Interactive multimedia e-collaboration for innovative linguistics education

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ABSTRACT

This study aims to investigate the needs of students and lecturers regarding interactive multimedia resources in linguistics at the Faculty of Teacher Training and Education, Universitas Borneo Tarakan, to facilitate further development. The findings reveal a significant gap between current instructional provisions and the specific needs of students and faculty, highlighting the necessity for pedagogical innovation to enhance interaction and understanding in linguistics. Utilizing a mixed-methods approach, the research included surveys and interviews with participants in linguistics courses. Results indicated that 86% of students sought in-depth knowledge of linguistics, and 73% felt that existing support was inadequate. It underscores a high demand for a focus on selected topics, simplified explanations, and multimedia interactivity. The findings demonstrate that instructional materials are poorly aligned with teaching needs, negatively impacting educational methodologies and failing to effectively address students' relevant needs. The implications of this study extend to practice and further research, urging faculty members to increasingly integrate multimedia elements into their teaching and develop tailored resources based on identified needs. Newly created materials should undergo practical evaluation to enhance student satisfaction and performance in linguistics studies.

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1. INTRODUCTION

Linguistics is the scientific study of language and, as such, is a fundamental part of human understanding and communication [1]–[3]. It encompasses a multitude of different investigations into the social implications, structure, and function of language. Linguistics is important, not just for academics but for technology, education, and intercultural relations [4], [5]. With the world becoming one big village where several cultures and languages cross paths, the need for highly competent translators and linguists has emerged. In this context, innovative pedagogical methodologies, which would equip students with the skills needed to deal with the complexities of language use in professional settings, become highly relevant. Recent studies, such as [6]–[8], highlight that linguistics is an interdisciplinary branch of science and, therefore, requires interdisciplinary approaches to teaching methodology. It implies that detailed knowledge of linguistics becomes an essential component of many professions. The literature describes several methods and approaches to teaching translation and linguistics. For example, [9] acknowledges the PTT (Practice,

Technique, and Theory) model as one of the most successful models; it is versatile for most classes, emphasizing the student's practical skills in translation classes. While giving ample opportunity for students to get intensively involved in the process, this model allows equal measures of theoretical input with practical application. On the other hand [10], [11] shows that technology-enhanced classrooms result in much higher student involvement and satisfaction, indicating that integrating technological tools will provide a more interactive and dynamic learning environment. These studies illustrate the importance of adapting teaching methods to the constantly changing needs of students, therefore providing a critical understanding of the pedagogical strategies currently being used in linguistics education.

Despite providing key insights, such approaches often focus on their methods as an individual methodology; in other words, the potential in collaborative learning is far from entirely utilized. Collaborative learning is not about the job responsibilities [12], [13]. However, instead of it relates to the completion of this by group members through collaboration, cultural and professional knowledge could be developed, and even a shared meaning could be established, 2019. The advantages relating to collaborative learning are well-recorded [14]–[16]. Highlight that practical cooperation develops in students positive interpersonal relationships, productivity, responsibility, and motivation. In [17] also adds that the socialization process in cooperative environments enables students to develop their knowledge by interacting with field experts, instructors, and colleagues. Despite such advantages, the literature records a deficiency in integrating collaborative learning into linguistics education, especially in translation contexts where collaboration is necessary.

On the other hand, the existing corpus of studies frequently fails to appreciate the gains from collaborative models that engage students in a joint learning process with one another [18], [19]. Although collaboration is recognized as a critical skill in professional settings, current research frequently concentrates on individual learning strategies, disregarding the potential of collaborative approaches to improve students' comprehension and application of linguistic concepts. This divide underscores the inadequacy of current teaching practices in adequately equipping students for real-world applications of linguistics, particularly in translation, where collaboration and mutual support are essential. The major challenge between educational technology and collaborative learning methods in language education is that they do not adequately prepare students for work-related skills. The current educational practices fail to recognize how crucial it is to establish environments where students can engage with each other for learning purposes. The present study merges multimedia content with collaborative tools to create an interactive multimedia e-collaborative model that solves these learning difficulties. This educational model serves to strengthen the language abilities of students through developing both community ties and classroom involvement. This model is our foundation to improve student learning through modern educational standards that also fulfill their future business requirements. We propose the establishment of an interactive multimedia e-collaborative model in linguistics teaching based on information technology to fill this gap. This novel approach to learning is proposed to bring an added dimension to learning by integrating advanced multimedia resources with collaborative learning principles, guaranteeing an engaging and practical learning experience. Using technology, students will collaborate in real-time, sharing resources and information that will enhance their understanding of linguistic concepts. This model is very important in developing necessary collaboration skills, as it creates a sense of community and encourages active participation among students.

