Improving Female Students' Use of ICT Tools in a College of Education

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Abstract:
Females who are the hope of the society cannot be neglected in this digital age. One feel dejected to see level two hundred (200) female students of St. Joseph's and Berekum Colleges of Education, when they only show interest in the theory aspect of the subject (ICT), not involving themselves in the practical activities in ICT but the ICT syllabus for Colleges of Education aims at offering basic knowledge and skills to students (Ministry of Education Science and Sports, 2004). It is against this background that this research was conducted to ensure female students involve themselves and use ICT tools well in practical lessons. The researchers made use of quantitative research methodology together with random and stratified sampling techniques to collect valid data on the problem. Notwithstanding, questionnaire methodology was employed in gathering relevant data from the research population. Results from the study revealed that students reported certain things teachers do to reduce their interest in class. Teachers also reported that they deliver lessons without appropriate TLMs. Based on the findings, it was recommended that students should be given career guidance and counselling on the relevance of the subject through career conferences and conventions. In doing this, role models should be used. It was also recommended that school authorities must ensure provision of adequate ICT tools to facilitate the teaching and learning of ICT. They should also adopt monitoring system on teachers' effective use of the equipment.

Keywords: College of education, information and communication technology, female education, motivation, ICT tools

1. Introduction

The impact of ICT on learning is currently in relation to the use of digital media, primarily computers and internet to facilitate teaching and learning. ICTs are the technologies used in conveying, manipulation and storage of data by electronic means; they provide an array of powerful tools that may help in transforming the present isolated teacher-centered and text-bound classrooms into rich, student-focused, interactive knowledge environments.

To meet these challenges, learning institutions must embrace the new technologies and appropriate ICT tools for learning. The direct link between ICT use and students' study habit and academic performance has been the focus of extensive literature during the last two decades. Some of them help students with their learning by improving the communication between them and the instructors (Valasidou & Bousiou, 2005).

Leuven (2004) stated that there is no evidence for a relationship between increased educational use of ICT and students' performance. In fact, they found a consistently negative and marginally significant relationship between ICT use and some student achievement measures. For instance, some students may use ICT to increase their leisure time and have less time to study. Online gaming and increased communication channels do not necessarily means increased achievement.

On the other hand, Abdulla and Twizell (2008), state that ICT has the potential to transform the nature of education; where and how learning takes place and the roles of students and teachers in the learning process. Karim and Hassan (2006) noted the exponential growth in digital information, which changes the way students perceive study and reading and in how printed materials are used to facilitate study.

Based on the extended usage of ICTs in education, the need appears to unravel the myth that surrounds the use of information and communication technology (ICT) as an aid to teaching and learning, and the impact it has on students' study habits and academic performance.

1.1. Research Question
The research question used for this study is as follows:

- What can teachers do to develop female students' interest in practical activities?

1.2. Reviewed Materials and Methods
The theories examined and discussed under this study include the following:
Need theory (Maslow, 1954), Two-factor theory (Herzberg, 1964), Self-determination theory (Deci & Ryan, 1985) and Existence, related and growth theory (Alderfer, 1977).

1.3. Need Theories
Analysis of Abraham Maslow's theory of need hierarchy which seems to be the fundamental motivational theory is as follows:

1.3.1. Physiological Needs
These are biological needs. They consist of needs for oxygen, food, water, and a relatively constant body temperature. They are the strongest needs because if a person were deprived of all needs, the physiological ones would come first in the person's search for satisfaction.

1.3.2. Safety Needs
When all physiological needs are satisfied and are no longer controlling thoughts and behaviours, the needs for security can become active.
Children often display the signs of insecurity and the need to be safe.

1.3.3. Needs of Love, Affection and Belongingness
Maslow states that people seek to overcome feelings of loneliness and alienation. This involves both giving and receiving love, affection and the sense of belonging.

1.3.4. Needs for Esteem
These involve needs for both self-esteem and for the esteem a person gets from others. Humans have a need for a stable, firmly based, high level of
Self-respect, and respect from others. When these needs are frustrated, the person feels inferior, weak, helpless and worthless.

1.3.5. Needs for Self-Actualization
`When all of the foregoing needs are satisfied, then and only then are the needs for self-actualization activated. Maslow describes self-actualization as a person's need to be and do that which the person was "born to do." "A musician must make music, an artist must paint, and a poet must write."
These needs make themselves felt in signs of restlessness.
Simons (1987) accepted the fact that this theory has influenced a number of different fields, including education. This wide influence is due in part to the high level of practicality of Maslow's theory. It is therefore undeniable fact that these needs must be considered in every aspect of life. Teachers and stakeholders in education should accept that these needs are interwoven; one must be satisfied before the other.
Neglecting one will definitely affect the next level of need. Classroom instruction must take these into consideration in order to ensure psychological, emotional and physical readiness of learners.

