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INFLUENCE OF TEACHERS' GENDER AND AGE ON THE INTEGRATION OF COMPUTER ASSISTED INSTRUCTION IN TEACHING AND LEARNING OF SOCIAL STUDIES AMONG BASIC SCHOOLS IN TAMALE METROPOLIS

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ABSTRACT: *This study was conducted in Tamale Metropolis to explore the influence of teachers' variables (gender and age) on the level of integration of Computer Assisted Instruction (CAI) in the teaching and learning of Social Studies. Three research questions and two hypothesis were formulated to guide the study. Quantitative research design was employed for the study. Data for the research was collected from 20 Junior High Schools randomly sampled from Tamale Metropolis using Krejcie & Morgan table for sample size determination. Data was collected by means of structured questionnaires administered to 60 Social Studies teachers from the 20 sampled schools. The questionnaire was designed with a 5-point Likert scale using closed ended questions. The questionnaire was pre-tested in a pilot study to guarantee its reliability using Cronbach's Alpha coefficient formula. It yielded an alpha of .78 which was good and was applied for the study. Data was analyzed using descriptive and inferential statistics. Frequencies were used to analyze data on teachers' perceptions on the integration of CAI, extent of integration and challenges encountered. Chi-square was used to test the hypothesis to determine whether there is a significant difference between male and female teachers and young and old teachers' implementation of CAI in teaching and learning of Social Studies. The findings discovered most teachers have positive attitude towards the integration of CAI in teaching and learning of Social Studies. Some of the teachers also incorporate CAI into their Social Studies instructions. However, the Social Studies teachers encounter a number of challenges such as limited number of computers, lack of time, lack of technical support, lack of internet among others. It was also discovered that more male teachers use video and radio in their instructions than their females' counterparts. Old teachers also integrate video and radio in their lessons than the younger ones. However, generally, there was no significant difference between old and young teachers' application of CAI in Social Studies teaching and learning. Based on the findings, it has been recommended that there should be periodic training of teachers on how to incorporate CAI in their lessons, reform of teacher training curriculum to allow technology integration, and supplying of laptops to teachers and students to enable them effectively incorporate CAI in their lessons to improve students learning outcomes. Government of Ghana in partnership with private sector and NGOs should design and implement intervention to eliminate all barriers to integration of CAI in all schools.*

KEYWORDS: Social Studies, Computer Assisted Instruction, Gender, Digital Literacy, Constructivist, Computer Based Learning, Teacher Professional Development, Policy, Pedagogy, and Hypothesis.

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INTRODUCTION

The Government of Ghana introduced Information and Communication Technology for Accelerated Development (ICT4AD) policy in the latter part of 2003. The overall aim of ICT4AD was to engineer an ICT-led socioeconomic development process with the potential to transform Ghana into a middle income, knowledge-based, information-rich, and technology-driven society (Government of Ghana, 2003). The ICT4AD policy has 14 main objectives of which promoting ICT in education is the 2nd objective, which emphasizes "the deployment and exploitation of ICTs in education". As a result, the Ministry of Education launched the ICT in Education Policy in 2008 as a way of addressing the ICT needs in education. In line with this policy, the Basic School Computerization policy was launched in 2011 to introduce computers and e-learning into the entire education system. The inclusion of ICTs into education was aimed at helping students to acquire basic ICT literacy, develop interest and use ICT tools in learning other subjects, and the capacity to use the Internet to communicate effectively and efficiently. As a result, in 2012, the Ministry of Education through rLG introduced the "teacher laptop and ICT project" where teachers were trained in ICT and supplied with laptops to support in research, teaching and learning across a variety of subject areas including Social Studies. The use of Computer Assisted Instruction (CAI) for learning and teaching is critical because it guarantees unrestricted access to relevant information and development in subject areas as well as the provision of efficient and effective resources to take care of students' individual differences including learners with special needs. CAI can help bring about collaborative learning, offer opportunity for differentiated instruction, and enable learners assess their own learning. This will effectively prepare them for future. After all, Technical-function theory of education postulated that skills required to function on the job market are constantly increasing and changing owing to technological changes. Proportion of jobs which require low skills are decreasing while the proportion of jobs that require high skills keep increasing. Majority of children who enrolled in primary schools in 2018 will work in occupations that do not yet exist (World Bank, 2019). We need to prepare our learners to acquire higher thinking skills to enable them become functional and globally competitive in this 21st century and beyond. CAI has potentials of helping learners acquire the 21st century skills such as critical thinking, creativity, digital literacy, communication and team work which are very critical in Social Studies education. Harris (1996) cited in Omariba (2018) observes that "Information Age citizens must learn not only how to access information, but more importantly how to manage, analyze, critique, cross-reference, and transform it into usable knowledge". Kelman (1989) identifies higher-order thinking skills as one of the instructional areas that could be improved by integrating ICTs. However, Salomon (1990) cited in Omariba (2018) observes that for the computer to be an effective classroom tool, "everything in the classroom needs to be technologically-enhanced in a way that makes curriculum, learning activities, teacher's behavior, social interactions, learning goals, and evaluation interwoven into a whole newly orchestrated learning environment". Higgins, and Allred (2011) conducted a quantitative quasi-experimental study to investigate the effects of computer educational games on middle school students' attitudes towards mathematics, mathematics self- efficacy, and mathematics achievement in USA. The students participated in 16 weeks of game intervention that included one session of game play per week. The analysis of covariance (ANCOVA) discovered significant and positive transformation in student attitudes towards mathematics and mathematics self-efficacy. In agreement, Baker conducted a quantitative study examining the correlation between computer intelligent tutoring system, class works, and student achievement on the state standardized Criterion Referenced Competency Test (CRCT). Data from 200 third grade CRCT scores, quizzes, and universal screener scores were collected.

