Effects of Computer-Based Interactive Materials in Learning English

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Abstract

The use of technology to strengthen English language teaching and learning is still less observable even now that it is almost everywhere. As a result, teachers often resort to the traditional methods and approaches in the lesson development, assessment, and enrichment activities. Guided by Situated Conditioning learning Theory, this study aims to find out the effect of pupils' exposure to computer-based interactive materials utilized in English classes and find out the challenges experienced by the pupils in learning English. This study is descriptive phenomenological, employing Colaizzi's method of data analysis. It utilized focus group discussions, documentary analysis, and informal interviews to gather data. Participants were randomly selected coming from different grade levels. This study revealed that using technology-based materials in teaching English affects the pupils positively. Moreover, pupils experienced challenges using computer-based interactive materials regarding access and technology support. The results of this study will provide valuable inputs in the effective delivery of instruction and will, in turn, improve pupils' interest and performance in learning English.

Introduction

The changing landscape of 21st Century Education brought about the infusion of technology in the effective delivery of instruction. Schools all over the globe are driven towards technology-based instruction to build a sustainable knowledge-based society. The challenge for globalization is likewise teaching in the 21st century that will cater towards the need of 21st-century learners, who are expected to become influential citizens of knowledge-based societies that are ICT-driven (Garba et al., 2015).

The use of Modern technologies and Information and Communication Technology (ICT) provides the extraordinary infrastructure in delivering knowledge in various ways. Studies likewise show that ICT in teaching and learning positively affects learners' academic achievement. Hence, many teacher education institutions have redesigned their curricula to ensure that prospective teachers will become competent users of technologies when they become teachers (Hartoyo, 2009; Mellati & Khademi, 2014).

Countries all over the globe, including Malaysia, recognize the role of education as the driving force

of its transformation into a knowledge-based society as a requirement in becoming a developed nation in the information age. Thus, policymakers in the education industry redesign their curriculum by pushing towards full integration of information technology in the education system to produce competent graduates who can contribute much towards attaining the national goal (Malaysian Ministry of Education, 2012).

Results of the study of Paje et al. (2021) revealed that computer-based technology in teaching science instruction uplifted pupils' learning interests and conceptual understanding significantly. They also posed that 21st-century teachers need to acquire skills in the effective use of computer-based technology to cope with the needs of 21st-century learners. It is then imperative that the application of technology-based activities in classes has been beneficial in the effective delivery of instruction by making them highly interactive and engaging for the learners.

Seeing its positive impact on education at present, various institutions all around the globe, including the Philippines, give much emphasis on the provision of Information and Communication Technologies (ICT) and computer-aided technology as one of the main infrastructures. (Paje et al., 2021) emphasized the importance of computer-based technology in developing 21st-century learning related to Education 4.0.

The Department of Education emphasizes the comprehensive integration of technology in education as a vital means in achieving quality education in the Philippines in its way of achieving the goal of the government of creating a "people-centered inclusive and development-oriented information society that established the kind of setting wherein everyone may be able to create, access, utilize and share information and knowledge (Kubota, Yamamoto and Morioka, 2018). It is then vital to hold capacity-building training workshops and seminars to ensure that teachers are well-capacitated for effectively integrating technology in their classes.

The use of technology is already adopted in language teaching. It is used as a means to both facilitate and improve language learning. Ahmadi (2018) stipulates that it becomes an important tool that enables teachers to adapt to classroom activities and helps them to carry out language learning activities effectively. Becker (2000) points out that teachers regard computer technology as a significant part of providing high-quality education and an essential instrument in language classes to facilitate the language learning process.

Some studies, however, presented some challenges faced by some institutions in the implementation of technology-based instruction in some institutions in countries around the globe. For example, in language teaching, the study of Rahman (2015) revealed that the utilization of technology in English language classrooms could encourage and expand learning in significant ways. It likewise leads to positive effects in English language teaching and learning. However, excessive use of computers and the internet may "hamper the pupils' original power" by relying on digital content or material. It provides a gap in the use of technology for language teaching.

The study of Kubota, Yamamoto, and Morioka (2018) entitled "Promoting ICT Education in Developing Countries: Case Study in the Philippines," which dealt with the status of ICT-adoption statuses in the country, emphasized the gap of accessibility present in rural and urban areas despite the wide adoption of ICT. It is then imperative that the effective use of technology in teaching is affected by several factors, which hamper the attainment of effective teaching and learning the language.

