

## **Application of Information Communication Technology in Developing Critical Thinking Among Social Studies Pre-Service Teachers in Kogi State**

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### **Abstract**

*The study examined the application of ICT in developing critical thinking among Social Studies pre-service teachers and assessed the role of gender on the application of ICT in Social Studies. Two hypotheses were tested in this study. The study adopted a quasi-experimental design. A simple random sampling technique was used in selecting two out of three Colleges of Education in Kogi State and self-selecting sampling procedure was used in identifying the subjects. The researcher made use of 70 pre-service 200 level Social Studies students in the two selected government owned Colleges of Education in Kogi State. Thirty-five pre-service teachers were selected from each of the two colleges of education. Two instruments were used, namely, Controversial Issues and ICT Instructional Package (CIIP) and Controversial Issues Achievement Test (CIAT)  $r = .86$ . The administration of the instrument lasted for six weeks. Data collected were analysed using ANCOVA. The results of the analysis indicate that ICT related strategies such as social media strategy contributed more significantly than conventional method in enhancing learning outcomes of the students in controversial issues discussion in Social Studies and there is moderating effect of academic ability on the students' post-test achievement scores in controversial issues discussion in Social Studies. Based on the findings, it is recommended that ICT related strategies will be of immense benefit in improving academic achievement of students in Social Studies, hence the use of ICT in Social Studies classroom should be inculcated in the curriculum of Social Studies educators.*

**Keywords:** critical thinking, ICT, social studies, pre-service teachers

One of the major focuses of Social Studies is to develop in students the ability to successfully deal with challenges and issues that confront them in society with self-confidence; train individuals to contribute to the growth and development of their nation; and develop in the citizens an understanding of their societal values, knowledge and skills; which can only be possible when the

students have acquired the right type of knowledge, skills and competencies required to solve these problems (Adeyemi & Onigiobi, 2020; Akinlaye et al., 1996). Social Studies education aims at equipping learners with the mechanisms of dealing with problems and emerging dilemmas, in order to make them live a happy and fulfilled life in the society by enhancing the ability and capability of the students to deal successfully with the fast dynamic world and the unknown future (Adeyemi, 2012). Based on the objectives of Social Studies in Nigerian schools, the emphasis of the subject is more on social phenomena (inductive) than theory (deductive). Social Studies is a field of knowledge and analysis of social symptoms and problems to find solutions to emerging issues and problems in the society (Whitlock & Brugar, 2019; Ollila & Macy, 2019). Therefore, Social Studies learning in schools must emphasize aspects of knowledge, attitudes, and skills from various contextual social problems that exist around students.

Social Studies should be more oriented towards problem-based learning and this can be achieved by adopting student-centred learning, which requires students to be more active physically and mentally. The school teacher, as a facilitator, stimulates critical and reflective thinking skills in the students through problem-solving conversations that are related to social problems. The engagement process helps the students to develop inter-personal skills, interact, communicate, and collaborate, as well as develop positive attitudes which are needed in problem solving (Kirmizi et al., 2015). Adopting this procedure will help to develop the critical thinking skills in the students. Critical thinking has continued to gain prominence among scholars, and it has been identified as one of modern skills that Social Studies students' need to fit into the 21<sup>st</sup> century society (García-Moro et al., 2021).

A critical thinker is a person who is able to carry out an intellectually disciplined process that allows him/her to conceptualise, apply, analyse, synthesise and/or evaluate information gathered from, or generated by observation, experience, reflection, reasoning or communication, as a guide towards belief and action (Bezanilla et al., 2018). Students at the tertiary level of education are attracted to different ideas and are at the stage of mental maturity and psychologically eager to clarify their opinions clearly and abstractly, thus need to be equipped with skills of inference, interpretation and evaluation at their highest levels. This makes it imperative to equip learners with different skills such as critical thinking, problem solving, and reflective inquiry, that will help them to discuss controversial issues and make sound judgment.