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A multiple regression stepwise analysis was used to determine a correlation between variables. The students' quiz scores showed the strongest correlation to achievement on the state standardized test (Cannon, 2017:36). In Kenya, Julius (2018) carried out a quasi-experimental research on impact of Computer Assisted Instructions (CAI) on Kenyan secondary school students' performance in Chemistry. Findings discovered that students who were taught with CAI method achieved higher Chemistry scores than those students who were taught with Conventional Methods of Instruction (CMI). Similarly, Atta (2015) carried out a study in Ghana at Kasoa to determine the impact of Computer Based Instruction on basic schools students' performance. Findings revealed that students who were taught with CBI scored higher marks than those who received traditional method of teaching. However, the literature on the extent of integration of CAI in teaching and learning of Social Studies in basic schools in Tamale is relatively scarce. Again, there was a gap on the literature as to whether teachers' variables such as gender and age significantly influences their level of integration of Computer Assisted Instruction in teaching and learning of Social Studies. The literature again was silent on teachers' perceptions on CAI as tools for teaching and learning. It was against this background that this study was conducted to explore Social Studies teachers' perceptions towards CAIs as tools for teaching and learning, the extent to which the teachers incorporate CAI resources into their instructions, challenges encountered, and whether the level of integration is significantly influenced by gender and age.

Research Questions

This research was guided by the following questions.

i) What is the perception of Social Studies teachers' on the integration of Computer Assisted Instruction in teaching and learning?

ii) To what extent do Social Studies teachers integrate Computer Assisted Instructions into their teaching and learning in classrooms?

iii) What challenges do teachers encounter in integrating Computer Assisted Instruction in the teaching and learning of Social Studies?

Hypothesis

The following hypothesis were formulated to guide the study:

Ho_1: There is no significant difference between male and female teachers' use of Computer Assisted Instruction during teaching and learning of Social Studies.

Ho_2: There is no significant difference between young and old teachers' integration of Computer Assisted Instruction in teaching and learning of Social Studies.

LITERATURE REVIEW

A Theoretical Framework of the Study

The study was grounded on the constructivist theory of learning (Buttlet, 1932). In a constructivist learning environment, the role of the teacher shifts from being the source of knowledge to facilitating learning. Khine (2003) opines that in learning situation, students

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should not be left to explore alone but teachers should provide support, coaching and modeling the students to make certain learning takes place. Unlike the teacher-centred pedagogy where teachers impart knowledge to students, "knowledge for constructivism cannot be imposed or transferred intact from one knower to the mind of others (Kargiorgi & Symeou, 2005). Constructivists believe that learners construct their own knowledge or at least interpret it based on their own experiences. Therefore, an individual's knowledge is a function of one's prior experiences, mental structures and beliefs that are used to interpret objects, issues and events. The Constructivists postulate that: i) Knowledge is constructed from experience, therefore, instructional media such as Computer Assisted Instruction must be used to provide rich interactive environment for the student to construct knowledge based on their experiences; ii) Learning is a personal interpretation of the world; hence individual differences must be considered when designing Computer Assisted Instructions so as to reach varied learning styles of students; iii) Learning should be situated in a realistic settings; assessment should be integrated with the activities and not a separate task; iv) Effective teaching employs a variety of learning strategies. This calls for the use of instructional materials including Computer Assisted Instruction with inclusive pedagogy to support students learning; v) Learning is enhanced by challenge and inhibited by threats. The classroom environment should be challenging but not threatening to students. The presence of a cane even when used as a pointer can undermine effective learning in class. CAI such as computer games, computer intelligent tutorials, video lessons, PowerPoint presentation with animation and the like offer challenging and rich environment to the child to think critically and to find solutions to problems. Social Studies aim at training the child to develop the ability to think critically and creatively to find solutions to personal and societal problems. The nature of the learning environment in Social Studies instructions contributes to the kinds of attitudes held by learners toward Social Studies. Hence, changes to the learning environment can improve students' attitudes towards the subject.

Rational for the Inclusion of Social Studies into Junior High School Curriculum in Ghana

Social Studies at the Junior High School in Ghana is an issue based or problem solving subject. Social Studies is the study of problems in society. The subject is a multi-disciplinary because it takes its sources from the various Social Sciences such as Geography, History, Economics, Government, Sociology, and Civic Education. Critical elements of relevant knowledge, principles, and theories from these disciplines are used to explain issues and to find solutions to contemporary problems of human survival in society. According to the teaching Syllabus for Social Studies for Junior High Schools in Ghana (2007), the objectives of teaching the subject at that level are seven (7). The syllabus is designed to help the pupil to:

i. Understand the interrelationships between the social and physical environment and their impact on the development of Ghana.

ii. Appreciate the impact of history on current and future development efforts of the country.

iii. Appreciate the various components of the environment and how these could be maintained to ensure sustainable development.

iv. Recognize the major challenges facing Ghana and be able to develop basic knowledge and skills for dealing with such challenges.