Some schools, including the Integrated Laboratory School, began using computer-based interactive materials in lower elementary to high schools in English classes. The interactive materials have a set of activities for each lesson with increasing difficulty levels. They are likewise intended for enrichment and mastery learning. However, the youngest group of users are pupils in the Grades 1-3 levels, who have never been exposed to computers in any of their classes.

The lack of exposure to such materials maybe because they had not been introduced nor exposed to the computer classes. But the effect of this has not been investigated as to whether this has some bearing on the pupils' ability to use the materials effectively in their English class. Moreover, the effectiveness of such a program has never been tested as to their effect on the teaching and learning of the pupils, especially in the lower elementary classes. It is on this premise that this study is conducted.

This study aims to determine the effect of computer-based interactive materials on the teaching and learning of English in primary-level classes. More importantly, it seeks to determine what the pupils perceive about their experience despite the lack of exposure to the computer units.

Specifically, the study aimed to find out the answers to the following questions:
1. What is the effect of using computer-based interactive materials in the learning of English?
2. What are the challenges experienced by the pupils in the use of such materials in learning English?

Theoretical Framework

This study is anchored on the Situated Conditioning Learning Theory by Jean Lave and Etienne Wenger. Situated learning, in general, is the type of learning that takes place in the same context in which it is applied. It utilizes the social aspect of human nature to help learners feel relaxed and at ease while learning. Lave's definition of situated learning suggests that learning, as it usually occurs, is the function of activity, context, and culture in which it occurs (i.e., it is situated). It contrasts with most classroom learning activities which involve knowledge which is abstract and out of context" (Kearsley, 2011). Abdallah (2015) stipulates that the shift in language learning from 'acquisition' to 'participation' views learners as active constructors of knowledge by collaborating to create meaningful learning situations and contextualized practices.

Stein (1998), cited by Young, further clarifies ways in which instructors can design "situated learning in the classroom:

- These situations will engage the learners in complex, realistic, problem-centered activities to support the desired knowledge.
- Provide a scaffold to new pupils depending on the type and intensity of guidance needed to help them master the situations. As learners acquire additional skills, they likewise need less support.
- Teachers need to recast the role from a transmitter of content to facilitator of learning by tracking progress, assessing products produced by learners, building collaborative learning environments, encouraging reflection, and helping learners become more aware of contextual cues to aid understanding and transference.
- Moreover, they need to assess the intellectual growth of the individual and the community of learners through discussion, reflection, evaluation, and validation of the community's perspective" (para 12).

Situated learning involves pupils in cooperative activities where they are challenged to use their critical thinking and kinesthetic abilities. These activities should be applicable and transferable to pupils' homes, communities, and workplaces (Stein, 1998).

This theory applies the use of technology-based materials in English. The computer-based activities were in the form of games designed to test the learners' level of understanding and learning. The tasks and questions are arranged from easy to more challenging tasks. This kind of program helps develop the pupils' critical thinking as they try to do the assigned tasks independently. The concept of computer-based activities in the form of games makes the teaching and learning of English exciting and motivating for the pupils. The scoring and rewards elements added in the game-based activities likewise reinforce learning the concepts taught in class.

Research Design

This study is qualitative research employing the descriptive phenomenology design. Descriptive phenomenology is widely used in social science research to explore and describe the lived experience of individuals (Christensen, Wekch, & Barr, 2017). It focuses on the effects of computer-based interactive

materials in English classes. It likewise aimed to find out the challenges experienced by the pupils in the use of technology-based instruction in learning English concepts.

Research locale

This study was conducted in an Integrated Laboratory School in Tacloban City. The school offers complete elementary, high, and senior high school levels. However, this study includes elementary-level pupils drawn explicitly from the three classes in the primary levels.

Participants

Six primary-level pupils were randomly selected using the fish-bowl technique. The participants were asked about their experiences on computer-based activities in learning English, and responses were recorded and analyzed until they achieved data saturation.

Instruments

Several research instruments were used: survey questionnaires, interview guide, and checklists in drawing pertinent data relative to the study. These instruments were examined, checked, and pre-tested in other pupils who are non-participants of this study. It has likewise undergone the scrutiny of research experts, particularly in language teaching.

