

Multimodal Learning Technologies for Improving English Communication Skills

Dr.D. Loyola Innaci^{1*} and Dr.P. Bastin Thiyagaraj²

^{1*} Assistant Professor, Department of English, St. Joseph's College (Autonomous),
Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.

E-mail: loyolainnaci_en2@mail.sjctni.edu, Orcid: <https://orcid.org/0009-0007-0723-4466>

² Assistant Professor, Department of Information Technology, St. Joseph's College,
Bharathidasan University, Trichy, Tamil Nadu, India. E-mail: bastinthiyagaraj_it2@mail.sjctni.edu,
Orcid: <https://orcid.org/0009-0001-3713-5289>

Abstract: The use of multimodal technologies in the English language classroom has changed the way language learners interact in various tasks involving both oral and written communication. The research looks into how multimodal language learning tools, which include digital storytelling, multimodal composition, mobile apps, AI tools, and learning analytics applications, help English learners develop their English communication skills. Even though the technology itself is widely available, it appears that educational integration has not hitherto been effective due to several issues faced by teachers, including their preparedness, the design of assessment, and access to technology. Therefore, this study was aimed at investigating these issues and included quasi-experimental intervention involving the control group of learners receiving conventional single-mode instruction and the group of learners receiving multimodal English instruction. Statistical analysis of the collected data showed that the group receiving multimodal instruction had statistically significant increases in terms of oral fluency, as well as the acquisition of interactive skills, and the overall vocabulary compared to the control group of learners. In addition to statistical analysis, qualitative data were used in the study, thus confirming that the use of multimodal technology in the classroom can enhance learners' engagement and boost their creativity. Giving a modest increase in the area of written skills, the multimodal teaching may prove more beneficial in the development of skills required for speaking and interacting. The study concludes that although multimodal methods can significantly facilitate the acquisition of English language skills, certain conditions should be met in the implementation of such technologies.

Key Words: multimodal learning, english communication skills, digital multimodal composing, technology-enhanced language learning, learning analytics

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Introduction

It is essential for people to have English communication skills, which include listening, speech, reading, and writing, and those things are crucial for academic success and success in the job market. Various traditional methods of improving oral and written skills are based on unimodal approaches, meaning that either text or audio is used, which does not reflect the reality of communication in the world. The research has proven that multimodal resources (e.g., text, audio, visual elements) can facilitate the process of communication in the context of oral skills development, providing a learner with context cues than unimodal materials (Kummin et al., 2020).

At the same time, digital multimodal composing, where a student creates texts combining all mentioned modes (writing, images, audio, and video), is getting more popular as a practical assessment tool in English courses, giving a chance to the students to demonstrate their communicative skills and competencies in a more authentic way (Kohnke et al., 2021). It should be noted that technologies based on artificial intelligence have broadened the horizons for multimodal reading by offering technologies that would take into account the specific needs of a learner (Dong et al., 2022). Mobile technology and social media are known for increasing student involvement in the learning process (Yu et al., 2022).

Unfortunately, the effectiveness of the application of modern technologies in the language classes is not consistent. There are no uniform approaches to the implementation of the processes of the digital multimodal composing approach, which means that the use of technology is not systematic (Liang & Lim, 2021). Teacher training programs do not prepare future teachers for employing multimodal composing tasks, no matter how valuable regarded by them (Tour & Barnes, 2022). Research conducted on the language teachers in U.S. middle schools shows how diverse the perception of the usage of technology can be Siefert et al., (2019). Student teachers receive limited opportunities to practice multimodal designing (Li, 2020). The emergence of multimodal learning analytics has unveiled many new questions related to implementation, ethics, and sustainability (Yan et al., 2022).

Studies in the field indicate that certain 21st-century skills (such as communication, collaboration, and digital literacy) are closely related (Shadiev & Wang, 2022). Multimodal learning analytics research that deals with group work indicates that the combination of information of different channels produces a clearer picture of communication than a message obtained from a single channel (Praharaj et al., 2021). Use of IoT technologies, according to the research, can obtain costly multimodal information (Camacho et al., 2020).

