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EFFECT OF COMPUTER-ASSISTED INSTRUCTION ON SENIOR SECONDARY SCHOOL STUDENTS' ATTITUDE TOWARD CIVIC EDUCATION IN KABBA/BUNU LOCAL GOVERNMENT AREA, KOGI STATE, NIGERIA

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Abstract
This study investigated the Effect Of Computer-Assisted Instruction on Senior Secondary School Students' Attitude toward Civic Education in Kabba/Bunu Local Government Area, Kogi State. The study adopted a quasi-experimental research design using a pre-test and post-test control group. Two groups were used: an experimental group taught using Computer-Assisted Instruction and a control group taught using the conventional lecture method. Two research questions were raised and two hypotheses were formulated and tested. Data collected were analyzed using mean and standard deviation to answer the research questions. The study also found that students exposed to CAI developed a more positive attitude toward Civic Education compared to their counterparts in the control group. Furthermore, gender had no significant influence on students' academic attitude when taught using CAI. The study concluded that Computer-Assisted Instruction is an effective instructional strategy for improving students' attitude in Civic Education. It was therefore recommended among others that Civic Education teachers should adopt CAI in classroom instruction, and that government and school administrators should provide adequate ICT facilities and training to support effective implementation of CAI in secondary schools.
Keywords: Computer-Assisted instruction, Attitude and Civic education

Introduction

Education plays a fundamental role in shaping individuals' knowledge, skills, values, and attitudes necessary for personal and national development. Among the core subjects offered in Nigerian secondary schools, Civic Education occupies a strategic position because it equips learners with democratic values, civic responsibilities, and the competencies required for active participation in society. Civic Education promotes national consciousness, unity, respect for the rule of law, and responsible citizenship. According to Federal Republic of Nigeria (2013), Civic Education is designed to inculcate moral principles, democratic ideals, and civic competence in learners. Therefore, students' attitudes toward the subject are crucial to achieving its objectives. Attitude is a psychological construct that influences how individuals think, feel, and behave toward an object, idea, or subject. Rosenberg and Hovland (1960) conceptualized attitude as a combination of cognitive, affective, and behavioural components that shape an individual's response to stimuli. In the educational context, students' attitudes toward a subject significantly determine their level of interest, motivation, participation, and ultimately academic achievement. When students develop positive attitudes toward a subject, they are more likely to engage actively in learning activities and demonstrate improved attitude. Conversely, negative attitudes may result in low participation, poor achievement, and lack of commitment to learning.

Despite the importance of Civic Education, observations and empirical studies indicate that many secondary school students in Nigeria exhibit lukewarm or negative attitudes toward the subject. This situation has been attributed largely to the persistent use of traditional lecture methods, which are predominantly teacher-centered and limit students' active participation. Aremu and Sokan, (2019) observed that conventional instructional approaches often fail to stimulate students' interest and curiosity, thereby contributing to unfavourable attitudes toward school subjects. The lecture method tends to make Civic Education abstract and theoretical,

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reducing students' ability to connect classroom learning with real-life civic experiences. The rapid advancement of Information and Communication Technology (ICT) has introduced innovative instructional strategies aimed at improving teaching and learning processes. One such strategy is Computer-Assisted Instruction (CAI). CAI refers to the use of computer-based systems, multimedia applications, and interactive software packages to deliver instructional content. According to Alessi and Trollip (2001), CAI integrates text, graphics, animation, audio, and video to create interactive learning environments that enhance students' understanding and engagement. The interactive nature of CAI allows learners to proceed at their own pace, receive immediate feedback, and actively participate in the learning process.

Empirical evidence supports the effectiveness of CAI in improving students' attitudes. Kulik and Kulik (1991) reported that students exposed to computer-based instruction demonstrated more positive attitudes toward learning compared to those taught using conventional methods. Similarly, Niemiec, R. and Walberg, H. J. (1987) found that CAI enhances students' motivation, interest, and retention of learning materials. These findings suggest that integrating technology into instruction can transform passive classrooms into interactive and learner-centered environments. In the context of Civic Education, CAI has the potential to make abstract civic concepts more concrete through simulations, animations, case studies, and real-life scenarios. For instance, democratic processes, electoral systems, human rights issues, and constitutional principles can be illustrated through multimedia presentations and interactive modules, thereby fostering deeper understanding and positive attitudes. The learner-centered nature of CAI aligns with constructivist learning theory, which emphasizes active knowledge construction and meaningful engagement.