Data Collection

The researcher sought permission by sending a letter to the head of the school regarding the conduct of the study. Then, the pupils were personally informed by their teachers and school head regarding their participation in the study. The participants were first made to answer the survey questionnaire, covering a few questions relative to the study. Before starting the focus group discussion, the researcher first sought permission from the pupils to record the conversations to document the interview properly. Then, the researcher was guided by the interview guide to ask the right questions. The researcher likewise conducted a focus group discussion (FGD) to capture all the needed information. Finally, the researcher described the nature and purpose of the research study. After the interview, the research likewise asked a few questions with their English teachers to validate the pupils' responses and find out the instructional implications that the teacher does in class.

Data Analysis

After gathering the data, the researchers analyzed the transcriptions based on the statements given by the participants in the recorded interview during the focus group discussion. Then, the researcher read the transcriptions several times to generate the codes. Colaizzi's (1978) unique seven-step process provides a rigorous analysis, with each step staying close to the data. The result is a concise yet all-encompassing description of the phenomenon under study, validated by the participants that created it (Morrow, Rodriguez, & King, 2015).

The stages are illustrated in the table below:

Table 1. Steps in Colaizzi's descriptive phenomenological method

Step	Description
1. Familiarization of the data	The researcher familiarizes him or herself with the data by reading through all the participant accounts several times.
2. Identifying significant statements	The researcher identifies all statements in the accounts that directly relate to the phenomenon under investigation.
3. Formulating meanings	The researcher identifies meanings relevant to the phenomenon that arise from carefully considering the significant statements.
4. Clustering themes	The researcher clusters the identified meanings into common themes across all accounts.
5. Developing an exhaustive description	The researcher writes a full and inclusive description of the phenomenon, incorporating all the themes produced at step 4.
6. Producing the fundamental structure	The researcher condenses the detailed description into a short, dense statement that captures those aspects essential to the phenomenon's structure.
7. Verification of the fundamental structure	The researcher returns the fundamental structure statement to all participants (or sometimes a subsample in more extensive studies) to ask whether it captures their experience. They may go back and modify earlier steps in the analysis in light of this feedback.

Scope and Delimitations of the Study

This study focuses on the effects of computer-based activities in learning English, specifically for primary-level pupils. It does not include pupils' experiences in the intermediate and high school levels.

Ethical Considerations

The researcher followed the appropriate guidelines for issues such as human rights, compliance with the law, conflict of interest, safety, health standard, and others. Next, she sought permission from the school heads, class advisers, and student participants regarding the conduct of the study. Then, the participants were notified of the preliminary results of the interview for them to recheck the correctness of the data gathered. The researcher likewise acknowledged all the authors used in this study, and the participants were aware that their answers and individuality would remain confidential.

Results And Discussion

Results of the study revealed important information relative to the effects of computer-based interactive materials in teaching English in the classroom.

In terms of the pupils' perceptions regarding the use of Computer-based interactive activities in English, the following themes were derived from the data:

Theme 1: Enjoyment

This theme sums up the participants' statements about their enjoyment while doing the computer-based activities.

"We enjoyed playing the games."	(P1, L12, P1)
"We like playing."	(P2, L13, P1)
"I had fun. I like the games*"*	(P4, L15, P1)
"We like it very much."	(P6, L 16, P2)

The statements revealed that the computer-based activities resulted in pupils' enjoyment. Such an effect is due to the fun-filled game-based activities that the pupils played at the end of every lesson in English. It could be gleaned in the statements that the games and the act of playing made them feel joyful. The whole experience was likable to the pupils.

Games and play elicit high interest and motivation from students. Teachers often employ these to draw students' attention and sustain their interest during class discussions. When such are incorporated in the lesson, pupils become more interested in participating in the individual and group dynamics. As Al-Tarawneh (2016) puts it, game-based teaching, such as those in computer-based activities in English, not only results in pupils' enjoyment but they are likewise seen as an educational tool.

Theme 2: Improved Learning

These statements show that the pupils perceived their experience to have helped them learn the lessons better.

"We learned a lot."	(P6, L17, P1)
"I was able to recall the previous lessons."	(P4, L18, P1)
"I got perfect scores."	(P2, L20, P2)

The pupils perceived that they learned the lessons because the games were stimulating and highly educational. The high scores that they received were proof that they learned the lessons for the students. They likewise associated their success in the activities with their learning in the previous discussion. This result coincides with Arcagok's (2021) study, wherein game-based teaching increased the pupils' academic achievement.

