Jurnal Pendidikan Progresif
e-ISSN: 2550-1313 | p-ISSN: 2087-9849
URL: https://jpp.fkip.unila.ac.id/index.php/jpp
Jounal's DOI: http://doi.org/10.23960/jpp

Vol. 16, No. 1, 2026
Article ID: 1618
Pages: 596-609

Perceived Usefulness and Learning Motivation: Evaluating Low-Barrier Augmented Reality in Foreign Language Acquisition

Destina Kasriyati[1,*], Refika Andriani[1], & Syahdan Syahdan[1]
[1]Department of English Language Education, Universitas Lancang Kuning, Indonesia
[3]Department of Education and Learning Technology, National Tsing Hua University, Taiwan, Province of China

*Corresponding email: destina@unilak.ac.id

Received: 26 January 2026 *Accepted: 14 March 2026* *Published: 09 April 2026*

Abstract: This study aims to analyze students' perceptions and motivations in acquiring English language skills through the integration of "low-barrier" Augmented Reality (AR) technologies, such as Google Lens and QR codes. The urgency of this research lies in providing empirical data on the effectiveness of accessible technology as a learning bridge for students in developing countries facing educational paradigm shifts in the digital age. A quantitative approach with a survey design was employed, involving 58 fourth-semester students from the English Education Study Program at Universitas Lancang Kuning. Data were collected using a closed-ended questionnaire adapted from the ARCS (Attention, Relevance, Confidence, Satisfaction) model, which had undergone rigorous validity and reliability testing. The findings revealed that students' perceptions fell within the moderate category, with an average score of 2.98. Pearson Product-Moment correlation analysis showed a very strong and significant positive linear relationship ($r = 0.886$; $p < 0.001$) between students' perceptions and their learning motivation. The coefficient of determination ($R^2 = 0.784$) indicated that approximately 78.4% of the variance in learning motivation can be explained by the student perception variable. The "Attention" indicator recorded the highest level of engagement, confirming AR's role as an effective tool for stimulating interest in language-learning environments. Despite moderate technical challenges regarding ease of use, students' perceived pedagogical value remained high, establishing a solid foundation for technology acceptance in higher education. This study concludes that AR integration has a transformative psychological impact by converting static content into interactive learning experiences. emphasize the importance of enhancing digital literacy and user-friendly application design to ensure the sustainability of technological innovation in formal education.

Keywords: augmented reality, EFL learning, language skills, student motivation, student perception.

Article's DOI: https://doi.org/10.23960/jpp.v16i1.pp596-609

INTRODUCTION

The rapid development of virtual technology has triggered tremendous changes in various aspects of society, especially in education, which has undergone the most significant changes (Akçayýr & Akçayýr, 2017). With the development of the digital era, traditional teaching methods face challenges in creating an engaging and immersive learning environment that focuses on students (Seel et al., 2017). Among the various new technologies that have emerged, Augmented Reality (AR) has become one of the most important in educational reform, bringing together the real and virtual worlds. AR is defined as a technology that places digital content (such as images, 3D models, or sounds) directly into the user's real world, making the learning environment richer and more meaningful (Azimova & Solidjonov, 2023). Unlike Virtual Reality (VR), which immerses users in an artificial world, AR maintains the user's connection to the real world while enriching the experience through layers of

instruction, making it suitable for use in the classroom (AlGerafi et al., 2023; Childs et al., 2023; Pramanik, 2024).

The use of AR in teaching English as a Foreign Language (EFL) offers unprecedented opportunities to update language acquisition techniques. Generally, EFL students, especially in non-native contexts such as Indonesia, face obstacles posed by static textbooks and mechanical memorization, which often lead to inactivity and low motivation (Rafikha et al., 2024; Tamba, 2021; Widyawati et al., 2025). AR resolves these educational issues by turning theoretical linguistic ideas into concrete, visual, and interactive encounters. Recent research data shows that AR can assist in various aspects of language learning, such as recognizing new words, understanding reading material, and comprehensively improving listening, speaking, reading, and writing skills (Belda-Medina & Marrahi-Gomez, 2023). AR can enhance the performance of current language courses and bridge the gap between theoretical knowledge and real-world application by delivering an extraordinary, successful educational experience for non-native speakers.