Gender refers to the socially constructed roles, behaviours, expressions, and identities of girls, boys, women, and men. Unlike sex, which is biologically determined, gender is shaped by social, cultural, economic, and political contexts. It influences how individuals perceive themselves, interact with others, and access opportunities, including educational opportunities. According to the World Health Organization (2022), gender describes the socially constructed characteristics of women and men, including norms, roles, and relationships, which vary from society to society and can change over time. The organization emphasizes that gender roles influence access to resources, participation in decision-making and educational outcomes. Similarly, UNESCO (2021) explains that gender in education refers to the ways in which social expectations and power relations affect learners' participation, achievement, and experiences in school systems. Recent educational research highlights that gender differences in academic achievement are often minimal when students are exposed to supportive and inclusive learning environments. In the context of technology-enhanced learning, contemporary studies between 2020 and 2025 indicate that gender disparities in digital learning environments are narrowing due to increased access to technology and digital literacy initiatives. UNICEF (2022) reports that when equal digital access and support are provided, both boys and girls demonstrate comparable learning outcomes in technology-supported instruction. This reinforces the idea that gender differences are not biologically fixed but are shaped by opportunity and environment.

Within Civic Education, gender is particularly significant because the subject promotes equality, human rights, justice, and democratic participation. Modern educational frameworks emphasize gender equity as a fundamental principle of civic learning. Ensuring that both male and female students participate actively and benefit equally from innovative teaching strategies such as Computer-Assisted Instruction (CAI) aligns with global education goals on inclusion and equity. Therefore, in this study, gender is conceptualized as a demographic variable (male and female) examined to determine whether it significantly influences students' academic attitude under Computer-Assisted Instruction and the conventional lecture method. Drawing from recent authorities (2020–2025), gender differences in academic attitude are understood to be largely influenced by instructional design, access to resources, and socio-cultural context rather than innate ability. Gender differences in students' attitudes toward technology-based instruction have also attracted scholarly attention. Some studies suggest that male and female students may respond differently to ICT-integrated learning environments, while others report no significant differences. Investigating gender as a moderating variable is therefore important to ensure equity and inclusiveness in instructional innovation.

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Although numerous studies have examined the effectiveness of CAI in science and mathematics education, there is limited empirical evidence regarding its impact on students' attitudes toward Civic Education, particularly in Kabba/Bunu Local Government Area of Kogi State. This gap in literature necessitates further investigation. Therefore, this study examined the effect of Computer-Assisted Instruction on senior secondary school students' attitudes toward Civic Education in Kabba/Bunu Local Government Area; moderating variable of gender was examined.

Statement of the Problem

Despite the recognized importance of Civic Education in fostering responsible citizenship and democratic participation, students' attitude toward the subject has remained persistently poor in many senior secondary schools in Kogi State, particularly in Kabba/Bunu Local Government Area. Over the years, examination bodies such as the West African Examinations Council (WAEC) and the National Examinations Council (NECO) chief examiner's report on civic education from 2022 – 2024 of Senior Secondary School Examination also depicts poor attitude of students in civic education. This could be attributed to teacher's use of less effective teaching strategy. One major factor contributing to this poor attitude is the continued dominance of traditional teaching strategies, especially the lecture methods, in the teaching of Civic Education. These teacher-centered strategies often encourage rote memorization and passive learning, which fail to stimulate students' interest, critical thinking, and active participation. As a result, many students develop negative attitudes toward Civic Education, leading to low motivation and poor academic outcomes. Furthermore, limited use of instructional technologies in Civic Education classrooms has restricted opportunities for interactive and learner-centered instruction. While Computer-Assisted Instruction (CAI) has been shown to enhance learning outcomes, improve students' attitudes, and promote attitude in other subjects, its application in Civic Education, particularly at the senior secondary school level in Kabba/Bunu Local Government Area, remains inadequate and under-researched. Consequently, there is a need for an empirical investigation to determine the effect of Computer-Assisted Instruction on civic education students' attitudes, as well as the moderating influence of gender, in senior secondary schools in Kabba/Bunu Local Government Area of Kogi State.

Purpose of the Study

The main purpose of this study was to examine the effect of Computer-Assisted Instruction (CAI) on senior secondary school students' attitudes toward Civic Education in Kabba/Bunu Local Government Area of Kogi State. Specifically, the study sought to:-

1. Determine the attitude of Senior Secondary School Students (SSII) taught civic education using Computer-Assisted Instruction (CAI) strategy and conventional lecture strategy in Kabba/Bunu Local Government Area of Kogi State.
2. Determine the difference in attitudes of Male and Female Students towards Civic Education when using CAI strategy in Kabba/Bunu Local Government Area of Kogi State.

