
Assessing the Teacher Factor in Computer Studies Instruction among Junior Secondary School Students in Chanchaga LGA, Niger State, Nigeria

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ABSTRACT

This study examined the teacher factor in Computer Studies instruction among Junior Secondary School students in Chanchaga Local Government Area (LGA), Niger State, Nigeria. A mixed-methods research design was adopted, involving 32 Computer Studies teachers selected from eight public junior secondary schools. Data were collected using structured classroom observation checklists, the Computer Studies Teacher Instruction Questionnaire (CSTIQ), and student interview guides. Findings were analysed using descriptive statistics and thematic analysis. Results revealed a gap between teachers' positive beliefs about the educational significance of Computer Studies (grand mean = 4.28) and their actual classroom practices (grand mean = 3.79). Teachers rated their qualifications and basic computer literacy highly but expressed lower confidence in pedagogical skills for practical instruction (mean = 3.62) and training preparation (mean = 3.48). Key challenges included inadequate computer resources, non-functional laboratories, unreliable electricity supply, large class sizes, and insufficient professional development. Classroom observations and student interviews confirmed that Computer Studies were frequently taught theoretically, with limited practical engagement. The study concludes that teachers recognise the value of Computer Studies but lack the necessary training and structural support to realise it in practice. It is recommended that the Chanchaga LGA Education Authority, through Public-Private Partnerships, prioritise functional computer laboratories and sustained professional development.

Keywords: Teacher factor; Computer Studies; Junior Secondary School; Chanchaga LGA

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I. INTRODUCTION

This subject is becoming more central to the Nigerian education system as it is considered a basic discipline for technological development and integration of knowledge economy. The National Policy on Education acknowledges the significance of the use of information and communication technology (ICT) in preparing students for the challenges of the 21st century and Computer Studies is included in the basic education curriculum to develop students with necessary digital skills (Federal Republic of Nigeria, 2004).

This means that poor teaching and learning of Computer Studies has direct consequences for students' further education, employment opportunities and the country's ability in technological innovation. National data on basic attainment records and empirical research outcomes are all aligned and show that many secondary school students in Nigeria are not well equipped with practical computer skills, they are also not exposed to functional computer environment (Jegede & Owolabi, 2003; Onifade, 2018). The problem is particularly high in Niger State, particularly in Chanchaga LGA where shortage of resources, qualified teachers and digital infrastructure are additional challenges that learners face (Ogele et al., 2022; Aboderin, 2014).

Over the last decade, scholars and curriculum theorists have strongly championed the successful infusion of Computer Studies into the teaching and learning of other curricular subjects as a pedagogical approach that can facilitate whole-child development in the digital age. Students' cognitive ability and future employability can be supported with a strong foundation of practical computing skills, programming logic and digital tools. Computer-based activities, when integrated systematically with other subjects can be used as a medium for problem solving, algorithmic thinking, data analysis and creative expression in an interesting and contextually relevant manner (Adomi & Kpangban, 2010; Gambari et al., 2021). In the contemporary research, it has been acknowledged that hands-on computer teaching is associated with higher order thinking and digital competence, as long as it is explicitly mediated by the teacher through the structure of activities and interaction that are guided (Buabeng-Andoh, 2012; Ogbu, 2025).

However, the Classroom-based study carried out in Nigerian Secondary Schools shows that the potential benefits of Computer Studies are yet to be fully realised despite the recognition. In some cases, the subject is taught as a theoretical abstract study, and in many cases, the lessons do not involve developing practical skills in digital skills but rather, memorizing concepts (Bamidele & Bakare, 2015; Onifade, 2018). The factors that contribute to the poor implementation of ICTs in the school include poor teacher preparation, limited professional development opportunities, lack of functional computer laboratories, and the use of ICTs in a manner that fails to address the issues of resource constraints (Aboderin, 2014; Ogele et al., 2022). In this regard, learners are often denied meaningful opportunities to gain real hands-on computing skills necessary for learner's educational and career path (Bakare, 2017).

The quality of the teacher is always a key factor in determining the amount and quality of Computer Studies being provided. Teacher quality in this context is viewed as both involving three interrelated aspects: digital literacy and fluency, pedagogical competence (especially technological pedagogical content knowledge), and proficiency in subject matter of computing. Computing tasks designed by teachers with high digital literacy, strong understanding of the concepts of computing and pedagogical skills are more likely to enhance students' hands-on skills in computing (Afshari et al., 2009; Olori & Saka, 2024). In contrast, when teachers lack digital literacy, lack content knowledge and use transmissive pedagogy, Computer Studies is dealt with superficially, resulting in poor learning outcomes (Bakare, 2017; Ogbu, 2025).