Moreover, the model proposed here not only overcomes the deficiencies found in previous studies but also meets the current educational trends that stress collaborative and interactive learning environments. This approach is likely to enhance students' linguistic skills and prepare them better for the demands of their future careers by fully incorporating multimedia tools and technologies. The implementation of this model has the potential to improve academic outcomes, increase student satisfaction, and improve professional readiness, thereby contributing to the advancement of linguistics education. It will discover the model's potential and provide the framework for its application in the linguistics course in the faculty of teacher training and education, Universitas Borneo Tarakan, regarding a transformative learning process for the students.

2. METHOD

This mixed methods study investigated the creation and effectiveness of the interactive multimedia e-collaborative model based on information technology in linguistics instruction through qualitative and quantitative approaches. This strategy was used to employ both quantitative and qualitative data to analyze the research questions comprehensively. The qualitative component was examined through interviews, observations, and preliminary research [20]. This component sought to understand participants' views on current teaching approaches. Qualitative data collection methods identified deficiencies and opportunities for enhancement, aiding students and instructors in comprehending the challenges of linguistics education [21], [22].

Meanwhile, the quantitative component collected data from a larger sample using questionnaires and surveys [23], [24]. This strategy enabled researchers to quantify student learning outcomes, experiences, and preferences regarding the teaching paradigm. Quantitative and qualitative data provided a complete picture of teaching materials' effectiveness and impact on student learning. The study design was systematic, starting with needs analysis and early investigations to inform the teaching model. Expert and user feedback were used to develop the model through iterative validation and testing, which were incorporated into the design. This iterative method enhances educational resources, rendering them more pertinent and efficacious. The research design was meticulously constructed to guarantee that the outcomes were pertinent and dependable for linguistics education. Integrated and systematic approaches were employed to cultivate innovative linguistics teaching practices and yield substantial findings.

2.1. Participants

The participants in this study included undergraduate students enrolled in linguistics courses at Universitas Borneo Tarakan, along with their instructors. A diverse group of students was selected to represent various academic backgrounds and proficiency levels in linguistics. Additionally, expert content, design, and media evaluators were consulted to validate the developed teaching materials. This combination of participants ensured that the research captured a wide range of perspectives, enhancing the comprehensiveness and reliability of the findings. The materials involved in this study included existing English teaching documents, multimedia resources, and educational software designed for interactive learning.

2.2. Research procedure

The study implemented a structured research methodology, commencing with preliminary research to accumulate data by the requirements analysis. During this preliminary phase, interviews were conducted with students and lecturers to ascertain their expectations regarding the learning materials and to identify deficiencies in current teaching practices. Primary sources, such as systematic observations, in-depth interviews, and documentation, were employed to collect data in natural environments.

In particular Figure 1 below showed that implementing english language instruction was the primary focus of the observations and learning activities in linguistics classes. Structured and semi-structured interviews offered a more profound understanding of students' and lecturers' perceptions and experiences. In order to gather quantitative data regarding students' preferences and experiences with extant teaching methods, closed questionnaires were distributed. In order to enhance the study's context, pertinent documents, including syllabi and extant teaching materials, were examined. The teaching model was developed based on the initial findings after the data collection, which included a literature review to inform instructional strategies and comprehend the constraints encountered in previous English teaching efforts. The multimedia-based English teaching materials were subsequently developed to ensure that they were engaging, aligned with the identified requirements, accessible using information and communication technology and designed to encourage independent learning. The developed model underwent a validation process involving evaluations by experts and field trials. Feedback was obtained through one-on-one expert evaluations, small group assessments, and more extensive field trials to ensure the model's effectiveness and quality standards.
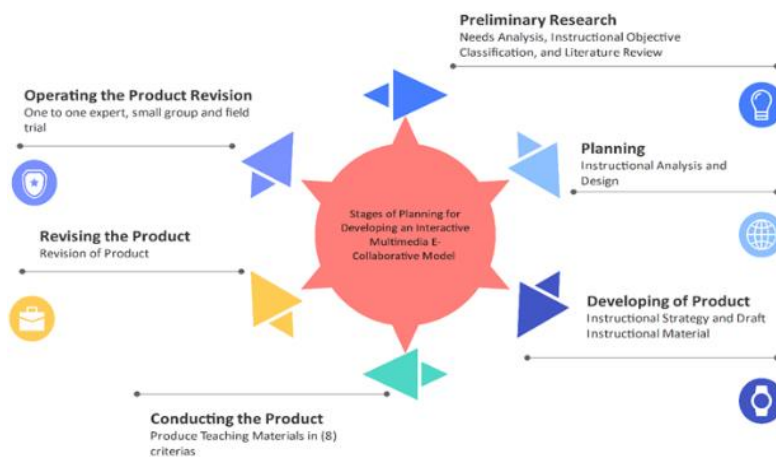

