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STUDENTS' PERCEIVED IMPACT OF COMPUTERIZED MEDIA ON ENGLISH LANGUAGE LEARNING IN PUBLIC SECONDARY SCHOOLS IN MBEYA, TANZANIA

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ABSTRACT

This study examined the impact of computerized media on students' English language learning in public secondary schools in Mbeya City, Tanzania. The study adopted a quantitative approach and descriptive research design to examine the perceived impact of computerized media on students' English language learning. The study employed purposive sampling to select Form Three students and four public secondary schools that utilized computerized media. A sample of 242 out of 612 Form Three students was selected from four public secondary schools using the Yamane formula, whereby simple random sampling was used to select the number of students from each selected school. Grounded in Mayer's Cognitive Theory of Multimedia Learning, data were collected through a semi-structured questionnaire and analyzed using descriptive statistics, particularly frequencies and percentages. Findings revealed that computerized media had a significant positive impact on students' English language learning by enhancing their language skills and lesson engagement. However, significant challenges constrained effective utilization of computerized media, including poor internet connectivity, unreliable electricity, limited digital skills, authority restrictions and limited access to devices. The study concludes that computerized media significantly improves English language learning; however, their educational potential depends on reliable digital infrastructure, adequate devices and students' digital competencies.

KEYWORDS: Computerized media, English language learning, digital skills, multimedia learning, secondary education.

1. INTRODUCTION

Globally, the rapid development of information and communication technologies (ICTs) has transformed teaching and learning processes across educational systems in the universe. Computerized media, including computers, smartphones, tablets, projectors, online learning platforms, educational applications and multimedia resources, have increasingly become invaluable tools for supporting classroom instruction and independent learning. Technological innovations such as internet, smartphones, cloud computing, learning management systems, artificial intelligence and mobile applications have revolutionized educational delivery by making learning more flexible, collaborative and accessible beyond the traditional classroom. UNESCO (2023) notes that digital transformation has fundamentally changed how teachers teach, how students learn and how educational institutions organize instructional processes across the globe. In language education, computerized media provide opportunities for learners to interact with audio, visual, textual and interactive materials that help them to improve their skills and understood the lesson taught.

In Africa, governments are increasingly recognizing digital technologies as being essential tools for expanding educational access, improving instructional quality and preparing learners for participation in the global knowledge economy. Recent studies have demonstrated that digital technologies provide students with opportunities to practise receptive and productive language skills. Warschauer and Healey (1998) argue that computer-assisted language learning provides opportunities for learners to practise different language skills through interactive and multimedia environments. Similarly, Blake (2013) observes that digital environments can extend language learning beyond classroom boundaries by providing learners with access to authentic language materials and opportunities for communication.

The increasing availability of smartphones and internet-based platforms has further expanded opportunities for English language learning. Students can use digital platforms such as YouTube, WhatsApp, educational websites and language-learning applications to access English learning materials, communicate with peers and practise various language skills. Kukulska-Hulme (2020) notes that mobile technologies have become increasingly important in language learning because of their portability, accessibility and capacity to support learning across different contexts. Despite substantial investments in ICT infrastructure and educational technology, many developing countries continue to experience persistent challenges associated with inadequate technological infrastructure, unreliable internet connectivity, insufficient teacher competence, limited digital learning resources and unequal

access to technological devices particularly in public schools (UNESCO, 2023 and World Bank, 2020).

In Tanzania, the integration of ICT in education has been promoted as part of the concerted efforts to improve the quality, accessibility and relevance of education. Computerized media have provided opportunities in exposing students to multimedia learning resources, including audio, video, interactive exercises, online texts and communication platforms. Research has demonstrated that technology can enhance learner engagement, autonomy and access to authentic materials and opportunities for language practice (Blake, 2013; Chapelle, 2003; Warschauer & Healey, 1998). However, schools in many countries continue to experience challenges associated with inadequate ICT infrastructure, unreliable electricity, limited internet connectivity, insufficient digital devices and varying levels of digital competence. Mtebe and Raisamo (2014) and Kafyulilo (2014) have observed that infrastructure, internet connectivity, availability of devices and digital competencies are important factors influencing effective technological integration in Tanzanian educational institutions.