The increasing awareness of these dynamics, however, is matched by a limited literature base of empirical research which takes the 'teacher factor' as its focus in relation to Computer Studies teaching in Junior Secondary Schools in the Chanchaga LGA of Niger State. The current literature is focused mostly on curriculum structure, resource availability, or issues pertaining to the students themselves, and there is a lack of focus on the role of the teacher's attributes and competencies in the mediation of instruction in actual classroom settings (Bamidele & Bakare, 2015; Onifade, 2018). It fills this void by focusing on the role of the teacher as a major agent of curriculum implementation and examining the effects of teachers' qualification, computer literacy, pedagogical competence and content knowledge of Computer Studies on the quality of the teaching of computer studies in the eight public junior secondary schools of the LGA under study.

1.1 Statement of the Problem

National curriculum frameworks place emphasis on digital literacy and the practical teaching of Computer Studies, but outcomes from this are evident in several Junior Secondary Schools in Chanchaga LGA where such teaching and learning are not being put into practice. There are notable lack of students' practical computing skills coupled with the predominance of theoretical teaching of Computer Studies which suggests that the way existing teachers are teaching the subject is not adequate (Jegede & Owolabi, 2003; Onifade, 2018). The trends have been attributed to curriculum design, instructional materials, or student-related factors, such as motivation and study habits, in earlier research. Although these dimensions are relevant, they are not enough to highlight the importance of teachers as main actors in the implementation of effective pedagogy for Computer Studies.

The study of curriculum implementation by researchers has shown that teacher-related factors like his or her qualification, pedagogical competence and subject content knowledge are of critical importance to the quality of instruction (Oglelare and Ayo, 2017; Aboderin, 2014; Oglelare et al., 2022). In the Junior Secondary School classroom of Chanchaga LGA however, there is limited empirical research on the specific effect of the above mentioned variables on Computer Studies teaching in the classroom environment as there are only eight public junior secondary schools and few Computer Studies teachers within the LGA. There have been problems reported with lack of resources and inadequate practical relevance in existing studies, but these problems are not explicitly linked with the indicator of teacher quality (Bamidele & Bakare, 2015; Bakare, 2017).

The general problem under consideration in this study is the insufficient study of the role of teachers' digital literacy, pedagogical competence and subject knowledge on the teacher's teaching in Computer Studies in the eight public Junior Secondary Schools of Chanchaga LGA, Niger State with a specific focus on the effect of teachers' subject knowledge on Computer Studies teaching. If the evidence is not there, policy developments and professional learning programs may be too vague or fail to be tailored to the specific needs of the school, teacher, classroom, and student, which reduces their effectiveness in improving students' digital literacy outcomes.

1.2 Objectives of the Study

The broad objective of this study is to examine the teacher factor in Computer Studies instruction among Junior Secondary School students in Chanchaga LGA, Niger State. Specifically, the study aims to:

- (i) examine the educational importance of Computer Studies in the teaching and learning process at the Junior Secondary School level in Chanchaga LGA;
- (ii) investigate the role of teachers in facilitating or constraining the effective teaching of Computer Studies in the classroom;
- (iii) assess the quality of teachers in terms of their academic and professional qualifications, digital literacy, pedagogical competence, and subject content knowledge; and
- (iv) identify the challenges teachers encounter in teaching Computer Studies and propose context-appropriate strategies for strengthening digital literacy in Chanchaga LGA.

1.3. Research Questions

The study is guided by the following research questions:

- (i) What is the educational significance of Computer Studies in Junior Secondary School instruction in Chanchaga LGA?
- (ii) In what ways do teachers promote or hinder the effective teaching of Computer Studies in their classrooms?
- (iii) What is the current level of teacher quality in relation to qualification, digital literacy, pedagogical competence, and subject content knowledge?
- (iv) What challenges do teachers face in teaching Computer Studies, and what practicable measures can enhance instruction and improve students' learning outcomes?