Figure 1. Stages of planning for developing an interactive multimedia e-collaborative model

2.3. Data analysis

Data from observations, interviews, questionnaires, and document analyses were rigorously examined. Qualitative data were systematically coded and categorized to discern prevalent themes and insights, and quantitative data were subjected to statistical analysis to evaluate the efficacy of the teaching model [20], [25]. The analytical procedure encompassed multiple stages: structuring and preparing data for examination, meticulously scrutinizing all gathered information, and performing comprehensive analysis via coding. The results were presented narratively, visually, and in charts for clarity. The research utilized rigorous data analysis approaches to assure the reliability and validity of the results, thereby leading to the construction of a strong teaching model that promotes the instruction and comprehension of languages at the university level.

3.   RESULTS AND DISCUSSION
3.1. Result of need analysis

This chapter contains results from the research conducted by the faculty of teacher training and education at Universitas Borneo Tarakan. In the provision for the development of innovative teaching materials that will be able to meet lecturers' and students' requirements, a preliminary study in the classroom needs to be conducted to assess the classroom conditions and needs for better linguistic teaching materials. The preliminary research included field surveys and direct questionnaires and was implemented in english language education and indonesian language education majors. The study's respondents were lecturers and students enrolled in the linguistics course's english language education and indonesian language education programs. The purpose of the pre-study was to observe classroom conditions and determine whether more effective linguistic teaching materials were needed.

This research was initiated in April 2024. To begin with, the preliminary stage of this research consisted of an exploratory study by researchers to understand what linguistic teaching material is currently being used by the lecturers and students within a classroom setup. It was to establish whether the available resources were adequate or if new teaching materials should be developed, where their needs would be more inclusive for lecturers and students and optimize learning more effectively. To complement the exploratory research, interviews were conducted with two lecturers, hereafter referred to as Lecturers 1 and 2. Lecturer 1 confirmed that the current teaching materials are in tandem with the lesson plans, making every class session well-prepared and directly relevant to the curriculum stipulated. He noted that the themes and topics relevant to the instruction are up-to-date and related to present social contexts that will engage the students and build a connection between what they learn in class and life.

By contrast, Lecturer 2 emphasized that although the teaching materials are related to current social contexts, they do not entirely fit the department's curriculum. She indicated that the competencies she had wanted were not attained by all her students, which may mean the failure of the current teaching methodologies or materials in their effectiveness. She, however, concluded that the materials tap the linguistic knowledge in a good way and that, on the whole, students enjoy the lecture explanations enriched using project-based activities. Besides, the multimedia tools of images, texts, and audio are used well to create a multisensory learning context.

Both lecturers recognized the efficient use of technology and internet resources in their pedagogical practices, thus creating an interactive learning experience that would adequately equip students for a technology-driven world. Lecturer 1 affirmed that the educational model makes it easy to teach from home with obvious instructions and that schedules of lessons can be rearranged according to students' needs. The assessment strategies have both formative assessments focused on understanding concepts and their applications, along with summative assessments directed towards measuring learning outcomes. Such would be the insights from the interviews, on top of the findings from the preliminary study, that will ensure the development of more useful linguistic teaching materials, catering specifically to the needs of the lecturers and students; this detailed needs analysis depicts the commitment to enhancing quality in the field of linguistics education at the higher learning level.