One of the strategies to achieve this is the use of e-learning in the educational process to suit the characteristics and nature of the learners in tertiary institutions. The goals of Social Studies in Nigeria go beyond the task of transmitting information and teaching the student traditional skills. They include building the student's thought and personality through the development of critical thinking. Critical thinking is defined by Facione (1990) as an acquired capacity that allows an individual to reason and reflect on what to decide and

what to do. It is a purposeful, self-organizing judgment that leads to interpretation, analysis, evaluation, and inference, as well as an explanation of the evidence, concepts, methodology, standards, or contextual considerations upon which this judgment is based (Facione, 1990). Febres et al. (2017) conceptualize critical thinking as an approach that makes one to think about himself in an active and reflective way in order to understand the world that he/she lives in. It goes through the process of introduction, middle and conclusion (Khudhair et al., 2019). Critical thinking is a process of evaluation, a means of enhancing problem solving skills, an active engagement of learners on the process of knowledge construction through reflective thinking, and development of mental disposition process (Al-Ghadouni, 2021a, b; Saleh, 2019).

Teachers' perception has been one of the challenges facing the development of critical thinking in students. Choy and Cheah (2009) note that the belief among teachers that students cannot think critically alone has made teachers in Social Studies classrooms concentrate on transmission of knowledge instead of actively involving students in the process of discussion, most especially when it concerns controversial and current issues. The dominant method of instruction in Social Studies classrooms has continued to focus on lecturing, rote learning, and memorization, which does not promote critical thinking within classrooms (Alwadai, 2014). In addition, Nigerian educational practices by teachers have been based on preparing students for formal testing that does not require critical thinking. Consequently, students channel all their efforts towards succeeding in formal tests that rely on facts and recall, and large class sizes in most of our tertiary institutions also pose a challenge to effective implementation of critical thinking (Bataineh & Alazzi, 2009).

One major characteristic of critical thinking is that it makes students to gain as much relevant knowledge as possible on an issue before evaluation; and not to make or accept conclusions without careful thought and evaluation. It makes students to carefully analyse and evaluate reasons and evidence; distinguish between what is known and what is suspected; detect bias and unsubstantiated evidence; be willing to re-examine assumptions; not seek to be negative or to find fault; and be objective in their evaluation in spite of personal views, interests, or wishes. Skills for Critical Thinking include ability to ask questions that are clear and easily understood, listen to others' views and opinions; distinguish between fact and opinion and distinguish relevant from irrelevant information; determine credibility of sources of information; detect bias, weigh all evidence and draw inferences from available evidences; draw logical conclusions based on evidence; organize and classify ideas and evidence and identify underlying assumptions; distinguish hypotheses from evidence; and make appropriate use of persuasive techniques.

Critical thinking skill is a social requirement that helps people to discern correctly how to face the constant amount of information and complex social processes of our current society which are necessary to make sound

judgments and contribute to a better society. Development of critical thinking skills in students will help to enhance in them self-awareness and reflection which will contribute in assessing and finding solutions to social problems in the future (Ennis, 2016). Critical thinking helps to foster the habit of being well informed; of expressing one's opinions correctly and appropriately; and having, defending and arguing one's ideas and opinions; as well as being able to understand, analyse and evaluate others' views (Bezanilla et al., 2021). Critical thinking skills are indispensable for the professional development of students in the knowledge society, as they prepare them to face the challenges of a globalised world (Flores, 2016).

The application of ICT in education has been on the increase across all academic fields in the past two decades. The advent of social media particularly has increased the usage of ICT in teaching and learning as scholars have continued to advocate for its usage in improving the performance of students. ICTs have the potential for providing opportunities for both teachers and learners to engage in effective interaction beyond the four walls of classroom setting and help the teacher to develop innovative ways of enhancing learning experience and improve students' critical and reflective thinking skills.

García-Moro et al. (2021) assessed the qualitative and quantitative studies on critical thinking among social education degree students. The results showed that students have average general knowledge of what critical thinking is. The findings also showed a great contradiction between what the students said and what they actually did. Bezanilla et al. (2021) examined the importance of teaching critical thinking in higher education and existing difficulties according to teachers' views. The results showed that teachers consider it important to teach critical thinking at the university level and mainly for students to become good professionals in a complex world. Khalid et al. (2021) explored pre-service teachers' perception of barriers to their efforts in promoting critical thinking skills in classrooms. The results showed that teachers' factors such as readiness to assess pupils' critical thinking skills and lack of appropriate instructional materials served as impediments to the development of critical thinking skills among the pupils in the classroom.