1.4 Significance of the Study

This study enriches the body of knowledge of Computer Studies teaching by highlighting the role of teacher as a key explanatory variable in the teaching and learning of digital literacy at the Junior Secondary School level. Conceptually, it helps contribute to the discussion of teacher quality in the context of digital literacy, pedagogical competence, and content knowledge; and by exploring how these aspects relate and interrelate in actual classroom environments (Afshari et al., 2009; Olori & Saka, 2024).

In practice, findings of the study serve as empirical information for the education policy makers and administrators of the LGA of Chanchaga in general and other Local Government Areas in the Kaduna State as far as recruitment of teachers, deployment of teachers and in professional development programmes in the area of Computer Studies competencies are concerned. The study also provides practical suggestions to teachers as to instructional strategies that are effective in a resource-poor environment (Buabeng-Andoh, 2012; Ogbu, 2025). The findings for curriculum planners and technology resource developers are used to identify points where current curriculum supports or undermines effective Computer Studies instruction and therefore, inform future revisions to the curriculum.

2. RESEARCH METHODOLOGY

The study design was a mixed method research design which involved both quantitative and qualitative methods for a holistic perspective on the teacher variable in Computer Studies instruction in the junior secondary school classrooms of Chanchaga LGA of Niger State. The quantitative strand produced quantitative evidence of teacher characteristics, effectiveness of teaching and statistical relationships between important variables, and the qualitative strand produced qualitative evidence of classroom processes, teaching, and contextual influences that were not fully quantifiable.

Population size included all the 1,001 teachers from all the 8 public junior secondary schools in Chanchaga LGA, Niger State as reported by the local government education authority (LGEA) Chanchaga (2026). The target group for this study was the Computer Studies teachers. Large schools (found to have over 1,000 students) had three to five teachers of Computer Studies and medium schools (500 to 1,000 students) had one to two. There were 38 teachers of Computer Studies in all the eight schools. Since the population to be sampled was not too large, a census sampling approach was used. All 38 teachers in Computer Studies were invited to participate; 32 of which consented (84.2%). Teacher and students were involved because effective Computer Studies teachers are effective, and the effective teachers are effective teachers who design effective teaching and learning; also, part of effective teaching is an effective classroom process that is visible in students' experiences.

There were three instruments used for data collection. The digital literacy, pedagogical competence, interactional techniques, questioning strategies and subject content knowledge of the teachers were assessed through a structured classroom observation checklist that was applied to teachers' performance in real time computer studies lessons. Situational bias was minimised by observing each teacher at least twice. The Computer Studies Teacher Instruction Questionnaire (CSTIQ) was used to gather data regarding demographic factors, qualifications, instructional experience, professional development experiences, beliefs about Computer Studies, and self-reported instructional practices. Learners' perception of classroom interaction, opportunities for using practical computing, and how well lessons were structured to foster digital skill development were also explored in a student interview guide.

The content validity of the instrument was done using experts' reviews by the computer science education specialists of Ibrahim Babangida University, Lapai who checked the clarity, relevance and purpose of the instrument items with respect to the research objectives. Two schools not part of the main sample were used in a pilot study. Pilot data analysis using Cronbach's alpha corroborated internal consistency of above 0.70, which is considered acceptable. To avoid subjective bias in the scoring of observations, inter-rater reliability procedures were used. The data collection was carried out in three stages: observations in the classroom, teacher questionnaire, and student interviews. Trained research assistants were used to support all field activities to ensure that procedures are consistent.

Descriptive statistics were applied to the scores obtained from questionnaires and observation forms while thematic analysis was applied to the qualitative data. The study was carried out in an ethical manner, in line with the research guidelines and regulations. Prior to fieldwork, permission was secured from the Chanchaga LGA Education Authority and school administrators. All data were anonymous and securely stored, and participation was voluntary.

3. RESULTS

3.1 Background Characteristics of Respondents

Table 1: Background Characteristics of Respondents

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	19	59.4
	Female	13	40.6
Highest Academic Qualification	NCE	18	56.3
	B.Sc./B.Ed.	9	28.1
	PGDE	3	9.4
	M.Sc./M.Ed.	2	6.3
Area of Specialisation	Computer Studies	12	37.5
	Other Subjects	20	62.5
Teaching Experience	1–5 years	8	25.0
	6–10 years	14	43.8
	11–15 years	7	21.9
	16 years and above	3	9.4
School Location	Urban	14	43.8
	Peri-urban	18	56.3
Received In-Service Training on Computer Studies	Yes	10	31.3
	No	22	68.8

Source: Field Survey, 2026

The background data of the 32 respondents is given in Table 1. The male teachers outnumbered the female teachers (59.4% compared to 40.6%). As for qualification, most of them had the Nigeria Certificate in Education (56.3%) followed by the holders of the bachelor's degree (28.1%).