3.2. Wants analysis for linguistics teaching materials

The results from the needs analysis questionnaire given to the students regarding the multimedia-based english teaching materials model provide very important implications about their needs and requirements toward an effective linguistics education. The questionnaire included several questions to understand what students want and need during a learning process. According to Figure 2, As many as 92% of respondents are willing to study linguistics to learn about the structure, evolution, and functions of language in depth. It reflects the motivation for profound interaction with the subject matter. Additionally,

88% of the students reported a need for in-depth coverage of the issues their professor has introduced, meaning that specialized material might serve their needs. An overwhelming majority, 92% of the participants, considered communication skills crucial, which showed that they considered linguistics as a basic form of self-expression to others. More so, 96% of the students reported that the teachers should explain the language input during the lesson, showing the need for clear pedagogical support. A remarkable need emerged for videos: 92% mentioned that they would understand the items more clearly with the videos. Providing instructional support is essential since 99% of the respondents mentioned a need for guidance to finish the assignments. It further indicates the need to provide clear instructions and resources.

Evidence of reliance on technology is proven by 97% of the students mentioning the need for electronic devices, such as mobile phones, to complete their tasks. Ninety-eight per cent confirmed their need for access to the internet to study linguistics. Even though 73% of students showed an interest in learning online, it has indicated that there is still a desire to receive instruction in the traditional classroom combined with some online content. However, there is recognition that 84% still find printed material as necessary for reinforcement with internet-based material. Besides, 69% of respondents highlighted autonomy in learning, meaning they highly valued the time for self-study. There is unanimous support among all participants on the issue of learning in class because there is no substitution for actual live teaching; hence, learning in the classroom has a crucial place in students' learning process. Actually, 86% of respondents needed more in-class time to understand languages, indicating the required deeper involvement with subjects.

Assignment help is crucial, as 93% of students needed support in fulfilling their responsibilities, while 89% wished to work in groups, emphasizing the power of learning together. The questionnaire results clearly show a strong student need for an integrated academic support system that includes clear instructional guidance, multimedia resources, and engagement activities for both the classroom and online environments. These will be instrumental in guiding the development of tailored educational materials and resources that meet students' identified needs and preferences and thus enhance the quality of their learning in linguistics.
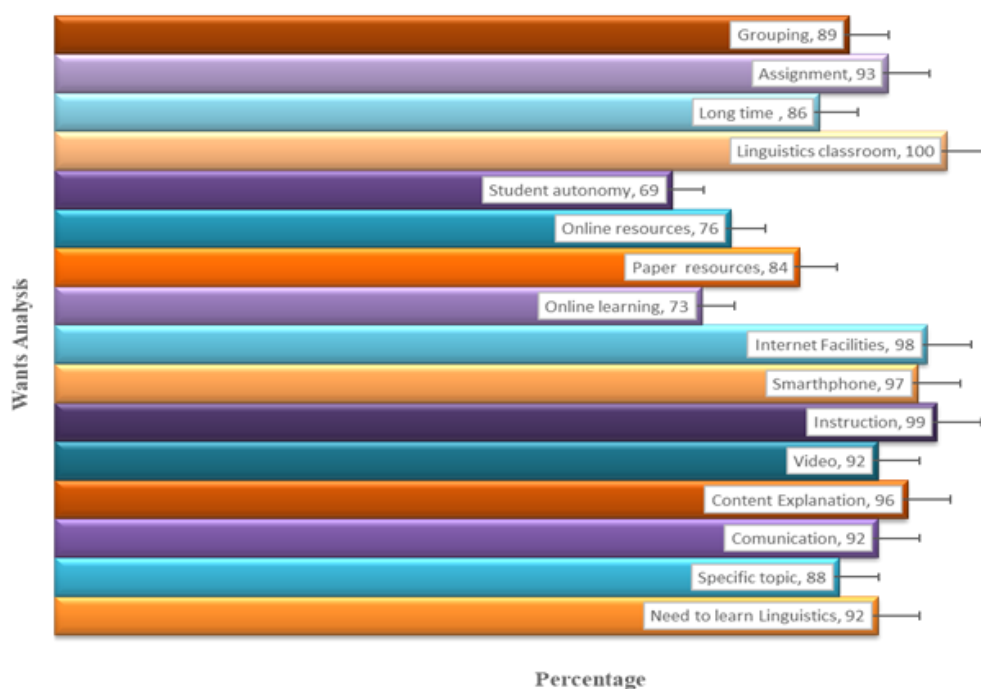

Figure 2. Multimedia-based in linguistics

3.3. Analyzing the Gaps for interactive multimedia resources

The survey investigated several aspects of the learning experience, highlighting significant differences in the urgent need for more interactive multimedia resources, customized content, and instructional support. The results indicate that although students express a strong desire for deeper engagement with linguistic concepts, current provisions often fall short, particularly in the integration of multimedia elements. This suggests a need for significant reforms to better align educational offerings with student needs.