The scoring mechanism of the learning activities serves as feedback on their performance. High scores are perceived as an indication of learning, while low scores indicate that there is still room for improvement. Teachers also use the scores and other test results as evidence of students' achievement and reflect the effective delivery of the class lessons. In the case of computer-based learning activities, the scores that the students received give them a sense of fulfillment and joy. For Bağcı & Çoklar (2014), such activities increase the quality of education when used effectively in teaching.

Theme 3: Heightened Interest

This theme presents the effect of the whole experience of doing computer-based activities.

"I like to play more games."	(P5, L22, P2)
"I want to go to the Computer Lab every week."	(P1, L24, P2)
"I want to go back (to play the games) there."	(P2, L25, P3)

The statements revealed the computer-based learning activities increased the pupils' interest in the subject since they enjoyed the games. Furthermore, they expressed their interest to experience the same again. It could likewise be gleaned that the pupils emphasized the place to be the venue they look forward to visiting again for a whole new fun-filled experience.

It is worth noting that pupils' heightened interest in class activities helps raise their engagement level. This is because interest and motivation become a driving force for students to pursue and gets their attention. Thus, computer-based learning activities serve as the stimuli to make them engage in the said enjoyable activities again. This coincides with the idea of Burkholder et al. (2017), stating that computer-based technology influences student engagement.

While most of the pupils gave positive remarks on the favorable effects of computer technology in the English class, some pupils mentioned a negative effect on its use.

"Looking at the computer (too long) will make my eyes tired."   (P4, L22, P3)

"We also like learning from the books because

　　they(computers) will hurt our eyes."   (P5, L26, P3)

The pupils perceived exposure to computers as eye-straining since they had to use the computer units to perform the game-based activities. It could be inferred that the pupils are aware of the ill-effects of overexposure to computers. Although computers bring them enjoyment, the pupils are aware that they may also cause them harm.

Technology-based activities in English likewise posed some challenges for the pupils. The statements below generated the following themes:

Theme 4: Access Problem

One of the difficulties experienced by the students has something to do with getting access.

"I could not open my file because I do not know the password."   (P3, L28, P4)

"My teacher opened the file for me."   (P2, L30, P4)

The pupils experienced difficulty accessing their accounts since they had not been exposed to the technical aspects of manipulating computers. The problem has something to do with opening their accounts since they could hardly memorize the passwords. This was a common observation among the pupils. Although the pupils were given individual access details and were asked to remember or take note of them, many still requested that they be given their password. This problem may have been rampant during the first few sessions, but the pupils learned to help themselves as days went by.

Theme 5: Needed Assistance

This theme emerged in line with the pupils' statements about their inability to access and navigate the computer with ease.

"Teacher opened the file for me because I don't know."   (P5, L26, P4)

"It is difficult at the beginning."   (P2, L30, P4)

"I want the teacher to help me so I can play right away."   (P4, L31, P4)

Accessing the materials in the computers became another challenge for the pupils, especially those who are new in the use of the computers. The pupils needed much assistance from the IT assistant and the teacher in accessing the materials and navigating the computer. Their lack of exposure to computers made them much dependent on the technical support given by the teachers. The role of the teacher is seen here to be of high importance in providing guidance and assistance to the pupils in operating and navigating the computers effectively.

Conclusions and Recommendations

In conclusion, the computer-based interactive materials in English had a positive impact on pupils as they served as intrinsic motivators in the subject. Furthermore, despite the pupils' limited exposure to formal computer classes in school, the availability of computer units, laptops, and other digital technology at home has given them background knowledge on their usage. In conclusion, the application of computer-based activities in learning English brought a new and exciting experience for the pupils in taking English instruction to a higher level with the infusion of technology-based activities instead of the usual class routines of class discussions and activities inside the classrooms.

Employing technology-based activities in English resulted in a feeling of enjoyment on the part of the pupils. It has raised the pupils' motivation and interest in the subject since they can perform exciting game-based activities in application to their lessons. Pupils likewise perceived it to have improved their learning. The game element added to the program allowed pupils to receive immediate feedback on their performance in every activity. The tests, which were in the form of games, lowered the anxiety level of the pupils and raised the potential of the pupils getting better scores. Moreover, activities served as reinforcers of the previous lessons and extrinsic motivators due to the rewards and badges associated with their excellent performance in the different activities. These positive effects of employing computer-based activities in learning English may sustain such best practices.