The Objectives of this Study Include

1. Investigating the contribution of multimodal learning technologies in the formation of English communication skills.
2. Conducting empirical analysis of the influence of multimodal instructional intervention on learners' oral and written communicative competence.
3. Outlining teaching conditions in which the use of multimodal technologies is applicable.
4. Addressing practical and institutional issues concerning implementation of multimodal technologies.

This paper makes important contributions to the research on technology-based learning. First, it synthesizes recent research findings on learning technologies and English communication skills, an area that is customarily treated separately from multimodal pedagogy. Second, it proposes a practical three-step instructional framework that can implement multimodal theories in the classroom context. Third, it provides empirical data from empirical research to fill the gap in the literature regarding classroom-based controlled studies. Thus, the contributions of the paper can provide theoretical basis and practical advice to practitioners and help bridge the gap in the field.

The paper is divided in the following way. Section II discusses the existing literature devoted to multimedia learning technologies in language studies. In Section III, describe the methodology of the study designed and give information regarding the population of the study, sampling, instruments and analytical procedures. Section IV presents the results of the previously conducted research study. Section V presents

the discussion of findings and their significance from the educational and equality viewpoints. Finally, Section VI gives conclusions of the paper.

Literature Review

Recent studies reveal that multimodal technologies are crucial in providing customized and precise foreign language education by collecting diverse data flows including text, sound, videos, and signals from the body, but also bringing some issues regarding data privacy and teachers' workload (Qusheh et al., 2021). In a wider context of higher education, multimodal education is understood as using various modes of representation to enhance understanding, which holds true in a foreign language classroom because the meaning is being conveyed through several semiotic resources at once. Another related area of research uses multimodal learning analytics to explain student engagement finding out that the best predictor of student engagement is not any of the indicators itself but their combinations (Bouchey et al., 2021; Papamitsiou et al., 2020). In addition, embodied approaches go beyond this finding showing that embodied learning technologies support learning by linking physical movement to representation while multimodal knowledge gives evidence that multimodal tools are effective in capturing the process of embodied learning in young children (Flood et al., 2020; Crescenzi-Lanna, 2020). Digital multimodal composing has also been linked to students' identities and engagement, where minorities show more involvement in studying while working on multimodal tasks and grown-ups achieve better speaking results while creating their digital storytelling tasks (Jiang et al., 2020; Kallinikou & Nicolaidou, 2019). The research in accessibility proves that the use of digital tools being based on the principles of Universal Design for Learning allows students with special needs to succeed in studying thanks to the multiple ways of expressing oneself, while development in dialogue systems points to the fact that soon it will be possible to use them for practicing the language outside of lessons, which is in line with the previous studies that state that interaction technologies rapidly develop in the scope of foreign language education (Rao et al., 2021). On the level of specific skills, the meta-analysis of the use of glossing techniques demonstrates that combining glosses made in text format with those represented in pictorial format leads to better outcome than the use of one mode of glossing, and the same goes for tablet-based multimodal text products that result in giving better results in literacy skills development by drawing, telling stories and composing text. Systematic reviews reveal that trends in theory of technology in vocabulary teaching emerge based on sociocultural and cognitive theories.

Overall, this body of work indicates that multimodal technology benefits all language learners regardless of the age and skills level, but more important is how this technology is implemented during the teaching process. It has been observed that the combination of tools with teacher's help is of most use to students. It should be noted that there are some ongoing concerns regarding teachers, data ethics and issues in the area of accessibility making it clear that using technology alone does not bring desired results without methodical approach used by teachers during classes.