In terms of specialisation, the 37.5% of teachers who taught Computer Studies as a main subject, while the other 62.5% taught it as an additional subject within their main specialisation. Most teachers (43.8%) had spent 6–10 years teaching. The major segment of respondents were from the peri-urban schools (56.3%). Most importantly, 68.8% reported that they had received no in-service training specifically for Computer Studies, indicating that professional development is a challenge to be overcome as predicted in the subsequent analyses.

3.2 Educational Significance of Computer Studies

Table 2: Mean and Standard Deviation of the Educational Significance of Computer Studies in Junior Secondary School Instruction

S/N	Item	Mean ($\bar{x}$)	Std. Dev. (σ)
1	Computer studies help students develop essential digital literacy skills needed for the modern workforce.	4.44	0.619
2	Practical computer skills provide meaningful opportunities for students to solve real-world problems.	4.38	0.675
3	The use of computer-based tools enhances students' critical thinking and problem-solving abilities.	4.25	0.752
4	Computer studies instruction improves students' logical reasoning and algorithmic thinking abilities.	4.13	0.805
5	Computer studies education supports students' preparation for further studies and career opportunities in technology fields.	4.19	0.735
	Grand Value	4.28	0.717

Source: Field Survey, 2026

The overall mean of the teachers in Table 2 indicates that there was a high level of agreement on the value of Computer Studies (4.28). The strong consensus was indicated by the highest mean value (4.44) and the lowest standard deviation value (0.619) in item 1 on developing digital literacy skills. The second item, which dealt with computing skills for solving real world problems, also received a high mark ($M = 4.38$, $SD = 0.675$). The mean (4.13, $SD = 0.805$) of item 4, on improving logical reasoning and algorithmic thinking, was the lowest, suggesting that there might have been more variation in the views expressed, perhaps because the programming resources available were limited and there was less pedagogical training in CT. The results are consistent with the arguments that Computer Studies is vital for the development of digital competencies (Adomi & Kpangban, 2010; Gambari et al., 2021), and that there are areas where targeted teacher support is needed.

3.3 Ways Teachers Promote or Hinder Computer Studies Instruction

Table 3: Mean and Standard Deviation of the Ways Teachers Promote or Hinder the Effective Teaching of Computer Studies

S/N	Item	Mean ($\bar{x}$)	Std. Dev. (σ)
1	I consciously plan my computer studies lessons to include practical, hands-on activities for students.	3.81	0.891
2	Classroom activities I design encourage students to use computers to explore, create, and apply digital skills.	3.88	0.815
3	My teaching approach allows students to interact actively with computers and software rather than simply memorising concepts.	3.69	0.950
4	I use questioning strategies that connect theoretical concepts with practical computer applications.	3.75	0.875
5	My teaching methods promote meaningful skill development during computer studies lessons.	3.84	0.858
	Grand Value	3.79	0.878

Source: Field Survey, 2026

The results of the mean scores shown in Table 3 are significantly lower than those in Table 2, showing that there is a gap between teachers' beliefs of Computer Studies and their instructional practices. Designing activities for students to explore and create with the use of computers (Item 2, $M = 3.88$, $SD = 0.815$) had the most positive ratings, indicating some level of inclination to interactive tasks, although there is some variation. The lowest mean (3.69) and the highest standard deviation (0.950) were found for Item 3, which involves embracing active computer interaction as opposed to rote learning, indicating that rote learning is still used in many classrooms to a large extent and varies greatly across teachers. The results corroborate the study which found that in many schools in Nigeria, Computer Studies content is mostly theoretical and is taught for examination purposes instead of skills development (Bamidele & Bakare, 2015; Onifade, 2018).