Global research trends are focusing more on the motivation for using AR in the classroom. The optimization of student academic achievement, which is generally driven by greater engagement and cognitive stimulation, has been shown in several studies to be strongly associated with the use of AR resources (Khan et al., 2019). For example, using augmented reality (AR) games and enriched notes has been shown to help pupils develop independence and foster a positive learning environment (Taskiran, 2019). AR integration has been linked, especially in the area of language acquisition, to favorable attitudes and a strong passion for the subject matter. Compared with traditional instruction, students who engage in AR-enhanced activities, such as interactive reading tasks, frequently report lower anxiety and greater happiness (Marrahi-Gomez & Belda-Medina, 2024). This mental change is important since, in learning a foreign language, motivation is the main driver of long-term success (Di Serio et al., 2013).

While interest in Augmented Reality (AR) in education continues to grow, current literature still exhibits a significant research gap regarding its implementation in resource-constrained environments. Most previous studies have focused on advanced, specialized, and high-cost AR software, thereby overlooking the potential of more inclusive tools (Anis & Khan, 2023; Khan et al., 2019). This research aims to fill that gap by evaluating the use of "low-barrier" AR technologies in a formal English-language program within an Indonesian higher-education setting. The scope of AR in this study is defined by the Instant Camera Translation features in Google Translate and Google Lens, which, conceptually, meet AR criteria through the real-time superimposition of digital information onto real-world objects. The novelty of this research lies in the systematic application of these everyday tools, measured through the ARCS (Attention, Relevance, Confidence, Satisfaction) motivation framework. Focusing on accessible technology aims to prove that pedagogical transformation can be achieved without reliance on expensive technical infrastructure. By using this approach, the study provides empirical evidence that simple technology can trigger psychological effects comparable to those of complex AR systems. Ultimately, this research offers practical solutions and a relevant implementation roadmap for educators in regions with limited access to high-level digital technology.

The concept of 'low-barrier' AR, utilizing widely accessible tools such as Google Lens and QR codes, holds profound theoretical relevance for bridging the Digital Divide and accelerating technology adoption within the Technology Acceptance Model (TAM). In the context of developing nations, the digital divide is often characterized not merely by a lack of internet

access but by the complexity of high-end hardware and prohibitive software costs; thus, low-barrier AR serves as an inclusive solution that democratizes access to pedagogical innovation without requiring expensive infrastructure (Parmaxi & Demetriou, 2020). From a TAM perspective, the Perceived Ease of Use offered by technologies already integrated into students' smartphones directly enhances their Perceived Usefulness for language learning, as familiarity with the device reduces the cognitive effort required to operate new educational interfaces (Graniæ & Maranguniæ, 2019). When technical friction is minimized through this low-barrier approach, students' psychological resistance diminishes, facilitating a smoother transition from passive users to motivated, active learners. Consequently, this form of AR integration functions not only as a visual aid but as a strategic intervention to ensure that educational advancements reach a broader spectrum of learners, regardless of their socioeconomic background or initial technical proficiency (Zawacki-Richter & Jung, 2023; Zawacki Richter et al., 2025).

This research is unique in that it examines how effectively readily available AR technologies can be used as teaching tools in an EFL environment in a developing country. Through both a perception lens and the organized ARCS motivation framework, this study offers a nuanced view of how "low-barrier" AR may be as effective as expensive, complex systems. This study examines the complexity of technology in relation to students' perceptions of experience and psychological motivation, thereby filling a gap in real-world implementation plans for educators in areas with limited technical infrastructure.