1.3.6. Empirical Basis of the Study
Empirical basis of a research work can be defined as "research based on experimentation or observation. The word empirical means information gained by experience, observation, or experiment. The central theme in scientific method is that all evidence must be empirical which means it is based on evidence. In scientific method the word "empirical" refers to the use of working hypothesis that can be tested using observation and experiment. Empirical basis or evidence is information that justifies a belief in the truth or falsity of an empirical claim. In the empiricist view, one can only claim to have knowledge when one has a true belief based on empirical evidence
In addition, an empirical basis of a research work is a way of gaining knowledge by means of direct and indirect observation or experience. Empirical evidence (the record of one's direct observations or experiences) can be analyzed quantitatively or qualitatively. Through quantifying the evidence or making sense of it in qualitative form, a researcher can answer empirical questions, which should be clearly defined and answerable with the evidence collected (usually called data). Research design varies by field and by the question being investigated. Many researchers combine qualitative and quantitative forms of analysis to better answer questions which cannot be studied in laboratory settings, particularly in the social sciences and in education.
Uniquely, empirical basis of a research work has important objectives as follows:
- Goes beyond simply reporting observations.
- Promotes environment for improved understanding.
- Combines extensive research with detailed case study.
- Proves relevancy of theory by working in a real-world environment (context).
Arguably, some of the reasons by which empirical research methods can be used are as follows:
- Traditional or superstitious knowledge has been trusted for too long.

- Empirical Research methods help integrating research and practice.
- Educational process or Instructional science needs to progress.

Moreover, the use of empirical basis or support in a research work/study has the following advantages.

- Understands and responds more appropriately to dynamics of situations.
- Provides respect to contextual differences.
- Helps to build upon what is already known.
- Provides opportunity to meet standards of professional research.

In effect, the collection of evidence to prove or counter any theory involves planned research designs in order to collect empirical data. Several types of designs have been suggested and used by researchers. Also, accurate analysis of data using standard statistical methods remains critical in order to determine legitimacy of empirical research.

Literature review on previous studies or research related to this study have been discussed under the following headings; employing motivation to sustain female students' participation in practical lessons of ICT and exploration of factors that motivate female students in acquiring practical skills.

2. Methodology

2.1. Introduction

This action research aimed at employing strategies to ensure female students' involvement and use of ICT tools in ICT practical/activity lessons in St. Joseph's and Berekum Colleges of Education in the Brong Ahafo. Accordingly, Leedy (1993) stated that a method is a way of accomplishing an end result. A research methodology, therefore, refers to a set of methods, systems and procedures used in a particular research to achieve stated objectives. Additionally, the word method is coined from two Greek words: 'meth' and 'odos'. A method is therefore, following after the way someone found to be effective in solving a problem or reaching an objective or getting a job done. The meth means 'after' and 'odos' means 'way'. Thus, if the data is verbal, the methodology is qualitative; if the data is numerical, the methodology is quantitative hence this study employed a quantitative methodology.

2.2. Research Design

According to Grandhi (2004), "a research design is the tentative outline of a proposed research work". Kerlinger (1986) defines research design as "a plan structure and strategy of investigation so convinced as to obtain answers to research questions or problems". Similarly, a research design is a procedural plan that is adopted by a researcher to answer questions in a valid way, as a provisional outline of this action research, the researchers employed about six (6) strategies to determine the appropriate research design.

The action research/case study is mainly descriptive since it involves investigating, recording, analyzing and interpreting data. According to Gerber (2009), "the aim of descriptive research is to verify formulated hypotheses that refer to the present situation in order to elucidate it". This method seeks to describe the phenomenal change that will be manifested when female students are motivated and encouraged to fully participate and use ICT tools in ICT.

2.3. Research Population

A research population is a group of individuals, persons, objects, or items from which samples are taken for measurement (Mugo, 2009). In this regard, the present researchers considered the teaching and learning situation in the schools which called for two categories of people who were directly involved. Students and teachers of St. Joseph's and Berekum Colleges of Education were therefore captured as the main population for the study. The choice of this population became necessary since it was hoped to provide the researchers with relevant and immediate data needed for the analysis.

2.4. Sample and Sampling Procedure

According to Grandhi (2004) "a complete coverage of the units of the universe selected for research, is not possible. Instead of complete coverage, selected units are studied". Lunsford and Lunsford (1995, p55), also defined sample as "a small subset of the population that has been chosen to be studied". Lunsford and Lunsford further cautioned that "the sample should represent the population and have sufficient size ....". Best and Kahn (1989) have observed that the primary aim of research is to discover principles that have universal application.