3.4 Current Level of Teacher Quality

Table 4: Mean and Standard Deviation of the Current Level of Teacher Quality in Relation to Qualification, Digital Literacy, Pedagogical Competence, and Subject Content Knowledge

S/N	Item	Mean ($\bar{x}$)	Std. Dev. (σ)
1	I possess adequate academic and professional qualifications to teach computer studies effectively.	4.06	0.752
2	My level of computer literacy and digital fluency enables me to effectively model the use of technology for students.	3.94	0.771
3	I have sufficient pedagogical skills to teach computer studies through practical, hands-on activities.	3.62	0.985
4	I have strong subject content knowledge in computer studies.	3.85	0.865
5	My training has adequately prepared me to teach computer studies effectively in Junior Secondary School classes.	3.48	1.060
	Grand Value	3.79	0.887

Source: Field Survey, 2026

\Teachers' perceptions of their academic qualifications and basic computer literacy skills are high, and the highest mean score is on Item 1 (4.06, SD = 0.752) followed closely by Item 2 (3.94, SD = 0.771) as shown in Table 4. Content knowledge (M = 3.85, SD = 0.865) is reasonably self-assessed in item 4. The lowest scores and the highest dispersion were, however, obtained for pedagogical application – specifically, for hands-on training (M = 3.62, SD = 0.985) and for training preparation specifically for Computer Studies (M = 3.48, SD = 1.060). The low mean of the Item 5 indicates that teachers are poorly prepared for this task, either in pre-service or in-service training. The results corroborate the view that poor teacher preparation and lack of professional development account for the problems of effective Computer Studies Education in Nigeria (Aboderin, 2014; Ogele et al, 2022) and the evidence that Nigerian Computer Studies teacher preparation programmes are still in their early stages and curricula are still evolving (Bakare, 2017; Olori & Saka, 2024).

3.5 Challenges and Practicable Measures

Table 5: Mean and Standard Deviation of Challenges Teachers Face in Teaching Computer Studies and Suggested Remedies

S/N	Item	Mean ($\bar{x}$)	Std. Dev. (σ)
1	Lack of functional computers, computer laboratories, and reliable electricity supply limits my ability to teach computer studies effectively.	4.66	0.568
2	Large class size limits my ability to provide individual attention and manage hands-on computer activities for all students.	4.53	0.611
3	Time constraints within the school timetable hinder effective coverage of the computer studies curriculum.	4.34	0.752
4	Inadequate professional development opportunities affect my competence in teaching computer studies.	4.16	0.875
5	Regular in-service training and the provision of ICT resources would significantly improve my ability to teach computer studies effectively.	4.72	0.552
	Grand Value	4.48	0.672

Source: Field Survey, 2026

Table 5 shows the significant problems faced by teachers in providing Computer Studies teaching. The most critical issue was the lack of functional computers, laboratories and reliable electricity (Item 1, $M = 4.66$, $SD = 0.568$) resulting in hands-on practical computing activities in many schools being virtually impossible. Larger classes ($M = 4.53$, Item 2) also limit interactive uses of computers, as teachers tend to be more likely to use lecture-centred approaches. The realities of the school timetable (Item 3, $M = 4.34$) and a lack of professional development opportunities (Item 4, $M = 4.16$) add to these challenges.

It was worth noting that teachers strongly felt about the need for regular inservice training and ICT resources (with a mean of 4.72, $SD = 0.552$) as this item recorded the highest mean in the table. The results are consistent with studies that have shown the structural and resource limitations of the practice of Computer Studies education despite teachers' appreciation of the benefits, there is a tendency to return to traditional ways of teaching using theoretical approaches (Bakare, 2017; Ogbu, 2025; Aboderin, 2014).

4. DISCUSSION OF FINDINGS

The results indicate a clear and consistent difference between what teachers believe and what they do in their classrooms, and are both statistically stable and of theoretical interest. As can be seen in Table 2, teachers' attitudes towards the importance of Computer Studies in the educational process were significantly positive (4.28). The mean scores in Table 3, however, indicated that instruction at the practical level was less effective, with scores in the lower range for the item of encouraging active computer interaction rather than memorisation ($M = 3.69$). This separation was evident in classroom observation: Computer Studies were taught largely in a theoretical way, with emphasis on definitions and concepts with little or no hands on activities. When there were computers, they were often out of order or locked away. However, these findings were supported by student interviews, where students indicated that lessons were teacher-centred and they copied notes and did not have the opportunity to use a computer. One pupil commented: 'We are taught about computers but have never touched one.'

There are several reasons for this difference that relate to the teachers. Table 4 indicated that teachers were moderately confident in their capabilities in terms of their qualifications and basic computer knowledge, but much less confident in terms of pedagogy in computer practice and preparation for training. Table 1 showed that only 37.5% of teachers have specialization in Computer Studies and that 68.8% of the teachers had not taken any in-service training in Computer Studies. This is congruent with the fact that many teachers of Computer Studies in Nigeria are assigned this subject as an extra-curriculum subject, besides their main subject (Bakare, 2017). Table 5 pinpointed major structural issues that were substantiated during the classroom observations: having functional computers and electricity, large class sizes, time constraints, and insufficient professional development. There was only a computer lab in three of the eight schools with a steady power supply in Chanchaga LGA.