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v. Understand the dynamics of development in the world and their impact on the development of Ghana.

vi. Develop the knowledge, skills and attitudes needed for personal growth, peaceful co-existence, and respect for peoples of other nations.

vii. Develop a sense of national consciousness and national identity.

Currently, the problems of Ghana are many and varied. They include youth unemployment, cybercrime, youth indiscipline, political vigilantism, high rate of illegal mining, poor disposal of liquid and solid waste in towns and cities, open defecation, depletion of forest resources, political intolerance, corruption, nepotism, poor quality education, winner takes all syndrome among others. Social Studies is a unique subject in the school curriculum because it is the only subject that exposes learners to these problems of human survival in Ghanaian society. Learners are then equipped with relevant knowledge, skills and desirable attitudes and values to deal with such challenges. The main goal of Social Studies is to promote Citizenship Education among learners by preparing students to be critical, reflective and reasonable in making decisions which affects them and others in society. Social Studies when effectively taught with student-centered inclusive pedagogy that integrate technology has the potential of developing in learners higher order thinking such as analysis, synthesis and evaluation which are vital in this 21st Century. Therefore, Social Studies is needed in Ghanaian pre-tertiary education curriculum now than ever. The recent proposals by some interested parties in the education sector in Ghana to remove Social Studies from the basic and senior high school curriculum will not inure to the benefits of the country and hence should be ignored.

The Concept of ICT Integration

ICT integration is defined by Bruniges (2003) as a strategy to integrate Information and Communications Technology into all facets of education and training, including the administrative functions and e-business as well as methods required to support effective learning. It is the seamless incorporation of technology to support and enhance student engagement in meaningful learning and for the attainment of curriculum objectives (Makoba, & Smulders, 2010). Computer Assisted Instruction (CAI) is an interactive instructional technique whereby a computer is used to present lessons and monitor students learning. CAI applies a combination of text, graphics, sound and video to enhance teaching and learning. Computer has many purposes in the classroom, and can be used to help a Social Studies student in all areas of the curriculum. The purpose of integrating CAI into teaching and learning is to improve and increase the quality, accessibility and cost-efficiency of the delivery of education, while taking advantage of the benefits of networking learning communities together to equip them to face the challenges of global competition. The level of integration of CAI is determined by the interplay between infrastructure, teachers and students' attitudes and perceptions, teacher motivations, innovations and development of e-pedagogies and content. Integration of CAI in teaching and learning of Social Studies is more of a process rather than a product. Technology should be fitted into the Social Studies curriculum not the Social Studies curriculum into the technology. Therefore, effective integration of CAI should focus on pedagogy design by justifying how the technology is used in such a way and why. Effective integration of CAI into teaching and learning process has the potential to engage Social Studies learners in meaningful and active learning. Additionally, CAI can support various types of interactions in Social Studies learning environment: learner – content, learner- learner, learner-teacher and learner-interface. These types of interactions make the learning process more

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interactive and learners more active and engaged (Wong et al, 2006). Empirical studies discovered that the'' Information Age" has made the development of problem solving, critical thinking, and higher-order thinking skills crucial to future success (Fontana, Dede, White, & Cates, 1993; Morgan, 1996; Norris & Poirot, 1990; Ramirez & Bell, 1994). Therefore, teaching and learning activities and experiences that engage Social Studies students at higher levels of the Bloom's Taxonomy (analysis, synthesis, evaluation) need to become a common practice in Social Studies learning environment and should be supported.

Teachers' Perceptions on the Integration of CAI in Teaching and Learning Process

Teachers' attitude towards CAI and their perceptions of CAI effectiveness plays a significant role in their making use of the technology in their teaching and assessment activities in classrooms. Studies conducted in Europe (Huang & Liaw, 2005; Korte & Hüsing, 2007; Becta, 2008) discovered conflicting perceptions of teachers towards effectiveness of CAI in making teaching and learning interesting and classroom constructivists teaching and learning places. There were some teachers who believed that the use of CAI have had positive impact on students' and their own learning; helped in individualizing learning and also helped in strengthening the link between classroom learning and the real life situations. However, there is evidence in these researches suggesting that some teachers believe that the benefits of technology were not visible in students' performance. A study by van Braak, Tondeur & Valcke (2008) showed that teachers' positive attitude towards new technological innovations would increase their integration in classroom teachings and assessment strategies. Woodrow (1992) recommended a positive attitude towards educational innovation for a successful transformation of educational practices. Onyia & Onyia (2011) conducted a study to determine whether a significant correlation exists between perception of self-efficacy and technology adoption among teachers. The findings revealed a positive correlation between teacher self-efficacy and the integration of technology. As a result, there is the need to address Social Studies teachers concerns and fears as they integrate technology into their classroom instruction to enhance students learning. The results of Al Bataineh (2014) study showed that teachers believe that ICT competency is needed for the implementation of technology in Social Studies classrooms. This calls for capacity building of teachers to enable them implement CAI in teaching and learning to improve students learning.