The essential need to adapt to the demands of the "digital age" in higher education determines the urgency of this research. Interpreting students' perspectives is vital as educational institutions adopt more flexible and creative teaching methods, emphasizing that technology serves as an instructional bridge. Without empirical data on student perceptions and motivation, there is a persistent risk of investing in technologies that learners may perceive as "difficult" or a "waste of time" (Bowen, 2012; Mikusa, 2015; Tomoviæ, 2021). Therefore, this study aims to investigate the effect of AR technology on students' learning motivation and to evaluate their overall perception of its use in language skill learning. The findings will serve as a critical reference for teachers and educational practitioners in adopting AR as an innovative, efficient, and relevant learning tool for the modern, technology-driven classroom. The research questions are as follows:

1. What are the perceptions of English Education Study Program students regarding the integration of "low-barrier" Augmented Reality (AR) technology in language skills learning?;
2. What is the level of student learning motivation when using AR technology as measured by the ARCS (Attention, Relevance, Confidence, Satisfaction) model?; 3) To what extent is the relationship between students' perceptions of the utility of AR technology and their learning motivation in the context of English as a Foreign Language (EFL) learning?

METHOD

Participants

The participants in this study consisted of students from the English Language Education Study Program at the Faculty of Education and Vocational Studies, Universitas Lancang Kuning. A total of 58 students were involved as respondents. All participants shared similar characteristics regarding their experience using AR technology in a learning context, including tools such as Google Translate, video, QR Codes, and Google Lens.

The sampling technique applied in this research was Total Sampling (saturated sampling), in which questionnaires were distributed to the

entire population of fourth-semester English Education students with prior AR experience to ensure comprehensive local data representation. However, the reliance on a single university setting is explicitly acknowledged as a limitation that restricts the generalizability of the findings. This constraint affects the study's external validity, as the results may not fully reflect the diverse experiences and perceptions of EFL students at other institutions with differing technological infrastructures and socioeconomic backgrounds. Nevertheless, the involvement of these specific participants remains crucial, as their direct exposure to digital technologies integrated into the language skills curriculum provides significant, context-specific insights into the effectiveness of "low-barrier" AR tools.

Research Design and Procedures

This study employed a quantitative research approach with a survey design to examine the relationship between students' perceptions and their motivation to use Augmented Reality (AR). Data were collected through two sets of closed-ended questionnaires distributed via Google Forms, which participants completed to provide information on their experiences with AR. The instruments utilized a 4-point Likert scale, Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), intentionally omitting a neutral or "middle" category. This four-point configuration was selected to eliminate "central tendency bias," where respondents might choose a neutral option to avoid making a definitive judgment or due to social desirability bias. By removing the neutral midpoint, the researchers aimed to compel respondents to take a clear stance, thereby increasing the data's discriminat ive power and yielding more definitive insights into students' actual perceptions and motivational levels. The resulting data were analyzed using descriptive statistics, which effectively demonstrated interpreted the levels of agreement and disagreement across all questionnaire items.

Instruments

The research data were collected using closed-ended questionnaires adapted from Khan et al. (2019) and distributed to students in the English Education Study Program at Universitas Lancang Kuning via Google Forms. This instrument was contextually modified for Indonesian students by adjusting the terminology of the AR tools used (such as Google Lens and camera features) and underwent a back-translation process to ensure semantic accuracy. The perception questionnaire encompasses indicators of perceived usefulness, ease of use, and attitudes toward technology. At the same time, learning motivation was measured using the ARCS framework, consisting of Attention, Relevance, Confidence, and Satisfaction. Prior to the final data collection, the instrument underwent expert judgment to assess its validity. It was tested for reliability using Cronbach's Alpha to ensure that each item was consistent and suitable for the local higher education context. This adaptation process was meticulously conducted to ensure that the instrument, originally developed abroad, remains culturally and technically relevant to students' experiences in Indonesia.

Table 1. Indicators of students' perception and motivation questionnaires

Variable	Indicators / Items	Number of Items
Students' Perception	Measuring aspects of visual appeal, stimulation of curiosity, complexity of use, concentration, pleasure, and the future utility of AR.	17
Students' Motivation (ARCS	1. Attention: Measuring the impression and attractiveness of the material.	4 Main Indicators

Model)	2. Relevance: Assessing the suitability of the material to students' needs.
	3. Confidence: Assessing students' self-belief when facing learning tasks.
	4. Satisfaction: Measuring the level of satisfaction with learning outcomes.