Methodology

Research Framework and Population

Utilizing a pretest-posttest control group quasi-experimental model, the study seeks to investigate the effects of multimedia leaning technologies on English communication skills of learners. A quasi-experimental model instead of a true experimental one is used since in existing educational establishments it is impossible to assign learners randomly into groups; thus, two existing intact classrooms are used in experiment: one that undergoes multimedia training and one that receives traditional single-

mode training. The target population is English learners of [indicate: secondary/tertiary] programs studying English communication course. Two equal groups with about 30-40 students in each will be chosen by purposive sampling. One of the two crashed groups will be assigned as an experimental group at random to eliminate potential bias.

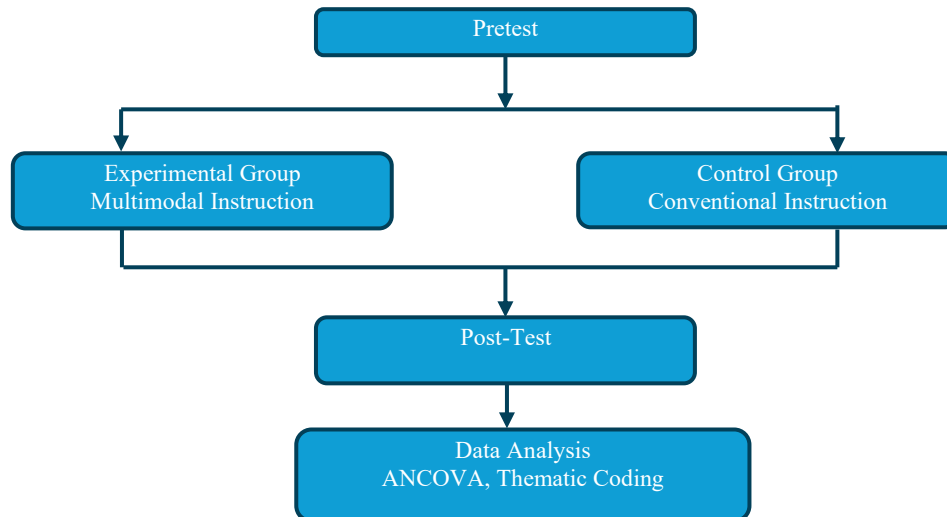


Figure 1: Quasi-Experimental Research Design for Evaluating Multimodal Instruction

Figure 1 illustrated the quasi-experimental design used for assessing the effectiveness of multimodal instruction. The participants will take part in pretesting before being assigned to either the experimental group, which is taught using multimodal instruction, or the control group, which receives traditional instruction. After instruction, posttesting is carried out on both groups, and the results are analyzed through ANCOVA and thematic analysis.

Means of Research and Intervention Procedures

The study employs the following means: (1) pretest and posttest regarding learners' English communication skills like fluency, coherence, vocabulary, and interactive communication; (2) digital multimodal tasks with experimental group (e.g., digital stories, multimedia presentations, voiceover dialogues); (3) semi-structured interviews with some students (8-10) and teachers participating in the project; (4) classroom observations checklists registering kinds and the amount of media used during the classes. The experiment lasts for 8–10 weeks. The experimental group receives training using three steps: input (multimodal materials), production (multimodal tasks), feedback, unlike the control group, which is instructed with traditional approaches. Hence, the difference between both groups is due to the method, not course aim.

Data Analysis

Quantitative data collected from pretests and posttests will be analyzed using descriptive statistics and ANCOVA, and because of no randomization of groups the pretest scores and group type will be used as covariates. Moreover, qualitative data from interviews and observations of students will be analyzed using thematic analysis – process of the familiarization, coding the data, developing themes, and reviewing the materials. Additionally, the content validity of data will be guaranteed by expert qualification.