In this regard, the researchers saw that considering the entire population would not help; instead part of the population would be sampled to ensure reliability and validity of data collection. The sample for the study was made up of one hundred and twenty (120) female students who were in the said Colleges of Education level two hundred (200), and forty (40) teachers.

The simple random sampling method was used to select the sample. The said sample is probability in nature in which each member of the population had a known and equal chance of being chosen in the sample. The method helped the researchers to identify and enumerate the finite population. To avoid selection bias, it is important to guarantee that each of the candidates for inclusion in the study has an equal opportunity for selection (Lunsford & Lunsford, 1995).

Stratified sampling technique was also adopted alongside the random sampling since the study concerned the inclusion of gender group (female students) in ICT. According to Lunsford and Lunsford (1995), stratified sampling is "a method by which subjects are grouped according to strata such as age, gender or diagnosis. Using this method, subgroups of interest could be defined and ... sampled for each group".

The said subgroup included seventy five percent (75%) female students and twenty five percent (25%) teachers who were used for the study.
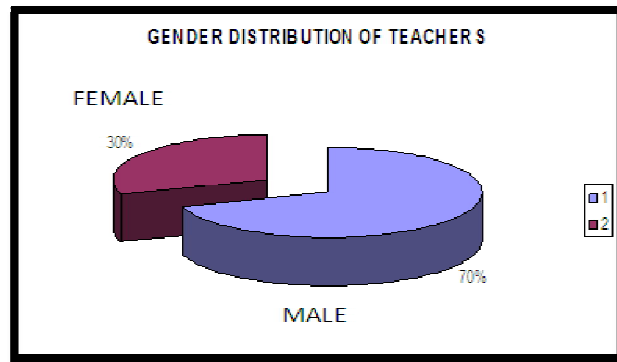

Figure 1: Gender Distribution of Teachers

2.5. Instrumentation

Research techniques refer to the methods for gathering reliable information to answer a question or support an experimental hypothesis (Okai, 2009). In view of this, the researchers of this study employed questionnaire technique to gather valid and reliable data in aid of rectifying the situation at hand. It must be emphasized here that good data is directly related to the questions; that is, they provide direct answers (Padak & Padak, 2009).

According to Cohen, Manion and Morrison (2003), questionnaires can provide a structured and straightforward analysis of information. Moreover, questionnaires are relatively more economical than other approaches in terms of time and money and they can be convenient for respondents as they can complete them in their own time.

Questionnaire is usually more superficial than the interview. It is usually used in group work. The questionnaire is especially useful to obtain information about reasonably big groups. Questionnaire is usually characterized by relatively low cost, ease of interpreting information, and likelihood of answering each question.

2.6. Data Collection Procedure

The present researchers therefore sat down to carefully plan, design and administer one hundred and sixty (160) questionnaires to respondents (female students and teachers) to obtain information on the topic under discussion. These questionnaires were presented to the respondents during the data collection stage of the study. The items in the questionnaires were written in clear language to enable respondents understand and answer the questions objectively as possible. The choice of the questionnaire technique for the study was that many respondents could be reached within a short period of time. Respondents were expected to answer every item in the questionnaire. It also required little time of respondents. Some examples of sample items on the questionnaire included 'I am regular at ICT practical lessons', 'I feel happy and satisfied in ICT classes, 'Practice makes man perfect', etc.

In addition, the respondents were given little opportunity to express their views as they were restricted to the questions and their corresponding answers. The main items contained in the questionnaire included how motivation can add value to female students' participation in ICT practical lessons; what teachers can do to develop female students' interest in ICT lessons and finally relationship between practical learning and students' performance.

2.7. Intervention Design and Implementation

This aspect of the study presents the actual measures were taken to alleviate the problem understudy. To intervene means "to become involved, intentionally, in a difficult situation in order to improve it or prevent it from getting worse". The researchers, after considering existing literature on the problem, came out with six (6) interventional strategies and their implementation which contributed to overcoming the challenges.

2.8. Intervention Design

Classroom research/Case study focuses on identifying or evaluating the "method in our madness" as it affects our students' learning.

As classroom teacher who has been teaching ICT at St. Joseph's College of Education since 2009 academic year, and attending certain academic programs in Berekum College of Education as well, a number of challenges that affect female students' learning and academic performance have been observed. The involvement and improvement in the use of technological equipment (ICT tools) among female students has become unease. The researchers of this study observed similar situation even among his university female counterparts during the period of study at the university.

Encouraging females' participation and improvement in practical lessons in ICT through motivation and attractive techniques was hoped to alleviate the fear and nervousness and equip them with the skills of using modern technology. To do this, the researchers proposed the following interventional designs and mechanisms to effect a change in female students' attitude towards practical lessons in ICT.