The research instrument was contextually modified to ensure its relevance to EFL students in Indonesia and the characteristics of 'low-barrier' AR technology. The modification process involved adjusting specific items; previously, general statements were revised to explicitly highlight the visual appeal of smartphone-based applications like Google Lens and QR codes, thereby avoiding bias toward high-end AR devices not used in this study. Pedagogically, these changes aimed to enhance face validity, ensuring that respondents evaluated the technology they actually used; meanwhile, culturally, the questionnaire underwent a back-translation process to eliminate linguistic ambiguity and align the terminology for learning satisfaction with the collaborative values of local students. To guarantee transparency and replicability, the instrument was validated through expert judgment by three specialists: a senior lecturer in educational technology, an ELT specialist, and a digital literacy researcher, all of whom hold doctoral degrees. These experts evaluated item clarity and content relevance using the ARCS motivation model, which led to simplifying technical language to improve comprehensibility.

The research tools were tested for validity and reliability prior to the primary data collection. The validity was evaluated using the Pearson Product-Moment correlation, where each item was deemed valid if the r_{count} value exceeded the r_{table} limit (0.254 for N=25). The validity test interpreted that each motivation item and 17 perception items accommodated the validity requirements. Cronbach's Alpha method was applied to assess reliability, which constructed an Alpha value of 0.842 for the perception variable and 0.815 for the motivation variable. Thus, the instrument was highly reliable and suitable for data collection.

The pilot study involving 25 participants was conducted as a preliminary phase to ensure the instrument's clarity, readability, and initial internal consistency before full-scale administration. Methodologically, a sample size of 20-30 participants is widely considered sufficient for a pilot test to detect potential flaws in instrument items (Isaac & Michael, 1995; Julious, 2005). Since the pilot participants shared identical characteristics and were drawn from the same institutional population as the main sample (N=58), the psychometric properties identified were deemed representative. Furthermore, to address the reviewer's concern, the instrument's stability was re-verified during the final analysis of the 58 respondents, and the results remained consistent with the initial pilot findings. We have revised the methodology section to include this justification."

Data Analysis

The generated data were analyzed using descriptive statistics and correlation analysis to provide a comprehensive quantitative representation of the responses from 58 participants. Although descriptive statistics provide an overview of the data, correlation was used to ascertain the relationship between participants' perceptions and motivations. The analysis process is outlined in Table 2:

Table 2. Data analysis procedures and interpretations

Analysis Stage	Procedures and Techniques	Purpose
Descriptive Statistics	Calculation of total scores, mean, mode, and standard deviation.	To examine the central tendency and variability of the respondents' answers.
Likert Scale Categorization	Grouping mean scores into the following ranges: * 1.00 – 2.49: Low * 2.50 – 3.99: Moderate * 4.00 – 5.49: High.	To qualitatively determine the level of students' perception and motivation based on the average scores.
Item-by-Item Analysis (Mean & SD)	Comparing the mean score of each question.	To identify dominant aspects that are considered strengths or areas for improvement.
Correlational Analysis	Pearson Product-Moment Correlation coefficient (r) calculation.	To ascertain the strength and direction of the relationship between Perception and Motivation.

■ RESULT AND DISCUSSION

Overview of Participants' Experience

The study involved 58 English Education students at Universitas Lancang Kuning. Prior to data collection, it was established that all participants (N=58) had practical experience using Augmented Reality (AR) tools in their language learning. Among these tools were instructional videos, QR codes, Google Lens, and Instant Camera Translation. This background ensured that, rather than theoretical expectations, the participants offered informed opinions grounded in real classroom integration.

What are the perceptions of English Education Study Program students regarding the integration of "low-barrier" Augmented Reality (AR) technology in language skills learning?

The first objective was to evaluate students' perceptions regarding the use of AR in language skill learning. This was measured through 17 items on a 4-point Likert scale.