Results

Quantitative Findings

The descriptive statistics pertaining to the pretest data exhibit that there are no significant differences in scores by both groups ($p > .05$), verifying the claim of baseline equivalence. There is a great improvement in the posttest scores of the experiment group after eight to ten weeks of training across all the dimensions of communicative competence, including fluency, coherence, vocabulary range, and interactive communication compared to the control group. The ANCOVA computations show a significant main effect of the group on the communication scores ($p < .05$), with a significant effect size (partial $\eta^2 \approx .13-.20$), which indicates that the multimodal approach has explained a significant amount of variability in the posttest results of the learners compared to the traditional method.

The improvements were seen mainly in oral fluency and interactive communication, which is aligned with the framework of the method which insisted on production and feedback stages which include oral output. Vocabulary range is also improved a lot in accordance with the input stage where students were exposed to varied multimodal glosses. The improvements in written coherence can also be observed, but not so considerable after all, which means that multimodal composing may produce more impact on oral competence development than on written accuracy.

Qualitative Findings

The results of the thematic analysis of the interviews have revealed three general themes. First of all, learners participating in the experiment have reported increased confidence while doing speaking tasks thanks to less stressful conditions of work such as recording and rerecording their answers beforehand. Also, the students were more engaged in the creative process of composing texts combining different types of performances than while writing of purely written tasks. Finally, teachers mentioned that although it required more time for preparations, noted that such activities were very effective for engagement of students, which can be seen during the observations when the students were using English while communicating with each other in the classroom more actively during multimodal composing activities than during common lectures in the control group.

Summary of Findings

Thus, the results obtained show that the use of multimodal learning method resulted in the broad range of positive changes in the skills of the students while using English, specifically in developing their oral fluency and communicating with other people.

Discussion

Results Interpretation

The findings, which reveal that learners progressed in their oral skills more than their written coherence skills, imply that using tasks in which learners have to interact and voice their opinions is beneficial in fostering the motivation to participate in the learning process and in showing learners' identities through oral skill use. The insignificant improvement in writing coherence indicates that this type of instruction tends to develop participants' oral skills more than their writing abilities.

Pedagogical Implications

The teacher time spent on preparation was revealed as a practical concern: organizations adopting the multimodal approach should ensure that dedicate resources to the initial teacher preparation and continuing professional development to provide teachers with the skills needed for effective multimodal task design and implementation.

Evaluation Implications

The moderate improvements in writing coherence compared to oral skills suggest that rubrics may need to give more weight to the speaking and interactive parts of the multimodal product to evaluate the skills developed through the multimodal method.

Equity and Accessibility Implications

The implementation should consider the difference in access to technology that would be widening equity gaps without direct intervention of the institution.

Limitation

The nature of quasi-experimental design does not enable to avoid the influence of confounding variables coming from the intact group assignment. Moreover, the 8–10-week intervention period does not provide results related to long-term skills retention.

Conclusion

The impact of various learning technologies on enhancement of English language communication skills has been assessed in this study through application of the quasi-experimental, pre-and post-test control group research design. The findings showed that the students learning using the three-level systematic framework represented by input level, production and feedback level made statistically significant progress in such areas as verbal fluency, interaction and vocabulary as compared to their peers learning through the traditional single mode teaching method having a moderate effect size. Based on the qualitative analysis, the study verified the assumption that using multimodal approaches in learning boosts learners' confidence, creativity and engagement in class activities, particularly when composing multimodal projects that involved the process of combining text, image and sound. Written communication skills demonstrated progress, but the results were not so outstanding. The study's conclusions may be explained by the fact that multimodal approaches contribute to the improvement of oral and interactive communication skills but the written ones have not changed a lot. The findings are indicative of the benefits of evidence-based multimodal instruction in teaching English. However, more attention should still be paid to teacher training and the issue of equal access of students to the necessary learning devices. The study's research design is very effective for teaching practice but does not allow removing all hidden variables occurring in the process of research. Besides, time allotted for conducting research is short so very little space for long-term effects biasing the study findings. Future studies should conduct research using the design in different educational institutions allowing for gathering larger representative samples and extending the period of the experiment.

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