Challenges Teachers Encounter when Integrating CAI into their Lessons

Hakkarien, (2001) analyzed the relations between teachers' skills in using the new technologies; their pedagogical thinking and their self-reported practices. The results indicated that only a small percentage of teachers had adequate technical ICT skills. In agreement, Veen, (1993) suggested that lack of initial training of teachers was a serious obstacle to ICT implementation. Rose and Weil, (1995) reports that lack of time required to successfully integrate CAI into their curriculum as a major obstacle in integration in ICT teaching and learning. According to Becta (2004), the inaccessibility of ICT resources is not always merely due to the non-availability of the hardware and software or other digital infrastructure within the school. It may be the result of one of a number of factors such as poor resource organization, poor quality hardware, inappropriate software, or lack of personal access for teachers (Becta, 2004). Pelgrum (2001) explored teachers' views from 26 countries on the main obstacles to implementation of CAI in schools. He concluded that four of the top ten barriers were related to the accessibility of ICT tools. These barriers were insufficient number of computers, insufficient peripherals, insufficient numbers of copies of software, and insufficient immediate

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Internet access. Similarly, Toprakci (2006) discovered that low numbers of computers, oldness or slowness of ICT systems, and scarcity of educational software in schools were barriers to the successful ICT implementation in Turkish schools. By implication digital infrastructure should exist in schools to support the implantation of CAI in teaching and learning. In agreement, Beggs (2000) noted that one of the top three barriers to teachers' use of ICT in teaching was the lack of training. Recent research in Turkey found that the main problem with implementing new ICT in education was the insufficient amount of in-service training for teachers. Özden (2007) and Toprakci (2006) concluded that limited teacher training in ICT use in Turkish schools is an obstacle. The issue of Teachers Professional Development is certainly complex because it is important to consider several components to ensure training effectiveness. These were time for training, pedagogical training, skills training, and an ICT use in initial teacher training. Recent study by Gomes (2005) relating to various subjects concluded that lack of training in digital literacy, lack of pedagogical and didactic training in how to use ICT in the classroom and lack of training concerning technology use in specific subject areas were obstacles to using new technologies in classroom practice. These are challenges after all may not entirely be different from Ghanaian context. For technology to be an amplifier in the classroom teaching and learning, teachers need the skills on how to design and implement the learning experience. If you are working with teachers who have only used rote learning techniques, they need to be exposed to and trained in new pedagogies which empower them to be creative, flexible and adaptable to meet the varying learning needs of their students. Good Teacher Professional Development equips teachers with the skills to design their own instructions, be creative with technology, reflective on their facilitation techniques, and leverage the interests of their students while at the same time meeting learning outcomes.

Gender and ICT Integration

The human rights based, technical and social implications brought by ICTs are not gender neutral. Existing power relations in society determine who benefits from and shapes the content, development and use of ICTs. Human rights, including women's rights, are as important online as they are offline. If gender dimensions of ICT are identified and addressed, technology can be a powerful catalyst for political and social empowerment of women and girls, and a tool to promote gender equality. Gender equality is achieved when women and men, girls and boys, have same rights, life opportunities and prospects, and the power to shape their own lives and contribute to society progress and development. However, Russel and Bradley (1997) reported a correlation between gender and levels of computer anxiety, in which female teachers reported a greater degree of anxiety than male teachers. The study revealed that there are gender differences in term of ICT knowledge, skills, and ICT applications. This is probably due to the fact that male teachers have a better attitude towards ICT than females. Previous studies discovered that females have negative attitude towards the use of ICT causes gender differences in this case (Schofield 1995). This might be as a result of lack of effective use of ICT among female teachers which is caused by work load and self-confidence in using ICT (Volman & Eck, 2001). In contrast to males, their attitude and self-confidence in using ICT are stronger which in return help them in enhancing the ICT knowledge and skills to be more effective in applying ICT in teaching and learning process. Janssen, Reinen & Plomp (1993) found that male teachers in secondary schools have higher self-confidence towards computers than females. In addition, the study also found that female teachers have lower knowledge and skills when compared to male teachers. Robertson et al. (1995) also found that male teachers consider themselves to be more efficient and have greater skills than their female counterparts. On the whole, it can be concluded that the ability of female teachers to incorporate

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ICT in their lessons as compare to males is greatly influenced by their level of confidence in using the CAI, access to computers and level of their computer skills and competences.

METHODOLOGY

This study was quantitative in nature which employed correlational study design which allowed the realization of an in-depth investigation of the study constructs. There are 86 Junior High Schools as at the time data was collected. 20 Junior High Schools (representing 23.25%) were randomly sampled for the study. Hut lottery technique was used to select the 20 schools. The study used convenience and purposive sampling technique to sample 60 Social Studies teachers from 20 sampled schools in the metropolis to participate in the study. Questionnaire was the main instrument used for data collection. The questionnaires were designed with closed ended questions. The questionnaire was pre-tested in a pilot study to ensure its reliability using Cronbarch's Alpha Formula. It yielded an Alpha of .78 which was good and was applied for the study. The data obtained from the field was prepared, edited to guarantee fullness, unambiguousness and reliability, and coded according to research questions for analysis. Both descriptive and inferential statistics were used to analyze the data with the support of Statistical Package for the Social Sciences (SPSS) version 21 for windows. Frequencies were used to analyze the data on Social Studies teachers' perceptions on CAI as tools for teaching and learning, extent of the integration and challenges encountered. Chi-square was used to test the hypothesis to determine if there is a significant differences between male and female teachers, and old and young teachers' integration of Computer Assisted Instruction strategies in the teaching and learning of Social Studies.