Two theories support this study; they are theories of reasoning and system approach. The mental model theory of reasoning developed by Philip Johnson-Laird and Ruth M. J. Byrne is based on stages; representing information about a problem or situation through alternative possibilities, using relevant background knowledge to evaluate the model, adding new information to update the model, resolve internal consistencies by revising the model and using surviving possibilities to draw conclusion (Johnson-Laird, 1983; Johnson-Laird & Byrne, 1991).

The second theory that provides support for this study is systems approach developed by Ludwig von Bertalanffy in 1968. This refers to the learning system approach that takes place in a continuous cycle. This means that learning outcomes / outputs at the early stages will become potential input at the

next learning stage. This theory supports the development of skills to think logically and critically, commitment and awareness of social values, and the ability to communicate, cooperate and compete in a pluralistic society.

An appropriate Social Studies classroom environment should be tailored towards encouraging students to become critical thinkers. Social Studies teachers need to develop an open, non-threatening climate for the discussion of ideas and issues within the class and outside the classroom settings; this is where the application of ICT in developing critical thinking in Social Studies students comes in. This study therefore specifically assessed the application of ICT – using social media platforms in developing critical thinking skills in the pre-service Social Studies teachers when exposed to controversial issues aspects of Social Studies.

### **Statement of the Problem**

Application of ICT in education has continued to attract the attention of scholars throughout the world. The advent of social media has increased the usage of ICT in teaching and learning as scholars have continued to advocate for the usage of social media in improving the performance of students. The dominant method of instruction in Social Studies classroom has continued to focus on lecturing, rote learning, and memorization, which does not promote critical thinking within classrooms. Nigerian educational practices have been based on preparing students for formal testing that does not require critical thinking, which makes students to channel all their efforts towards succeeding in formal tests that rely on facts and recall, and large class sizes in most of our tertiary institutions also pose a challenge to effective implementation of critical thinking. Early researches in the application of ICT in the field of Social Studies have been on using ICT tools in enhancing academic performance in Social Studies. However, not much has been done within the local context in using ICT in developing critical thinking skills among Social Studies pre-service teachers. This study therefore specifically assessed the application of ICT – social media platforms in developing critical thinking skills in the pre-service Social Studies teachers when exposed to controversial issues.

### **Objectives**

The specific objectives of this study are:

1. Compare the effects of ICT strategies and the conventional methods on achievement in controversial issues discussion among pre-service Social Studies teachers in Kogi State
2. Establish the moderating effect of academic ability in the post-test achievement scores of pre-service Social Studies teachers exposed to controversial issues discussion.

### Hypotheses

The following hypotheses were tested at 0.05 alpha level:

- H<sub>01</sub>*: There is no significant difference in the post-test achievement scores of pre-service Social Studies teachers exposed to controversial issues discussion under different treatment ICT related strategies and conventional method.
- H<sub>02</sub>*: There is no moderating effect of academic ability in the post-test achievement scores of pre-service Social Studies teachers exposed to controversial issues discussion.

### Methods

The study adopted a quasi-experimental design. The subjects for the study comprised the two government owned Colleges of Education in Kogi State. These Colleges run similar academic calendar and syllabus / curriculum in Social Studies. The contents of Social Studies taught and examined in the study were only found in the 200 level programme. Purposive sampling technique was used in selecting the institutions for the study and self-selecting sampling procedure was used in selecting the subjects. The researcher made use of 70 pre-service 200 level Social Studies students in the two selected Colleges of Education in Kogi state. Thirty-five pre-service students were selected from each of the Colleges. Two instruments were used, namely, Controversial Issues and ICT Instructional Package (CIIP) and Controversial Issues Achievement Test (CIAT). CIIP were teaching materials used to expose the students to Controversial Issues aspects of Social Studies, while (CIAT) is the assessment instrument. The procedural instruments focused on issues around security and corruption. Content and face validity of the instrument were carried out by giving copies of the test items to four experts in the field of Measurement and Evaluation and Social Studies Education. Their observations were used to make necessary modifications in the research instruments. Also, a field trial of the instruments was carried on a randomly selected 35 (thirty-five) 200 level Social Studies pre-service teachers from a state outside Kogi State that did not take part in the main study. The split-half reliability technique was used to determine the reliability coefficient of the instrument and was found to be .75 which makes the instrument reliable for the study.