Based on Figure 3, the needs analysis questionnaire data reveals substantial discrepancies between the existing instructional provisions and the students' perceived requirements. While 86% of respondents demonstrated a profound interest in acquiring in-depth knowledge of linguistics, 73% asserted that the existing level of support is inadequate. It shows a real need for better resources that would allow students to engage more meaningfully with ideas about language. Also, 78% of students believed there is a need for targeted topics of relevance to their own studies. Of these students, 60% believe these are poorly provided for at the moment, further stressing the need for more relevant content. This elevated the communication competence to 87%, although only 68% perceive sufficient support, indicating that educational resources should emphasise the practical applications of language theory more prominently. Equally significant was the demand for clear material explanation; 96% of respondents perceived this necessity, whereas just 59% said it was adequately addressed, underscoring a deficiency in instructional clarity.

The demand for multimedia content, particularly movies, is exceedingly strong. Ninety percent of students indicated a significant demand for these resources, starkly contrasting with the current availability of merely thirty-two percent. This indicates that visual aids can markedly enhance comprehension and engagement. The final yet important point is instructional support: whereas 95% students responded that assignment supervision was necessary and only 65% detected sufficient support. Technological aspect, on the one hand, while all reported necessary availability of internet facilities in study processes but claimed that this requirement was actually fulfilled for just 14%. Conversely, 100% indicated a demand for online learning options, while 49% reported that these offerings were now insufficient. Furthermore, 97% of students required printed materials, showing that conventional resources remain vital in conjunction with digital resources.

Remarkably, while 66% of students desire greater autonomy in their study, only 41% indicated that this need is being fulfilled. Correspondingly, 85% felt the need for learning in the classroom; however, only 30% reported this need to be fulfilled. Similarly, on the issue of time utilized in learning, there was a major shortfall of the same, as 78% felt that more time needed to be devoted in class on every topic in order to comprehend it more clearly. Finally, great importance was placed on collaborative learning: 91% of the students stated that they needed group work, while only 26% perceived the current provision as adequately supporting this approach. From these results, it follows that there is an urgent need for resource development and instructional innovation in terms of meeting the specific needs and preferences that students bring with them to linguistics classes.
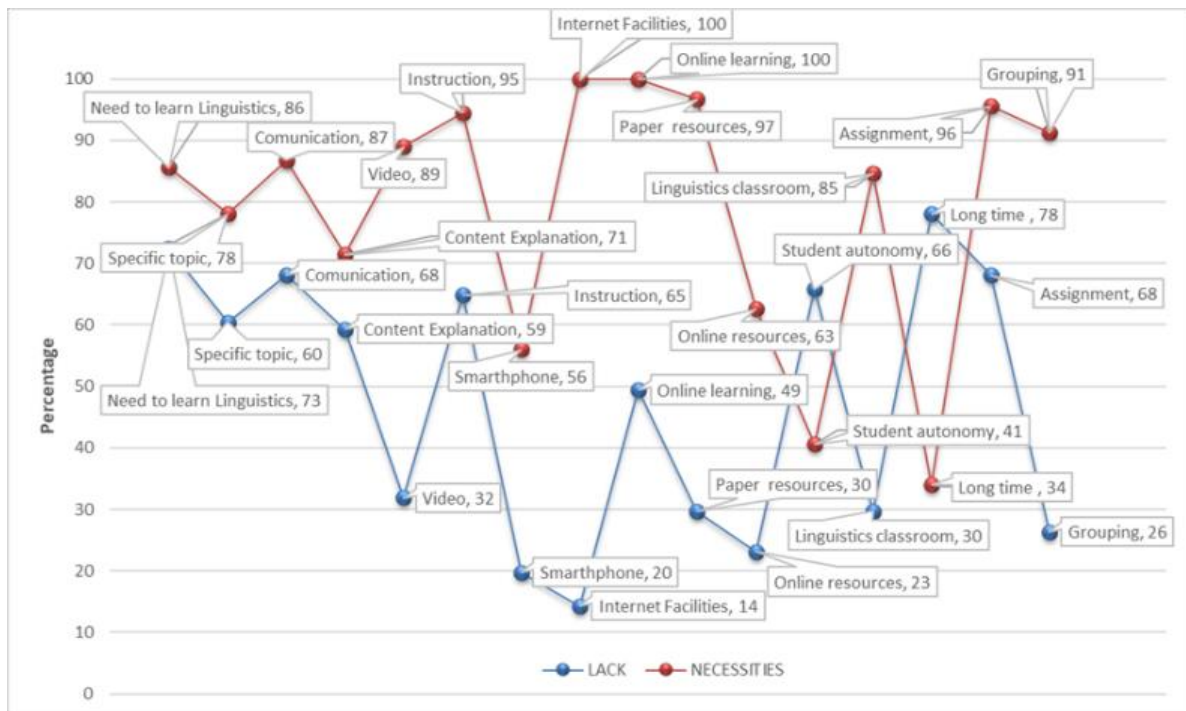