The findings from the quantitative data were complimented with qualitative data obtained from classroom observations and student interviews. Teachers who tried to do practical activities reported spending too much time on the logistics. One teacher said: 'I know that students have to practice on computers to learn, but we have 120 students and only have 5 computers, and the electric power is not stable. Another said: 'I was trained in Mathematics and I was asked to teach Computer Studies as there was no one else'. These are examples of human aspects of the structural barriers quantified.

All of these findings show that the teacher factor plays a significant role in the success or failure of the Computer Studies instruction in the eight Junior Secondary Schools in Chanchaga LGA. To overcome these problems, continuous professional development, better pre-service teacher training and the availability of adequate technology equipment, a functional laboratory and reliable electricity supply are needed. The findings are similar to those of other studies on the integration of ICT in schools in Nigeria (Afshari et al., 2009; Buabeng-Andoh, 2012; Ogbu, 2025), and supported by the existing research literature that shows the importance of technological pedagogical content knowledge in effective technology-integrated instruction (Olori & Saka, 2024).

5. CONCLUSION

The findings of this study shows that the teacher factor plays a pivotal role in the effective teaching of Computer Studies in Junior Secondary School teaching in the eight public schools of Niger State, LGA of Chanchaga, Niger State. Teachers' positive attitudes towards the importance of Computer Studies in education are present yet apparent disconnection between these attitudes and their practice is evident. There is a lack of pedagogical skills, subject content confidence and training preparation in the area of delivering Computer Studies in a practical, hands-on way. The lack of fully functional computer labs, access to stable electricity, the size of classes, the timetable, and the lack of professional development are all environmental or systemic factors that impede effective teaching.

Results of the quantitative analysis are confirmed through observations in the classroom and interviews with the students, both of which show that Computer Studies were mostly taught in a theory-oriented manner and that memorization was more important than the development of practical skills. Professional development, strengthening of the pre-service teacher training, and the provision of technology infrastructure must be emphasised for effective Computer Studies instruction to be realised. If this is not done then there will remain a gap between the teacher's beliefs and practice and the students of Chanchaga LGA will continue to miss out on the advantages of quality Computer Studies education.

6. RECOMMENDATIONS

Based on the results obtained, the following recommendations are made:

1. Teacher institutions need to enhance pre-service teacher training courses, and integrate curriculum development on teaching computer studies in a way that provides practical teaching experiences for student teachers to practice hands-on teaching skills with technology, with proper supervision. The courses should make for using real computer, and development of educational software and programming tools relevant to the junior secondary curriculum (Bakare, 2017; Olori & Saka, 2024).
2. The in-service professional development of the teachers in the LGA Education Authority of the Chanchaga LGA should be sustained by the regular provision of hands-on in-service workshops, specifically on pedagogical skills in the teaching of Computer Studies by the LGA Education Authority in cooperation with the Niger State Ministry of Basic and Secondary Education and the Universal Basic Education Board. A one-shot seminar should not be the only way these programmes are delivered but should involve classroom demonstration and peer mentoring as well as follow up support (Olori & Saka, 2024; Ogbu, 2025).
3. The school principals and the LGA-level administrators should form Subject Based Professional Learning Communities (PLCs) in the schools where teachers gather regularly to exchange resources, share ideas and discuss effective teaching strategies (Buabeng-Andoh, 2012; Afshari et al., 2009).

4. The training of teachers in digital literacy and pedagogical competence should be improved through integrating the development of digital competency into pre-service and in-service teacher training, including computer skills training sessions and pedagogical training sessions on coding and educational software (ESW), in teacher training institutions (TIs) and school administration (Ogbu, 2025; Afshari et al., 2009).
5. Structural barriers should be addressed by 5 (Nnamdi, 2012; Ogele et al., 2022), which includes providing reliable electricity and internet connection in all Junior secondary schools in the Chanchaga LGA; increasing the size of the classrooms in Junior secondary schools, and recruiting teachers to fill the classrooms; giving adequate time allocation for Computer Studies practical teaching in the Junior secondary schools.

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