PRESENTATION OF RESULTS AND DISCUSSION

Analysis of data for this study was guided by the research questions formulated to guide the study. Data were analyzed using descriptive and inferential statistics. Descriptive statistics (frequencies) were used to analyze data on research question 1, 2 and 3. Inferential statistics (chi-square) was used to test hypothesis 1 and 2. Detials are presented below:

Research Questions 1: What is the perception of Social Studies teachers' on the integration of Computer Assisted Instruction in teaching and learning?

Data on teachers' perception about the integration of CAI in teaching and learning of Social Studies were analyzed from a five point Litkert scale. The results are presented in frequencies and percentages are shown in Table 1.

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Table 1: Teachers Perceptions on Implantation of Computer Assisted Instruction in Teaching and Learning of Social Studies

Integration of ICTs in the Teaching and Learning of Social Studies	SD	D	N	A	SA	Total
CAI offer rich environment within which to create activities for students.	0 (0.0%)	2 (3.3%)	5 (8.3%)	35 (58.3%)	18 (30.0%)	60 (100%)
CAIs are good for teacher lesson preparations and not for classroom teaching.	17 (28.3%)	23 (38.3%)	5 (8.3%)	10 (16.7%)	5 (8.3%)	60 (100%)
CAI provides valuable facilities to support students learning.	0 (0.0%)	2 (3.3%)	2 (3.3%)	32 (53.3%)	24 (40.0%)	60 (100.0%)
CAI helps learners to access authentic and current information in Social Studies.	0 (0.0%)	0 (0.0%)	3 (5.0%)	20 (33.3%)	37 (61.7%)	60 (100.0%)
Integration of CAI makes me more productive and promotes students learning	0 (0.0%)	1 (1.7%)	4 (6.7%)	32 (53.3%)	23 (38.3%	60 (100.0%)
I will like to learn more about ICTs integration in Teaching and learning of Social Studies.	0 (0.0%)	1 (1.7%)	1 (1.7%)	29 (48.3%)	29 (48.3%)	60 (100.0%)
ICTs integration is cumbersome and delays my syllabus coverage	13 (21.7%)	24 (40%)	9 (15%)	11 (18.3%)	3 (5%)	60 (100.0%)
I am unable to Integrate ICTs into my teaching because of lack of ICTs facilities in my school.	1 (1.7%)	6 (10%)	5 (8.3%)	28 (46.7%)	20 (33.3%)	60 (100.0%)
Integrating ICTs is scaring and am reluctant to adopt	18 (30%)	29 (48.3%)	2 (3.3%)	8 (13.3%)	3 (5%)	60 (100.0%)
Integration of ICTs helps learners acquire critical thinking, creativity and collaboration.	2 (3.3%)	1 (1.7%)	1 (1.7%)	33 (55%)	23 (38.3%)	60 (100.0%)

Source: Field Survey (2019)

Different responses were recorded on statement that Computer Assisted Instruction (CAI) offer rich environment within which to create activities for students. From Table 1, 58.3% agreed to the statement while 30% strongly agreed. This implies majority of the respondents have at least agreed on the fact that Computer Assisted Instruction offers them rich environment within which to create activities for students. CAIs are good for teacher lesson preparations and not for classroom teaching, 28.3% strongly disagree, 38.3% disagree, 8.3% Neutral, 16.7% agree

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and 8.3% strongly agree with the statement. This implies that majority of the teachers disagree with the statement. CAI provides valuable facilities to support students learning, 3.3% disagree, 53.3% agree and 40.0% strongly agree. This implies that majority of the teachers (93.3%) agree with the statement that CAI provides valuable facilities to support students learning. CAI helps learners to access authentic and current information in Social Studies, 0.0% disagree where as 33.3% agree and 61.7% strongly agree. Integration of CAI makes me more productive and promotes students learning, 1.7% of the teachers disagree, 6.7% neutral, 53.3% agree and 38.3% strongly agree. By implication, majority of the teachers agreed to that statement. I will like to learn more about ICTs integration in Teaching and learning of Social Studies, 1.7% disagree, 1.7% neutral, 48.3% agree and 48.3% strongly agree. ICTs integration is cumbersome and delays my syllabus coverage, 21.7% strongly disagree, 40% disagree, 15% neutral, 18.3% agree and 5% strongly agree. I am unable to Integrate ICTs into my teaching because of lack of ICTs facilities in my school, 1.7% strongly disagree, 10% disagree, 8.3% neutral, 46.7% agree and 33.3% strongly agree. This means lack of access to ICT tools is one of the barriers to the integration of ICT in teaching and learning. This confirms study by Pelgrum (2001) explored practitioners' views from 26 countries on the main obstacles to ICT implementation in schools. He concluded that four of the top ten barriers were related to the accessibility of ICT. These barriers were insufficient unit of computers, insufficient peripherals, insufficient numbers of copies of software, and insufficient immediate Internet access. Integrating ICTs is scaring and am reluctant to adopt, 30% strongly disagree, 48.3% disagree, 3.3% neutral and 5% strongly agree. Finally, Integration of ICTs helps learners acquire critical thinking, creativity and collaboration, 3.3% strongly disagree, 1.7% disagree, 1.7% neutral, 55%agree and 38.3% strongly agree. This implies that majority (93.3%) of the teachers agreed to the statement that integration of ICT helps learners to acquire critical thinking, creativity and collaboration. Above data indicates that Social Studies teachers have positive attitude towards the integration of CAI in teaching and learning. However, there are some challenges that needs to be addressed.