The programme was run for six weeks. In the first week of the programme, a pre-test was completed by the students on the selected themes from Controversial issues / Social Studies education related areas to know their entry levels. The students in both the experimental group and control group were exposed to the pre-test. The students were earlier selected based on similar curriculum and levels. After the pre-test, the subjects in the experimental groups were asked to monitor controversial issues on social media and give judgements on the trends of discussion on the areas they monitored. Students monitored news related to the security (Kidnapping, herdsmen and farmers crises, banditry, Boko-haram etc and corruption in different sectors). Facebook, WhatsApp, and

Twitter were selected as the social media and an aspect of ICT on which the pre-service teachers monitored peoples' reactions on issues and formed their opinions after listening to different submissions. Subjects in the control were exposed to the selected topics for four weeks using conventional methods. The last one week was used to administer post-test on both experimental and control groups.

### Data Analysis and Results

The data obtained from the field work were coded and analysed with the help of Statistical Package for Social Science (SPSS). Inferential statistics of Analysis of Covariance (ANCOVA) was used to test the two hypotheses with the pre-test as covariates. Table 1 below shows the results of the two hypotheses tested in this study.

$H_01$ : There is no significant difference in the post-test achievement scores of pre-service Social Studies teachers exposed to controversial issues discussion under different treatment ICT related strategies and conventional method.

$H_02$ : There is no moderating effects of academic ability in the post-test achievement scores of pre-service Social Studies teachers exposed to controversial issues discussion.

