs | 1 2 3 4 |
| 2   | Gaining and maintaining pupils’ attention during lesson | 1 2 3 4 |
| 3   | Creating opportunities for pupils to demonstrate their ability | 1 2 3 4 |
| 4   | Teaching pupils with LDs learning strategies | 1 2 3 4 |
| 5   | Using positive reinforcement effectively during lessons | 1 2 3 4 |
| 6   | Pacing lesson for pupils with LDs in regular classroom | 1 2 3 4 |
| 7   | Providing immediate and explicit feedback during lessons | 1 2 3 4 |
| 8   | Willingness to give enough time for pupils with LDs to complete task | 1 2 3 4 |
| 9   | Providing relevant examples during lessons | 1 2 3 4 |

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