Although previous studies have addressed ICT integration in education generally, there is limited empirical evidence specifically demonstrating how students perceive the contribution of computerized media to specific English language skills. Therefore, little attention has been accorded the extent to which computerized media influence reading, listening, speaking, writing, vocabulary and grammar in English language teaching and learning among secondary school students in Mbeya City. Furthermore, existence of technological resources does not necessarily indicate that students are benefiting equally from them. Therefore, the present study addressed this gap by examining students' reported experiences of computerized media in English language learning. It specifically investigated the extent of perceived improvement in English language learning, the particular language skills students considered to have improved, their level of classroom engagement and the challenges limiting their effective use of computerized media.

2. Theoretical Framework

This study was guided by Mayer's (2009, 2014) Cognitive Theory of Multimedia Learning (CTML). The theory explains how people learn from combinations of written texts and pictures. According to Mayer, learners possess two separate information-processing channels: the verbal/auditory channel for processing words and the visual/pictorial channel for processing images and other visual representations. Each channel has limited processing capacity. Effective multimedia learning occurs when learners actively select relevant

information, organize it into coherent mental representations and integrate the representations with prior knowledge.

The theory is particularly relevant to a study on the application of computerized media to English language learning because digital technologies can combine written words, spoken language, pictures, animations, videos and interactive activities. For example, a student learning English vocabulary through a digital video may hear the pronunciation of a word while simultaneously seeing its written form and an image representing its meaning. Such integration may facilitate comprehension and retention because information is processed through complementary modes. Digital materials need to be relevant, organized and appropriately designed to avoid unnecessary cognitive load. This theory, therefore, provides a useful explanation for the reported improvements in students' reading, listening, speaking, writing, vocabulary and grammar.

The theory is consistent with Blake (2013), who argues that digital learning environment enhances language acquisition by exposing learners to authentic language input and providing opportunities for interactive communication and immediate feedback. Similarly, Warschauer and Healey (1998) contend that technology-rich learning environments improve learners' listening, speaking, reading and writing skills through meaningful interaction with multimedia resources and online learning platforms. Likewise, Schindler et al (2017) argue that the use of computerized media through multimedia content, online discussion and interactive platforms enable students to participate more effectively in classroom activities and strengthen their practical English language skills. Additionally, Alharbi (2015) notes that multimedia presentations and educational learning platforms create interactive learning environment that encourage active students' participation.

3. RESEARCH METHODOLOGY

The study was conducted in Mbeya City. The city hosts a mixture of public and private schools as well as higher learning institutions, thus, offering relevant environment with a broad sample of students with varying exposure to computerized media. Furthermore, the city had limited studies on the impact of computerized media on students' English language learning, making it a strong case for carrying out the study. The study adopted a quantitative research approach using a descriptive research design to examine the impact of computerized media on students' English language learning in public secondary schools in Mbeya City, Tanzania.

From 40 public secondary schools in the study area, four schools were purposively selected owing to their relevant settings in which computerized media were available and used for educational purposes. The study involved Form Three students who were selected purposively to provide the requisite information on the research problem of the study. The sample size of 242 out of 612 Form Three students was obtained using Yamane's (1967) formula. The sample of 242 students were selected using simple random sampling to provide each Form Three student from each of the selected schools an equal opportunity of participation.

Data were collected using a semi-structured questionnaire containing items on students' experiences with computerized media, perceived improvement in English language skills, classroom engagement and challenges encountered in using the computerized media. The questionnaire generated quantitative data that were analyzed using descriptive statistics whereby SPSS and Microsoft Excel were used to calculate frequencies and percentages. The findings were presented in tables and interpreted based on the study objective and assumptions of Mayer's Cognitive Theory of Multimedia Learning.

Research ethical issues were adhered to by the researcher by, firstly, seeking research permission from relevant authorities and obtaining informed consent from the respondents who participated in the study. The researcher ensured that all participants were free from any coercion and maintained confidentiality by not disclosing participants' names and sensitive information.

4. FINDINGS AND DISCUSSION

The study focused on students' perceived impact of computerized media on English language learning by highlighting the role of technology in supporting language learning. The presentation begins by examining the demographic characteristics of respondents and the distribution of students across the four selected schools. The study explored students' perceptions regarding the impact of computerized media on English language learning by addressing the contributions and limitations of using computerized media on English language learning. The study employed descriptive statistics with quantitative insights to provide a robust interpretation of the data, supported by relevant literature.