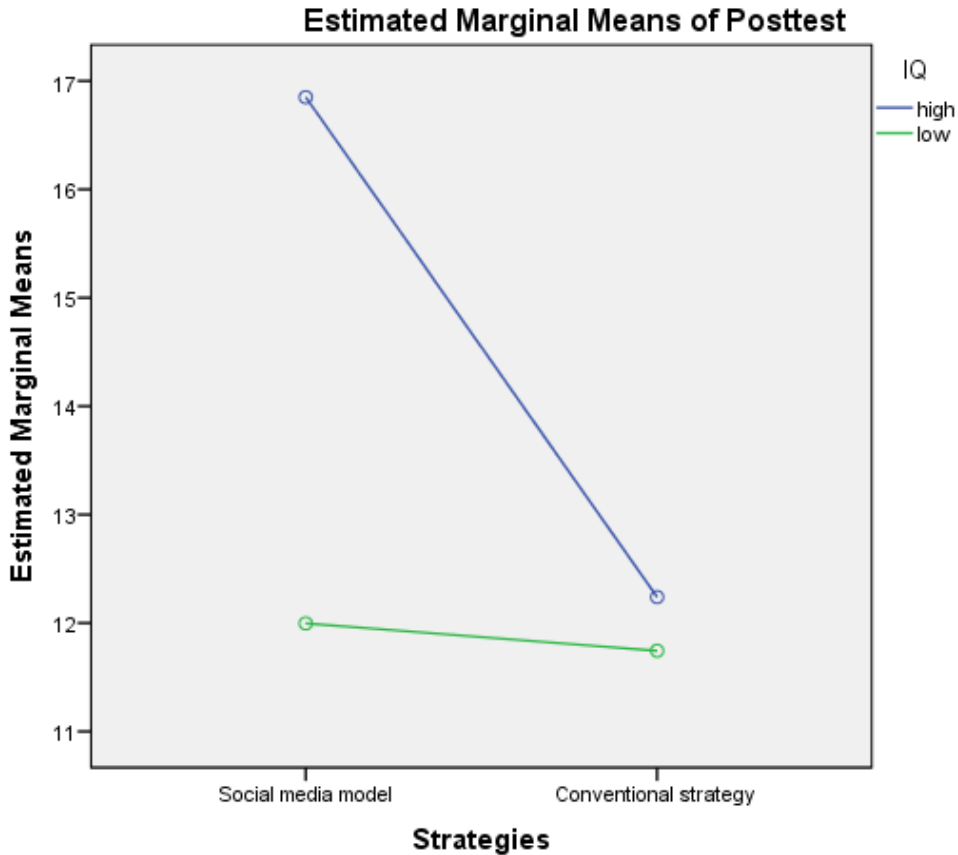
Table 1

*Summary of the Analysis of Covariance Test on Students' Achievement Score in Controversial Issues According to Teaching Strategies and Academic Ability*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	366.224 <sup>a</sup>	4	91.556	59.466	.000
Intercept	84.269	1	84.269	54.733	.000
Pretest	19.592	1	19.592	12.725	.001
Strategies	98.684	1	98.684	64.096	.000
Academic Ability	124.582	1	124.582	80.917	.000
Strategies* Academic Ability	71.822	1	71.822	46.649	.000
Error	100.076	65	1.540		
Total	12479.000	70			
Corrected Total	466.30069				

Table 1 presents the result of the main and interaction effects of treatment and academic ability on pre-service teachers' achievement in controversial issues discussion in Social Studies at .05 significance level. The result with respect to hypothesis one, revealed main significant effect of treatment on the students' achievement scores in Controversial issues discussion in Social Studies ( $F(2,70) = .000, p > .05$ ). Hence, the null hypothesis one ( $H_01$ ) was rejected.

Table 1 also revealed moderating effects of academic ability on the students' post-test achievement scores in controversial issues discussion in Social Studies ( $F(2,70) = .000, p < .05$ ). This outcome implies that the post-test mean achievement scores of students based on academic ability are significantly different. Hence, the null hypothesis one ( $H_{02}$ ) was rejected.



Covariates appearing in the model are evaluated at the following values: Pretest = 11.70

*Figure 1:* Interaction effects of teaching strategies and academic ability on students' achievement scores

The illustration in Fig. 1 shows that the high academic ability group recorded higher mean score than the low academic ability group under the two strategies—social media model and conventional strategy. This shows moderating effect of academic ability on the students' post-test achievement scores in controversial issues discussion in Social Studies.



### **Discussion**

On the effects of teaching strategies on learning outcomes of students in controversial issues discussion in Social Studies, Analysis of co-variance revealed a significant main effect of instructional strategies on students learning outcomes in controversial issues discussion in Social Studies. The result of this study seems to confirm the findings of Dilek and Burhanettin (2018) who reported significant effects of innovative methods over conventional methods in their studies. However, the significant main effects of the treatment run in contrary to the findings of Soluade (2018) who found no significant effects of innovative methods over conventional methods in his study. The significant main effect of the treatments suggested that innovative strategies improve the learning outcomes of students in controversial issues discussion in Social Studies.

The findings in respect of  $H_02$  revealed a moderating effect of academic ability on the students' post-test achievement scores in controversial issues discussion in Social Studies. The result of this study seems to confirm the findings of Henry (2015) and Preckel et al. (2017) who found over all effects of academic ability grouping on the students' achievement scores after exposure to treatment. However, the significant main effects based on academic ability grouping run in contrary to the findings of Dramanu and Balarabe (2013) and Steenbergen-Hu et al. (2016) who found no overall effect of ability grouping on the students' achievement scores after exposure to treatment.

### **Conclusion**

The main significant effects of treatments on the achievements scores of the pre-service teachers exposed to controversial issues discussion in Social Studies showed the potential of ICT application in enhancing students' learning if properly utilized. Students are mostly on social media in present time and occupying them in monitoring discussions and make inference from such will help to improve their analytical skills and be able to make sound judgement on controversial issues.

### **Recommendations**

From the conclusions the following recommendations become inevitable;

1. ICT related strategies such as Social Media Model is found to be more efficient and effective than conventional method in the teaching of Controversial Issues discussion in Social Studies. Therefore, it is recommended that students should be more engaged with what they are addicted to so that they can properly utilize their time and resources. Teachers and pre-service teachers should be familiarized with the use of this strategy through workshops and seminars.
2. Teachers of Social Studies should be familiar with the use of innovative strategies of ICT such as Social Media Model.

3. Regular seminars and workshops should be given by experts on the use of ICT related strategies to the serving Social Studies teachers at the primary, secondary and tertiary levels.
4. Authors of textbooks, curricula and instructional materials on Civic Education and Social Studies should provide additional opportunities for teachers and students to learn more about the application of different ICT related strategies.

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