Research Questions

1. What are the differences between the attitude scales mean scores of civic education students taught with computer assisted instruction (CAI) strategy and conventional lecture method?
2. What are the difference in attitudes of Male and Female Students towards Civic Education using CAI in Kabba/Bunu Local Government Area of Kogi State

Methodology

The study employed quasi-experimental research design using a pre-test and post-test control group design. This design was suitable because it allows for comparison between groups receiving different instructional approaches. Two Hundred and Eighty-Two (282) was used for the study in Kabba/Bunu LGA. The schools are St. Augustine College Kabba Boys =95 Girls =89 Total=184 was used experimental group and Comprehensive College School Kabba Boys =51 Girls =47 Total =98 was used for control group. Senior secondary school two (2) students was used as samples for the study in both school, this is because at this stage students were exposed to many concepts selected for the study and also they are preparing for their West African Examinations Council (WAEC) and National Examinations Council (NECO) exams, intact classes purposively used for the study. The Civic Education Attitudinal Scale Test (CEAT) was used. 20 items Likert scale on the

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attitudes scale (AS) of students in civic education, all based on a 4-point linker scale options: Strongly Agree (SA), Agree (A), and Disagree (D) Strongly Disagree (SD) was used as the instrument for data collection. The Civic Education Attitudinal Scale Test (CEAT) was analyzed using the Cronbach Alpha strategy. The reliability coefficient obtained was: alpha = 0.87. This value shows that the scale has very high internal consistency, making it appropriate for assessing students' attitudes toward Civic Education. The data collected were analyzed with Statistic Package for Social Science(SPSS).The analysis involved descriptive and inferential statistics (mean, standard deviation) Analysis of Covariance (ANCOVA) was used to test the Two (2) hypotheses at 0.05 level of Significance

Results

Research Question 1: What are the differences between the attitude scales mean scores of civic education students taught with computer assisted strategy (CAI) and conventional lecture strategy?

Table 1: Descriptive Statistics Associated with Treatment (Computer assisted strategy (CAI) and Conventional lecture strategy)

	No of students	Pre-test		Post-test		Mean gain score	Mean difference
		$\bar{x}_1$	SD_1	$\bar{x}_2$	SD_2		
Computer Assisted Strategy (CAI)	174	48.29	1.54	57.71	1.82	9.42	5.8
Attitude	108	27.50	1.46	31.16	1.28	3.56	

Table 1 presents the descriptive statistics on students' attitude scale mean scores toward Civic Education when taught using the Computer Assisted Instruction (CAI) and the Conventional Lecture Strategy. The findings reveal that students exposed to CAI had a pre-test mean attitude score of 48.29 with a standard deviation of 1.54, which increased to a post-test mean of 57.71 with a standard deviation of 1.82, resulting in a mean gain score of 9.42. In contrast, students taught with the conventional lecture strategy had a pre-test mean of 27.50 (SD = 1.46) and a post-test mean of 31.16 (SD = 1.28), with a mean gain score of 3.56. The mean difference between the two groups is 5.8, favoring the CAI group.LlllThis implies that the use of the Computer Assisted Instruction strategy significantly improved students' attitudes toward Civic Education compared to the conventional lecture strategy. The higher mean gain score among the CAI group suggests that learning through computer-based tools made the lessons more interactive, engaging, and motivating, thereby fostering a more positive attitude toward the subject. Conversely, the relatively low improvement in the lecture strategy group indicates that traditional, teacher-centered approaches may not stimulate students' interest or participation as effectively as technology-enhanced instruction.

Research Question 2: What are the differences in the attitude mean scores of male and female civic education students taught with computer assisted strategy (CAI)?