4.1 Demographic Characteristics of Respondents

The study involved Form Three students from four selected public secondary schools in Mbeya City. Demographic profile of the respondents was collected to ensure inclusivity and credibility of the study. Examining the demographic characteristics of respondents was

important because factors like maturity, prior experience in technology use and social environment often affect students' access and use of computerized media in learning English language (Livingstone & Haddon, 2012). Variables such as age, gender and school background may influence students' exposure and interaction with computerized media in English language learning. The detailed distribution of students' age and sex across the four selected public secondary school are presented in Table 1.

Table 1: Gender, Age and School Distribution of Respondents.

Category	Variable	Frequency	Percent (%)
Students (N = 242)			
Students' Gender	Male	95	39.3
	Female	147	60.7
Subtotal		242	100
Students' Age	15	97	40.1
	16	107	44.2
	17	30	12.4
	18	8	3.3
Subtotal		242	100
School Distribution	School A	47	19.4
	School B	97	40.1
	School C	64	26.4
	School D	34	14
Subtotal		242	100

Source: Field Data (2025).

The results in Table 1, show that most respondents were females, accounting for 60.7 per cent, while males accounted for 39.3 per cent, indicating relatively balanced participation. Majority of the students, representing 84.3 per cent, were aged between 15 and 16 years, reflecting the typical age group for Form Three learners who were likely to be active and adaptable to computerized media. Regarding school representation, Secondary School B contributed the highest number of respondents with 40.1 per cent, followed by Secondary School C at 26.4 per cent, Secondary School A at 19.4 per cent and Secondary School D at 14.0 per cent. Overall, the demographic composition ensured diverse and representative insights across the secondary schools in Mbeya City.

4.2 The Extent to which Computerized Media Impacted Students' English Language Learning

The study examined students' perceptions regarding the extent to which computerized media had influenced their English language skills, including listening, speaking, reading, writing,

vocabulary development and enhancement of grammar. Table 2 presents the extent to which computerized media affected students' English language skills.

Table 2: Extent to Which Computerized Media Improved Students' English Language Skills.

Extent of Impact	Frequency	Percentage (%)
Somehow improved	120	49.6
Highly improved	92	38.0
No improvement	18	7.4
Neutral	12	5.0
Total	242	100.0

Source: Field Data (2025).

The results indicated that computerized media had a significantly positive influence on students' English language learning. Nearly half of the respondents 49.6 per cent reported that computerized media had somehow improved their English language skills, while 38.0 per cent reported that their skills had been highly improved. In contrast, only 7.4 per cent reported no improvement, while 5.0 per cent remained neutral.

The findings suggest that computerized media were useful learning resources for the majority of students in the selected public secondary schools. The high proportion of students reporting improvement may be attributed to the capacity of digital technologies to provide learners with multiple forms of English language input. Through videos, audio materials, digital texts, online exercises and educational applications, students can encounter English in different forms rather than relying solely on teacher explanations and textbooks.

The finding is consistent with Mayer's (2009, 2014) Cognitive Theory of Multimedia Learning, which proposes that meaningful learning can be enhanced when verbal and visual representations are appropriately combined. Computerized media presents English language information through complementary auditory, textual and visual modes, thereby creating opportunities for learners to construct richer mental representations of the content. The result also corresponds with Blake (2013), who argues that digital language-learning environments provide learners with access to authentic input and opportunities for interaction and practice. Similarly, Chapelle (2003) emphasizes that technology can enhance language learning when it provides learners with meaningful exposure, interaction and opportunities for language practice. Warschauer and Healey (1998) also maintain that computer-assisted language

learning supports development of different language skills by creating interactive learning environments. The relatively small proportion of students reporting no improvement indicates that the effectiveness of digital technologies depends on access, quality of materials, learner competence and the conditions under which technology is used.

4.3 Impact of Computerized Media on Specific English Language Skills

The study further sought to examine specific English language skills that students perceived to have improved through the use of computerized media. However, since the students were given opportunity to identify more than one skill, the frequencies and percentages do not necessarily sum up to 242 or 100 per cent. Table 3 presents the specific English language skills reported to be been improved by the students' use of computerized media.