Figure 3. Analysis of lacks and necessities

The needs analysis evidences a considerable gap between the expectations of students regarding interactive multimedia means of linguistics education and actual instructional provisions. A dramatic 86% hoped to be deeply knowledgeable in linguistics, while for 73%, the support was insufficient. The discrepancy in these facts gives evidence of an acute need for enhanced teaching provisions which could allow more profound engagement with linguistic matters and improve learning attainment. These findings are important because they contribute to curriculum development and instructional design. As the responses show, students are interested in linguistics and want better learning support. The high scores in the search for specific topics and clear explanations indicate potential problems with meeting the present students' academic needs through existing materials. This gap is critical because the inability to relate linguistic theories foundational to their training immediately affects students' understanding and application of said linguistic theories.

These results also agree with previous studies that had identified personalized learning materials as necessary for the effectiveness of higher education. Other studies, for instance [26], [27], have gone ahead to add weight to the assertion that students are more motivated when resources are customized to suit their particular learning contexts. Study by [28], [29] further demonstrate how the inclusion of multimedia resources into language education improves understanding and retention of information about even tricky concepts. It tallies well with the strong appeal the respondents of this study have for video content and other interactive components in the learning process. Thus, the integration of multimedia may provide an improved learning experience. Yet, the findings could be explained from some other directions as well. The apparent inability of the current resources to engage the students properly is due to the inability to make good use of the materials rather than the inefficiency. Furthermore, some lecturers may possess an individual way of teaching and dealing with students; hence, the attitudes that students have towards the sufficiency of resources vary. Since it's a research-based study, the data taken was just from one cohort of the faculty of teacher training and education students, so maybe other faculties or universities aren't taking part in the study. In addition, students' individual learning styles and preferences were not measured, which might be a modifier of student perception of the adequacy of resources. Future research should be conducted in a more heterogeneous sample with a more significant number of variables to get a complete picture of the needs assessment of students in linguistics education.

4.   CONCLUSION

The study looks at the needs analysis of lecturers and students about the evolution of interactive multimedia in linguistics education at Universitas Borneo Tarakan faculty of teacher training and education. By use of questionnaires and interviews, we found notable differences between the present teaching strategies and the interesting, thorough language education sought for staff members and students. The results show that 86% of respondents want a better knowledge of linguistics, and 73% want better help by means of more resources. Furthermore, highly sought for are multimedia resource categories, focused subjects, and concise explanations, thereby underscoring the immediate need of producing instructional multimedia resources. These results imply a more general importance in the field of language instruction than only the immediate context of this research. Our studies emphasise the need of a paradigm change in educational approaches and support the inclusion of interactive multimedia components into the linguistics course of instruction. This method not only solves the found shortcomings in present instructional tools but also encourages more student involvement and comprehension.

Future research should concentrate on the creation and application of interactive multimedia tools fit for the demands revealed in this study. Working together, faculty members and instructional designers might produce interesting digital materials meant to improve the learning environment. Moreover, next investigations should investigate how these novel materials affect academic performance and student satisfaction, thereby adding important new perspectives to the field of research. In the final stage, our results highlight the need of faculty members giving the development and usage of multimedia tools customised to meet the particular requirements of their students top first priority. Encouragement of cooperative efforts to provide tailored resources would help to greatly improve the quality of linguistic training, therefore arming pupils for their future academic and professional endeavours. This study not only advances linguistics education at our university but also provides a template for other educational environments trying to be creative and enhance language instruction.

DATA AVAILABILITY
Data availability does not apply to this paper as no new data were created or analyzed in this study.

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