Research Question 2: To what extent do Social Studies teachers integrate Computer Assisted Instructions in teaching and learning in classrooms?

This was measured by the frequency of use of different CAI strategies for carrying out teaching and learning in Social Studies. Informants were requested to indicate the frequencies based on a five point Likert scale with the choices: Not at all (1), Less Used (2), Rarely Used (3), Moderately Used (4) and Mostly Used (5). The Likert scale scores are summarized in Table 2 below:

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Table 2: Extent to which Teachers Integrate Computer Assisted Instruction in Social Studies Instruction

ICT Tools	Not at all	Less Used	Rarely used	Moderately Used	Mostly Used	Total
Uses video and DVDs during teaching of Social Studies	14 (23.3%)	15 (25.0%)	10 (16.7%)	16 (26.7%)	5 (8.3%)	60 (100%)
Use of Radio to support students learning	34 (56.7%)	13 (21.7%)	9 (15%)	3 (5%)	1 (1.7%)	60 (100%)
Use Spreadsheet to plot a graph during teaching and learning of Social Studies	33 (55%)	7 (11.7%)	5 (8.3%)	10 (16.7%)	5 (8.3%)	60 (100%)
Downloading images from YouTube and using them during teaching	18 (30%)	15 (25%)	8 (13.3%)	13 (21.7%)	6 (10%)	60 (100%)
Use of PowerPoint presentation during teaching and learning process	37 (61.7%)	7 (11.7%)	5 (8.3%)	7 (11.7%)	4 (6.7%)	60 (100%)
Use of computer games to in supporting students learning	34 (56.7%)	15 (25%)	4 (6.7%)	4 (6.7%)	3 (5%)	60 (100%)
Use of Smart Boards during teaching process	23 (38.3%)	11 (18.3%)	5 (8.3%)	12 (20%)	9 (15%)	60 (100%)
Adding video clip to power point during instructions	39 (65%)	9 (15%)	4 (6.7%)	7 (11.7%)	1 (1.7%)	60 (100%)
Use of WhatsApp to create a platform for learning concepts in Social Studies	37 (61.7%)	7 (11.7%)	3 (5.0%)	8 (13.3%)	5 (8.3%)	60 (100%)
Use of mobile phones to support students learning	20 (33.3%)	18 (30%)	0 (0.0%)	15 (25%)	7 (11.7%)	60 (100%)

Source: Field Survey (2019)

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From Table 2, Using video and DVDs during teaching of Social Studies, 23.3% answered not all, 25% less used, 16.7% rarely used, 26.7% moderately used and 8.3% mostly used. Despite the fact that an NGO has provided all the participating schools with TV sets and relevant digital content to foster effective implementation of technology in teaching and learning, majority (65%) of the teachers do not use them. More research should be conducted to determine factors responsible for that situation. Use of Radio to support students learning, 56.7% responded not at all, 21.7% less used, 15% rarely used, 5% moderately used and 1.7% mostly used. By implication, majority (78.4%) of Social Studies teachers do not incorporate radio into their instructions. Use of Spreadsheet to plot a graph during teaching and learning of Social Studies, 55% not at all, 11.7% less used, 8.3%, 16.7% moderately used and 8.3% mostly used. Downloading images from YouTube and using them during teaching, 30% responded not at all, 25% less used, 13.3% rarely used, 21.7% moderately used and 10% mostly used. Use of PowerPoint presentation during teaching and learning process, 61.7% responded not at all, 11.7% less used, 8.3% rarely used, 11.7% moderately used and 6.7% mostly used. This implies that majority of Social Studies teachers do not use PowerPoint presentation during their instructions. Use of computer games to in supporting students learning, 56.7% reported not at all, 25% less used, 6.7% rarely used, 6.7% moderately used and 5% mostly used. This means most of the teachers do not use computer games during teaching and learning. Use of Smart Boards during teaching process, 38.3% responded not at all, 18.3% less used, 8.3% rarely used, 20% moderately used and 15% mostly used. Adding video clip to power point during instructions, 65% answered not at all, 15% less used, 6.7% rarely used, 11.7% moderately used and 1.7% mostly used. Use of WhatsApp to create a platform for learning concepts in Social Studies, 61.7% reported not at all, 11.7% less used, 5% rarely used, 13.3% moderately used and 8.3% mostly used. Finally, Use of mobile phones to support students learning, 33.3% answered not at all, 30% less used, 25% moderately used, 11.7% mostly used.

Testing of Hypothesis

Ho_1: There is no significant difference between male and female teachers' use Computer Assisted Instruction during teaching and learning of Social Studies

Further analysis was done to find out whether there was a significant difference between male and female teachers use of Computer Assisted Instruction during Social Studies instruction using the chi-square test. The results as shown in Table 3 indicate that the use of video and DVDs in instruction, and the use of radio shows a significant difference between male and female teachers at 10% (P-value < 0.1). This implies male teachers use video and radio during teaching and learning than females. Other Computer Assisted Instructions strategies as shown in Table 3 were found not to be significant at 10% (P-values > 0.1). This implies that the hypothesis has been accepted.