Table 3: English Language Skills Improved Through Computerized Media.

English Language Skills	Frequency	Percentage (%)
Speaking Skills	197	81.4
Listening Skills	199	82.2
Reading Skills	213	88.0
Writing Skills	190	78.5
Vocabulary Expansion	145	59.9
Grammar Enhancement	187	77.3

Source: Field Data (2025).

The findings in Table 3 show that reading skills recorded the highest language improvement, amounting to 88.0 per cent, followed by listening skills 82.2 per cent and speaking skills 81.4 per cent of the respondents. Writing skills were reported by 78.5 per cent of students, while grammar improvement was reported by 77.3 per cent. Vocabulary expansion recorded the lowest percentage, although it was still reported by a considerable 59.9 per cent of respondents.

The high percentage for reading skills suggests that computerized media provided students with increased opportunities to encounter English texts. Therefore, digital platforms expose learners to online articles, electronic textbooks, educational websites, subtitles, digital dictionaries and other reading resources. Unlike conventional classroom materials that may be limited in quantity, digital resources potentially provide learners with a much wider range of texts.

This finding is consistent with Mayer's Multimedia Learning Theory as it demonstrates that computerized materials combines written language with illustrations, diagrams, animations and other visual representations to enhance language learning. Such combinations can help

learners establish connections between verbal information and corresponding visual information (Mayer, 2014). The result also supports Warschauer and Healey (1998), who argue that computer-based environments facilitate language learning by providing learners with diverse and interactive materials.

Listening skills were reported to have improved by 82.2 per cent of students, which can similarly be explained by the availability of audio and video resources. Computerized media enable learners to listen to English pronunciation, conversations, speeches and other authentic forms of spoken English repeatedly. This provides opportunities that may be difficult to achieve through teacher-centred instruction alone. Blake (2013) notes that digital environments expose language learners to authentic linguistic input and provide opportunities for repeated practice.

Speaking skills were reported to have improved by 81.4 per cent of respondents. This demonstrates that digital platforms can support speaking by exposing students to pronunciation models and providing opportunities for interaction through audio-visual content and online communication. Kukulska-Hulme (2020) argues that mobile and digital technologies can support language learners' autonomy and provide opportunities for communication beyond the conventional classroom.

Writing was reported to have improved by 78.5 per cent of students, while grammar improvement was reported by 77.3 per cent. These results suggest that computerized media supported productive language skills as well as receptive skills. Word-processing applications, online exercises, digital writing tasks and grammar-learning applications provided learners with opportunities to practise writing skills and receive feedback. Chapelle (2019) emphasizes that technology-supported language learning can be valuable when learners receive opportunities to interact with language and obtain feedback.

Vocabulary improvement, reported by 59.9 per cent of students, was comparatively lower than the other skills. This indicates that computerized media were more frequently used for accessing texts, videos and classroom materials than for systematic vocabulary development. Nevertheless, the finding still indicates that a substantial proportion of students benefited from digital resources for vocabulary learning. Constantinescu (2007), points out that online dictionary enhances students' reading abilities as well as improving the vocabulary of the learners. Online dictionaries, videos, subtitles and language applications can provide learners with contextualized exposure to new words.

Overall, the results demonstrated that computerized media supported both receptive skills (reading and listening) and productive skills (speaking and writing). Sharma (2024) has

pointed out that the use of technological tools has a significant effect on the learning process of each area of the language. This supports the central proposition of Mayer's theory that learning is strengthened when information is presented through complementary verbal and visual modes. However, the variation among skills also suggests that the impact of computerized media is influenced by how specific digital resources are used. The English language teachers need to deliberately select multimedia resources that are appropriate to particular language-learning skills.

4.4 Students' Engagement and Interaction in English Language Classrooms

The study further examined the extent to which computerized media influenced students' engagement and interaction during English language learning. The integration of computerized media in English instruction influenced students' participation and interaction during English language lessons. Table 4 presents the level of students' engagement and interaction in English language learning influenced by computerized media in classroom setting.

Table 4: Students' Engagement and Interaction in English Language Classrooms.

Rate Category	Frequency	Percentage (%)
High	40	16.5
Moderate	174	71.9
Average	28	11.6
Total	242	100

Source: Field Data (2025).