Table 2: Descriptive Statistics Associated with Treatment (Computer assisted strategy (CAI) and Gender)

Gender	No of students	Pre-test		Post-test		Mean gain score
		$\bar{x}_1$	SD_1	$\bar{x}_2$	SD_2	
Male	146	49.89	1.54	58.17	1.53	8.28
Female	136	48.29	1.54	53.71	1.82	5.42

Table 2 presents the descriptive statistics of male and female students' attitude in Civic Education when taught using the Computer Assisted Instruction (CAI) strategy. The results show that male students had a pre-test mean score of 49.89 with a standard deviation of 1.54 and a post-test mean of 58.17 with a standard deviation of 1.53, resulting in a mean gain score of 8.28. Female students, on the other hand, recorded a pre-test mean score of 48.29 (SD = 1.54) and a post-test mean of 53.71 (SD = 1.82), yielding a mean gain score of 5.42. These results indicate that both male and female students improved in their attitude after being taught with

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CAI, but male students achieved a higher mean gain score than their female counterparts. This implies that while the Computer Assisted Instruction strategy was effective in enhancing students' attitude in Civic Education regardless of gender, male students appeared to benefit more from the use of technology-based instruction. The difference in mean gain scores suggest that male students may have shown greater engagement or adaptability to the computer-assisted learning environment compare to female students. However, the improvement observed among both genders confirms that CAI is an effective instructional approach for improving learning outcomes in Civic Education across gender lines.

Discussion of the Findings

The findings indicate that CAI significantly improved students' attitudes toward Civic Education. The interactive and multimedia features of CAI enhanced students' engagement and motivation. The absence of gender difference suggests that CAI is beneficial to both male and female students. The findings of this study revealed that students taught Civic Education using Computer-Assisted Instruction developed significantly more positive attitudes toward the subject than those taught using the conventional lecture method. The higher mean gain recorded by the experimental group indicates that CAI enhanced students' interest, engagement, and motivation. This finding corroborates the finding of Richard and Mayer (2021) demonstrated that multimedia learning improves students understanding, interest and participation in learning activities. This finding is consistent with the earlier work of Kulik, and Kulik, (1991), who reported that computer-based instruction positively influences students' attitudes toward learning. The result also supports Niemiec and Walberg (1987), who found that interactive learning environments increase students' motivation and interest.

The significant improvement in attitude among students exposed to CAI may be attributed to the interactive and multimedia features of computer-based learning. According to Alessi, and Trollip, (2001), multimedia instruction enhances learners' engagement by integrating text, images, audio, and animation, thereby making learning more meaningful and enjoyable. In the context of Civic Education, CAI likely helped students visualize civic processes, democratic practices, and real-life applications, which reduced abstraction and improved perception of the subject. Furthermore, the study found no significant gender difference in students' attitudes toward Civic Education under CAI. This suggests that Computer-Assisted Instruction is gender-inclusive and beneficial to both male and female students. The finding implies that when equal access to technology is provided, both genders respond positively to interactive instructional strategies. This finding supported the finding of John Hattie (2023) who noted that multimedia and technology-enhanced instructions improve learning engagement for both male and female students.

Conclusion

Computer-Assisted Instruction is an effective strategy for improving students' attitudes toward Civic Education. Integrating CAI into classroom instruction can promote positive learning experiences and support the development of responsible citizenship. This study examined the effect of Computer-Assisted Instruction (CAI) on senior secondary school students' attitudes toward Civic Education in Kabba/Bunu Local Government Area of Kogi State, Nigeria. Based on the findings, it was established that students exposed to CAI developed significantly more positive attitudes toward Civic Education than those taught using the conventional lecture method. The interactive and multimedia features of CAI enhanced students' engagement, interest, and motivation, thereby improving their perception of the subject. The study also revealed that there was no significant gender difference in students' attitudes when exposed to CAI. This suggests that Computer-Assisted Instruction is gender-inclusive and equally beneficial to both male and female students when provided with equal access and learning opportunities. The implication of these findings is that instructional strategy plays a crucial role in shaping students' attitudes toward learning. Since Civic Education is central to the development of responsible citizenship, democratic values, and national consciousness, improving students' attitudes toward the subject through innovative teaching strategies such as CAI is essential. Therefore, integrating technology-based instructional approaches into Civic Education classrooms can enhance learning experiences and promote positive civic orientation among students.

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Recommendations

Based on the findings, the following recommendations were made;

1. Teachers of Civic Education should adopt Computer Assisted Instruction (CAI) as a core teaching strategy to improve and increase students' attitude to civic education.
2. Government and educational stakeholders should provide adequate ICT facilities, computer laboratories, and internet access in secondary schools to support CAI implementation.
3. Curriculum planners should integrate CAI-based modules and digital literacy into teacher education courses to build teachers' capacity for effective use of technology in instruction.
4. School administrators should organize regular training workshops and seminars to equip teachers with the necessary skills and knowledge for using CAI effectively.

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