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Table 3: Chi-Square Test of Gender Differences and Integration of CAI

CAI	Gender	Level of Integration of Computer Assisted Instruction					Total	Chi-square	P-Value
		Not at all	Less used	Rarely used	Moderately used	Mostly used			
Using video and DVDs	Male	4	11	7	10	4	36		
	Female	10	4	3	6	1	24		
	Total	14	15	10	16	5	60	8.16	0.086 *
Use of radio	Male	17	8	8	3	0	36		
	Female	17	5	1	0	1	24		
	Total	34	13	9	3	1	60	8.05	0.089 *
Use of Spread sheet	Male	21	3	3	6	3	36		
	Female	12	4	2	4	2	24		
	Total	33	7	5	10	5	60	1.03	0.90
Use of Power Point	Male	23	2	4	4	3	36		
	Female	14	5	1	3	1	24		
	Total	37	7	5	7	4	60	4.18	0.38
Use of computer games	Male	20	9	1	4	2	36		
	Female	14	6	3	0	1	24		
	Total	34	15	4	4	3	60	4.78	0.310
Use of mobile phones	Male	8	14	0	9	5	36		
	Female	12	4	0	6	2	24		
	Total	20	18	0	15	7	60	6.08	0.108

Source: Field Survey (2019)

The results (frequencies) indicate that male teachers use of Computer Assisted Instruction such as video and radio during their instructional processes than their female counterparts. This confirms the conclusion by Jamieson-Proctor, Burnett, Finger and Watson (2006) whose study on ICT application in schools in Queensland State concluded that male teachers incorporate technology in their instructions than their female counterparts. This could be blamed on lack of access to ICT tools and facilities by females compare to males. On the other hand, the use of spreadsheet, use of PowerPoint, use of computer games, and use of mobile phones showed no significant difference between male and female teachers. Therefore, the hypothesis has been accepted.

Ho_2 There is no significant difference between young and old teachers' integration of Computer Assisted Instruction in teaching and learning of Social Studies

Analysis was done to determine whether integration of Computer Assisted Instruction is independent on teachers' age using the chi-square test of independence. Table 4 give further illustration of the results. Old teachers integrate video and radio in their instructions than their younger counterparts. The results as shown in Table 4 indicate that the use of video and DVD in instruction, and the use of radio in instruction shows a significant difference between young

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and old teachers at 10% (P-value < 0.1). This implies that Other Computer Assisted Instructions as shown in Table 3 were found not to be significant at 10% (P-values > 0.1).

Table 4: Chi-Square Test of Age Differences and Integration of CAI

CAI	Age	Level of Integration of Computer Assisted Instruction					Total	Chi-square	P-Value
		Not at all	Less used	Rarely used	Moderately used	Mostly used			
Using video and DVDs	Young	7	6	0	4	1	18		
	Old	7	9	10	12	4	42		
	Total	14	15	10	16	5	60	8.09	0.08*
Use of radio	Young	15	2	1	0	0	18		
	Old	19	11	8	3	1	42		
	Total	34	13	9	3	1	60	7.79	0.09*
Use of Spreadsheet	Young	11	2	1	1	3	18		
	Old	22	5	4	9	2	42		
	Total	33	7	5	10	5	60	4.46	0.34
Use of PowerPoint	Young	11	2	2	3	0	18		
	Old	26	5	3	4	4	42		
	Total	37	7	5	7	4	60	2.51	0.64
Use of computer games	Young	10	5	2	1	0	18		
	Old	24	10	2	3	3	42		
	Total	34	15	4	4	3	60	2.18	0.70
Use of mobile phones	Young	8	4	0	4	2	18		
	Old	12	14	0	11	5	42		
	Total	20	18	0	15	7	60	1.55	0.66

*represents significance at 10%.

Source: Field Survey (2019)

By implication, the hypothesis has been accepted. This contradicts findings from Paul (2015) whose study concluded that teacher's age negatively affected technology integration with younger teachers integrating ICT more often that old teachers.

Research Question 3: What challenges do teachers face in integrating Computer Assisted Instruction in teaching and learning of Social Studies?

This data were measured by the frequency on challenges teachers encounter when incorporating CAI in teaching and learning in Social Studies. Social Studies teachers were requested to indicate the frequency based on a five point Likert scale with the choices: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). The Likert scores are summarized in Table 5 below:

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Table 5: Challenges Teachers Encounter in the Integration of Computer Assisted Instruction in Teaching and Learning of Social Studies