- Motivational techniques
- Good teacher-student relationship
- A talk on career opportunities in ICT

- Applying a variety of teaching methods
- Provision of guidance and counseling
- Maintaining good attitude of students and teachers towards ICT

3. Data Analysis and Results

This chapter focuses on the presentation and analysis of data gathered from the field.

Students were asked whether they are regular at ICT practical lessons. They were to choose one of the following options: 'very true of me', 'true of me' and 'not true of me'. Table 1 shows that 76 (i.e.63.3%) chose very true of me, 41 (i.e. 34.2%) chose true of me and finally 3 (i.e. 2.5%) chose not true of me.

This means that students' regularity at ICT practical lessons has seen tremendous improvement. The significance of this finding is that students believed if they feel secured, respected, esteemed, and empowered, they are likely to make a strong effort in ICT in practical lessons.

Responses	Frequency	Percentage
Very true of me	76	63.3
True of me	41	34.2
Not true of me	3	2.5
Total	120	100.0

Table 1: Students' Regularity at ICT Practical Lessons
Source: Field Work July, 2018 (SPSS V16.0)

Table 2 shows students' responses when they were asked to indicate whether they are very active, active, and dormant, to the statement students' attitudinal level during ICT practical lessons. 46 (i.e. 38.3%) of them indicated that they are very active while 63 (i.e. 52.2%) of them indicated that they are active. However, 11 (i.e. 9.2%) of them indicated they are dormant.

It can be deduced from the table that students' attitudinal level in ICT practical lessons has soon a major improvement. The relevance of this finding shows that motivation had increased the likelihood that students would pay attention to something, study and practice it, and try to learn in a meaningful fashion.

Responses	Frequency	Percentage
Very active	46	38.3
Active	63	52.2
Dormant	11	9.2
Total	120	100.0

Table 2: Students' Attitudinal Level in ICT Practical Lessons
Source: Field Work July, 2018 (SPSS V16.0)

Table 3. shows responses of teachers when they were asked whether they are regular at handling all lessons. 30 (i.e. 75%) of them indicated very true of me and 10 (i.e. 25%) of them indicated true of me.

It is clear from the table that teachers' regularity at handling lessons has improved. The relevance of this finding shows that students believed teachers' consistent regularity at lessons ginger them to be regular at all lessons as well.

Responses	Frequency	Percentage
Very true of me	30	75.0
True of me	10	25.0
Total	40	100.0

Table 3: Teachers' Regularity at Handling Lessons
Source: Field Work July, 2018 (SPSS V16.0)

When asked about the punctuality of teachers to class, 26 (i.e. 65%) of the respondents indicated some minutes before time while 14(i.e. 35%) of them indicated exactly time.

As reflected in table 4.3.2, it is undoubtedly clear that teachers are punctual to class. The significance of this finding also shows students appreciated the fact that teachers' punctuality to class has affected them positively in their learning.

Responses	Frequency	Percentage
Some minutes before time	26	65.0
Exactly time	14	35.0
Total	40	100.0

Table 4: Teachers' Punctuality to Class
Source: Field Work July, 2018 (SPSS V16.0)

4. Conclusion

Improving female students' use of ICT tools is progressively more attracting research; nevertheless, this research is chiefly conducted in or by developed countries with a slight share of research emerging from developing countries. Very

little work has been done by Ghanaians regarding female students' use of ICT tools in our educational system. It is in this light that this research is undertaken to look at how female students' use of ICT tools can be of paramount priority in the Ghanaian educational system.

The researchers could not undertake the study in the entire country but restricted himself to the Colleges of Education in the Brong Ahafo region and chose only two colleges involving a few respondents in order to obtain a very consistent data to address the identified problem.

The said colleges were selected at random from one (1) Municipal area and one (1) District in the Brong Ahafo region of Ghana for the research. The Municipal area was Berekum and the District was Bechem (Tano South). In each of the colleges, the following were given questionnaires to respond to:

- Female students.
- Teachers.

A total of one hundred and sixty (160) respondents were selected for the research. Random sampling and stratified sampling methods were used to select the colleges and the students for the research. The type of tool used to gather data for this research was questionnaire. The researchers personally administered questionnaires directly to the respondents in their colleges after obtaining permission from the Heads. The administration of the questionnaires was done with the help of the teachers of the colleges chosen for the study. Here, the researchers explained to the students the purpose of the study and how to fill the questionnaires. With the help of the teachers, 120 female students (i.e. 60 from each college) from level two hundred were selected at random to respond to the questionnaires. The questionnaires were collected immediately after the students had finished responding to them. Having finished with the students, 40 teachers (i.e. 20 from each college) were also given their questionnaires to complete on the same day.

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