The results showed that majority of the students, 71.9 per cent, reported moderate engagement, while 16.5 per cent reported high engagement and 11.6 per cent reported average engagement. Thus, 88.4 per cent of students reported moderate or high engagement when computerized media were incorporated into English language learning.

The predominance of moderate engagement suggests that computerized media encouraged students to participate in English language learning, although their influence was not uniformly high among all learners. Digital materials, therefore, make lessons more interactive by incorporating videos, images, audio, online exercises and collaborative activities. Such resources shift classroom interaction away from exclusive dependence on teacher explanations toward greater student participation.

This finding aligns with Mayer's (2014) argument that multimedia facilitates active cognitive processing when learners select, organize and integrate information. When students interact with meaningful multimedia resources, they become more actively involved in processing learning materials compared to when they are passively receiving information. The result also supports Alharbi (2015), who argues that multimedia presentations and educational technologies create engaging learning environments that stimulate learners' attention and participation. Similarly, Schindler et al. (2017) observe that educational technology can contribute to student engagement when it is meaningfully integrated into instructional activities.

However, the fact that only 16.5 per cent reported high engagement indicates that the introduction of computerized media alone does not necessarily guarantee highly active participation. The limited number of devices, unreliable internet connectivity, electricity interruptions and restrictions on device use may have reduced students' opportunities to interact directly with digital materials. Therefore, the findings suggest that the pedagogical value of computerized media depends on both the technology available and the learning conditions in which it is implemented.

4.5. Challenges Limiting the Effective Use of Computerized Media

Although the findings demonstrated positive effects of computerized media, students also reported several challenges that limited their effective use in English language learning. Table 5 presents the frequency and percentage of students reporting each type of challenge limiting their effective.

Table 5: Challenges Faced by Students in Using Computerized Media.

Types of Challenges	Frequency	Percentage (%)
Limited access to computerized devices	163	67.4
Lack of internet connectivity	219	90.5
Lack of knowledge in using computerized media	175	72.3
Unreliable electricity	198	81.8
Lack of support from teachers	36	14.9
Authority prohibition	172	71.1

Source: Field Data (2025).

The most frequently reported challenge was lack of internet connectivity by 90.5 per cent of the students, followed by unreliable electricity by 81.8 per cent and lack of knowledge in

using computerized media by 72.3 per cent. Authority prohibition was reported by 71.1 per cent of the students, while 67.4 per cent reported limited access to computerized devices. Lack of teachers' support was comparatively less frequently reported at 14.9 per cent.

The identification of internet connectivity as a predominant challenge indicated that access to digital learning resources was a major constraint to learning of English language in most schools. Many contemporary English learning resources are internet dependent, including online dictionaries, video platforms, educational websites, communication platforms and language-learning applications. However, when connectivity is unreliable, students cannot consistently access these resources.

This finding is consistent with Mtebe and Raisamo (2014), who identify inadequate ICT infrastructure and internet connectivity as critical barriers to technology integration in Tanzanian educational institutions. Similarly, Kafyulilo (2014) emphasizes that access to infrastructure and technological resources influences teachers' and learners' ability to use ICT effectively.

The finding also has implications for Mayer's Multimedia Learning Theory. Although the theory explains the cognitive benefits of integrating verbal and visual information, learners cannot benefit from multimedia learning if the technological infrastructure required to access multimedia resources is unavailable. Thus, the cognitive effectiveness of multimedia instruction depends partly on the physical and technological conditions supporting its delivery.

Unreliable electricity, reported by 81.8 per cent of students, was another structural barrier to the use of computerized multimedia. This is because computers, projectors, internet routers and other digital technologies depend on a stable power supply. Thus, frequent power interruptions disrupted lessons and reduced opportunities for students to interact with digital resources. This finding aligns with Hawkins (2002) who identifies inadequate electricity infrastructure as a major challenge to ICT implementation in developing educational contexts.

The finding that 72.3 per cent of students reported inadequate knowledge of using computerized media further demonstrates that access to technology must be accompanied by digital literacy. Students may possess or have access to devices but still fail to benefit fully from them if they lack the skills necessary to search for information, use educational applications, navigate online resources or create digital content. This supports the broader argument that meaningful technology integration requires both technological access and digital competence.