Challenges of Integration of CAI into the Teaching and Learning of Social Studies	SD	D	N	A	SA	Total
Deficient teacher training curriculum.	7 (11.7%)	13 (21.7%)	10 (16.7%)	20 (33.3%)	10 (16.7%)	60 (100%)
Lack of internet in the school.	2 (3.3%)	4 (6.7%)	1 (1.7%)	15 (25%)	38 (63.3%)	60 (100%)
Insufficient number of computers in the school.	0 (0%)	2 (3.3%)	1 (1.7%)	18 (30%)	39 (65%)	60 (100%)
Lack of technical support for teachers.	1 (1.7%)	6 (10%)	4 (6.7%)	26 (43.3%)	23 (38.3%)	60 (100%)
Lack of motivation and confidence in integrating CAI into teaching	3 (5%)	6 (10%)	6 (10%)	32 (53.3%)	13 (21.7%)	60 (100%)
Lack of relevant digital content to support the integration of CAI.	3 (5%)	10 (16.7%)	3 (5%)	28 (46.7%)	16 (26.6%)	60 (100%)
Insufficient time for integration of CAI.	3 (5%)	9 (15%)	3 (5%)	30 (50%)	15 (25%)	60 (100%)
Pressure to prepare students for exams.	8 (13.3%)	22 (36.7%)	9 (15%)	16 (26.7%)	5 (8.3%)	60 (100%)
Lack of teachers interest to integrate CAI in teaching and learning	9 (15%)	19 (31.7%)	8 (13.3%)	19 (31.7%)	5 (8.3%)	60 (100%)
Lack of motivation and support from school management.	7 (11.7%)	13 (21.7%)	5 (8.3%)	24 (40%)	11 (18.3%)	60 (100%)

Source: Field Survey (2019)

From Table 5, for Deficient teacher training curriculum, 33.4% of teachers disagree with the statement, 16.7% neutral and 50% agreed. Lack of internet in the school, 10% disagree, 1.7% neutral and 88.3% agree. This implies that most of the Junior High schools in the Metropolis do not have access to the internet. This confirms the study by Natia and Al-hassan (2015) which concluded that the ability of basic school teachers in Ghana to use computer to teach and research is weak due to lack of access to internet, electricity/power problems, inadequate number of computers and low technical know-how. On the issue of insufficient number of computers in schools, 3.3% disagree, 1.7% neutral and 95% of the respondents agree. This implies that majority of Junior High Schools in Tamale are not connected to internet to support online learning. aLack of technical support for teachers, 11.7% disagree, 6.7% neutral and 81.6% agree. This confirms Toprakci (2006) whose study in Turkey discovered that the lack of technical support was one of two significant barriers to ICT integration in science education in schools. Lack of motivation and confidence in integrating CAI into teaching, 15% disagree, 10% neutral, and 75% agree with the statement. Lack of relevant digital content to support the integration of CAI, 21.7% disagree, 5% neutral, and 73.3%. Insufficient time for integration of CAI, 20% disagree, 5% neutral and 75% agree. This findings concur with Sicilia (2005) whose research concluded that the most common challenge reported by all the teachers was the lack

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of time they had to plan technology lessons, explore the different Internet sites, or look at various aspects of educational software. Pressure to prepare students for exams, 50% disagree, 15% neutral and 35% agree. Lack of teachers' interest to integrate CAI in teaching and learning, 46.7% disagree, 13.3% neutral and 40% agree. Lack of motivation and support from school management, 33.4% disagree, 8.3% neutral and 58.3% agree.

CONCLUSIONS

1. Majority of teachers have positive attitude towards the integration of CAI in teaching and learning of Social Studies. Some of the teachers incorporate CAI into their lessons while others do not incorporate CAI into their lessons due to several factors.

2. The challenges Social Studies teachers encounter when incorporating Computer Assisted Instruction into their lessons include: deficient teacher training curriculum, lack of internet in schools, lack of technical and pedagogical knowledge, insufficient time, inadequate number of computers and projectors in schools, lack of technical support, lack of relevant digital content, lack of motivation and support from school management, and finally, pressure to prepare students for their final exams using Conventional Instructional Methods (CIM).

3. Generally, there was no significant difference between male and female teachers' use of CAI in teaching and learning. However, male teachers integrate video and radio in their lessons than their female counterparts. Also, Old teachers incorporate video and radio into their lessons than their younger counterparts. This could be attributed to gaps in teacher training curriculum which failed to incorporate technology application in teacher training. However, apart from above observation, there was no significant difference between young and old teachers' application of other CAI strategies in teaching and learning of Social Studies. Therefore, gender and age has no significant influence on the application of computer assisted instruction in teaching and learning of Social Studies.

RECOMMENDATIONS

Based on the findings, the following recommendations have been made:

1. Ministry of Education through Ghana Education Service should organize periodic workshops to build the capacity of the teachers to effectively incorporate Computer Assisted Instruction in their lessons to improve learning outcomes of students

2. Government of Ghana in partnership with NGOs and other private sector organizations should design and implement interventions to deal with barriers to effective implementation of technology in teaching and learning to improve quality education.

3. All basic schools should be supplied with enough computers, projectors and relevant digital content to support application of technology in teaching and learning.

4. Teacher training institutions in the country should modify their curriculum to make provisions for the integration of Computer Based Learning strategies into teaching and

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learning to enhance capacity of trainees apply same in the field to improve the quality of lesson delivery.

5. Basic school teachers and students should be supplied with computers to enable them use them to learn during non-school hours for effective learning.

6. Social Studies play a critical role towards the development of responsible citizens who will contribute to national development in the spirit of patriotism. Therefore, the recent proposal to remove Social Studies from basic and senior high schools curriculum is misplaced and should be ignored by Ministry of Education and Ghana Education Service. Ghana need Social Studies in our pre-tertiary education curriculum now than ever.

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