On the other hand, the challenges experienced by the pupils in the use of technology-based materials proved that the pupils still need much technical support for them to carry out the different activities successfully. For better access, pupils could be taught and trained on how to operate the computer units with the help of the computer teacher and the ICT support staff. The teachers could likewise provide more interactive activities in their classes, specifically on the use of technology to familiarize the pupils on the effective manipulation of the facilities. These could serve as bases in improving the program relative to the infusion of technology-based instruction in other subject areas. Enhancing the curriculum with the inclusion of additional programs for the infusion of technology-based activities and the installation of more facilities to capacitate the teachers and pupils would equip the pupils with the technological skills they need as part of the thrusts of 21st-century education.

References

Al-Tarawneh, M. H. (2016). The effectiveness of educational games on scientific concepts acquisition in first-grade students in science. Journal of Education and Practice, 7(3), 31-37.

Anderson, M., & Horrigan, J. B. (2016). S*martphones help those without broadband get online but don't* necessarily bridge the digital divide. Washington, D.C.: Pew Research Center Retrieved from

http://www.pewresearch.org/fact-tank/   2016/10/03/smartphones-help-those-without-broadband-get-online-but-don't-necessarily-bridge-the-digital-divide/.

Andrew, L., Maslin-Prothero, S., & Ewens, B. (2015). Enhancing the online learning experience using virtual interactive classrooms. Australian Journal of Advanced Nursing, 32(4), 22–31.

Bağcı, H., & Çoklar, A. N. (2014). The evaluation of CEIT teacher candidates in computer games, educational use of computer games, and game design. Qualifications Journal of Theoretical Educational Science, 7(2), 195-211.

Batson, Trent (2015). Situated Learning: A Theoretical Frame to Guide Transformational Change Using Electronic Portfolio Technology.

Bonifacio, A. (2013). Developing Information Communication Technology (ICT) Curriculum Standards for K-12 Schools in the Philippines. Paper presented at The Sixth Conference of Vol. 5 No. 3 October 2018 281 MIT's Learning International Networks Consortium (LINC), MIT, Cambridge, Massachusetts, USA.

Carstens, K., Mallon, J., Bataineh, M., Al-Bataineh, A. (2021). Effects of technology on student learning. The Turkish Online Journal of Educational Technology. Volume 20 Issue 1.

Christensen, M., Welch, A., & Barr, J. (2017). Husserlian Descriptive Phenomenology: A review of internationality, reduction, and the natural attitude. Journal of Nursing Education and Practice, 7(8). 113. DIO: 10.5430/jnep.v7n8p113.

Colaizzi, P. (1978). Psychological research as a phenomenologist views it. In: Valle, R. S. & King, M. (1978). Existential Phenomenological Alternatives for Psychology. Open University Press: New York.
Garba, S. A., Yusuf, B., & Busthami Nur, A. (2015). Toward the use of technology and 21st Century teaching-learning approaches The trend of development in Malaysian schools within the context of Asia Pacific. International Journal of Emerging Technologies in Learning (iJET) 10(4):72. Doi. 10.3991/ijet.v10i4.4717

Hartoyo, M. (2009). ICT: Information and communication technology in language learning. Semarang: pelita insani Printing & Publishing.

Kearsley, G. (2011). Situated learning (J. Lave). Explorations in teaching & learning: The theory into practice database. Retrieved from http://tip.psychology.org/lave.html

Kubota, K., Yamamoto, R., & Morioka, H. (2018). Promoting ICT education in developing countries: Case Study in the Philippines.

Mellati, M. & Khademi, M. (2019). Technology-based education: challenges of blended educational technology. DOI:10.4018/978-1-5225-7010-3.ch003

Morrow, R., Rodriguez, A., and King, N. (2015). *Colaizzi's descriptive phenomenological method*. The Psychologist, 28(8), 643-644.

Ministry of Education (2012). Malaysian Education Blue Print 2013-2025-Executive Summary [Online]. Available   https://www.moe.gov.my/menumedia/media-cetak/penerbitan/dasar/1207-malaysia-education-blueprint-2013-2025/file

Paje, Y., Rogayan, D., Dantic, M. (2021). *Teachers'* utilization of computers in computer-based technology in science instruction.

Rahman, T. (2015). Challenges of using technology in the secondary English language classroom. BRAC Institute of Languages (BIL). BRAC University, Mohakhali, Dhaka-1212.

Stein, D. (1998). Situated learning in adult education. http://www.ericdigests.org/1998-3/adult-education.html