Authority prohibition was reported by 71.1 per cent of respondents as being a barrier to the use of some multimedia resources. This finding is particularly important because students may possess smartphones or other digital devices but face restrictions on their use within school environments. Such restrictions do reduce opportunities for educational use of devices, particularly where schools lack sufficient institutional alternatives. The finding therefore highlights the need to distinguish between recreational use of technology and carefully guided educational use.

Limited access to computerized devices was reported by 67.4 per cent of students. This suggests that the digital learning opportunities available to students were unequally accessible to students. A school may have a computer laboratory or several tablets, but if these resources are shared among large numbers of students, individual learners may have insufficient time to interact with them. Warschauer (2003) argues that meaningful digital inclusion involves more than physical access to hardware; it also requires meaningful opportunities to use technology for educational purposes.

In contrast, only 14.9 per cent of students reported lack of teacher support as a challenge. This relatively low percentage suggests that teachers were generally perceived as supportive of computerized media. This is an encouraging finding because teacher guidance is critical in helping students use digital resources appropriately. Teachers can assist learners in identifying reliable resources, organizing multimedia information and linking digital activities with English language learning objectives.

5. SUMMARY OF THE FINDINGS

Generally, the findings demonstrate that computerized media were perceived by students as having a positive influence on English language learning in the selected public secondary schools in Mbeya City. For instance, the results showed that 87.6% of students reported some degree of improvement in their English language skills. The impact on specific skills results further showed that computerized media enhanced reading, listening, speaking and writing skills and improved students' grammar, although vocabulary development was comparatively lower.

The results provide empirical support for Mayer's Cognitive Theory of Multimedia Learning. The theory argues that learners benefit when information is communicated through complementary verbal and visual modes. Computerized media provide exactly these possibilities by combining text, sound, images, video and interactive activities. Consequently,

students encounter English language skills through multiple forms of representation, potentially strengthening comprehension and retention.

Nevertheless, the findings also demonstrated that multimedia learning opportunities were constrained by contextual factors. The very high proportions of students reporting inadequate internet connectivity and unreliable electricity show that technological potential cannot be separated from infrastructure. Similarly, limited access to devices and inadequate digital knowledge prevented students from fully benefiting from multimedia resources.

The findings, therefore, support a balanced interpretation of technology-enhanced English learning. Computerized media should not be regarded as a substitute for effective teaching. Rather, they should be viewed as pedagogical resources that can enhance language learning when teachers integrate them purposefully and when students have adequate access, skills and infrastructure. This observation is consistent with Chappelle (2003), who emphasizes the importance of meaningful technology-mediated language activities and with Blake (2013), who stresses the potential of digital environments to provide authentic language input and interaction.

6. CONCLUSION

The study concludes that computerized media have a generally positive perceived impact on students' English language learning in public secondary schools in Mbeya City. Majority of the students reported a significant degree of improvement in their English language skills after using computerized media. From the perspective of Mayer's Cognitive Theory of Multimedia Learning, the findings suggest that computerized media do facilitate English language learning by providing learners with complementary verbal and visual forms of information. However, the effectiveness of such resources depends on appropriate access, purposeful pedagogical use and learners' ability to interact with the technology.

The findings further indicated that computerized media contributed to enhanced student engagement in English language classrooms. The majority of students reported moderate engagement, suggesting that digital resources made English language learning more interactive and participatory. However, the positive contribution of computerized media was constrained by significant infrastructural and technological barriers. Poor internet connectivity, unreliable electricity, inadequate digital skills, limited access to devices and restrictions on technology use were the major challenges reported by students. Consequently, the potential of computerized media to improve English language learning could not be fully realized without addressing these constraints.

7. RECOMMENDATIONS

This study recommends that the government and education stakeholders should improve electricity supply, internet connectivity and adequate digital devices in public secondary schools to enable students to access online English language resources consistently. It also emphasizes strengthening students' digital literacy and providing continuous professional development for English language teachers in improving both technological and pedagogical competencies. Schools and educational authorities should develop and provide multimedia resources that aligned with English language curriculum particularly in the areas that students reported comparatively lower improvement. Finally, further research should investigate the relationship between the actual frequency of computerized media use and measurable English language achievement through inferential or quasi-experimental approaches.

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