The descriptive analysis in the figure shows a predominantly positive trend in students' perceptions and motivations toward integrating "low-barrier" Augmented Reality (AR) tools into

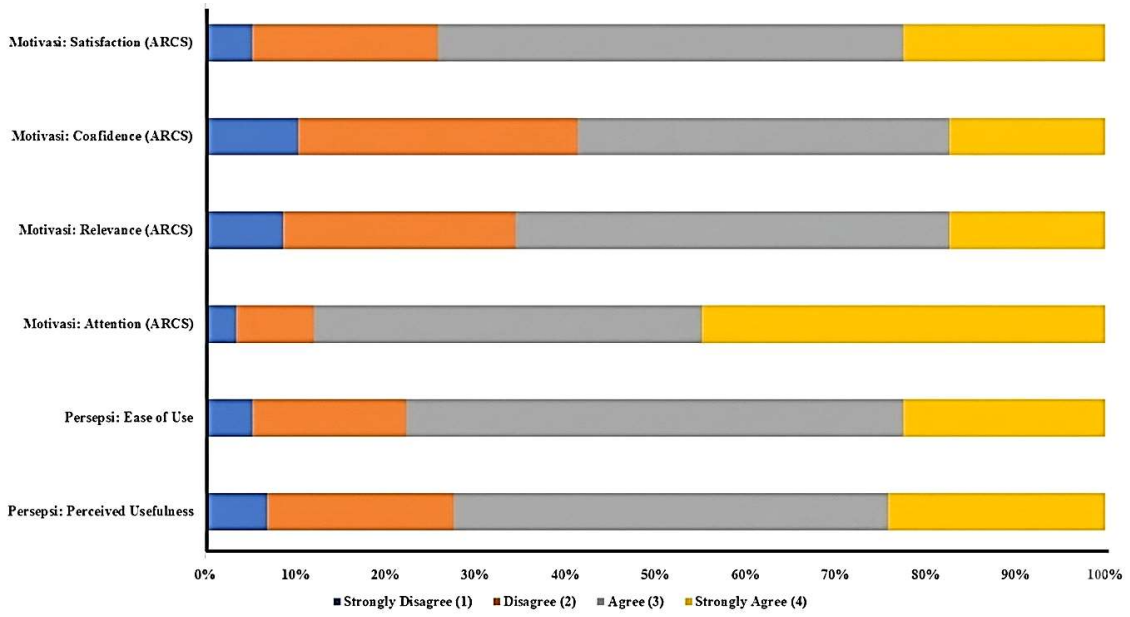

Figure 1. Descriptive statistics of students' perception toward augmented reality

language learning. Across all measured variables, the cumulative proportion of "Agree" and "Strongly Agree" responses exceeds the negative sentiments, indicating a strong baseline of acceptance among the 58 participants. Notably, the "Motivasi: Attention (ARCS)" indicator shows the highest level of engagement, with approximately 45% of respondents selecting "Strongly Agree," reinforcing the study's finding that AR is a highly effective medium for stimulating epistemic curiosity and capturing student interest. This visual data supports the overall mean perception score of 2.98, indicating that while the general sentiment is moderate, specific dimensions, such as visual appeal and engagement, are significant strengths of this technology.

Furthermore, the chart reveals critical nuances regarding the practical implementation of AR, particularly in the "Persepsi: Ease of Use" and "Motivasi: Confidence (ARCS)" categories. While positive responses remain dominant, these indicators show a higher frequency of "Disagree" and "Strongly Disagree" selections than the "Attention" variable, reflecting the identified technical challenges and digital literacy disparities among students. The "Motivasi: Relevance" and "Motivasi: Satisfaction" sectors also show substantial agreement, confirming that students perceive these accessible AR tools, such as Google Lens and QR codes, as pedagogically relevant to their specific educational needs as digital natives. Collectively, this distribution underscores a significant positive relationship between favorable perceptions of technology and enhanced motivation to learn, while highlighting the need for improved instructional scaffolding to address remaining usability barriers.

What is the level of student learning motivation when using AR technology as measured by the ARCS (Attention, Relevance, Confidence, Satisfaction) model?

The second hypothesis examines the direction of student motivation using the ARCS (Attention, Relevance, Confidence, Satisfaction) framework.

Table 3. Results of students' motivation indicators (N=58)

Indicators	Minimum	Maximum	Mean	Std. Deviation	Interpretation
Attention	6.00	12.00	9.38	1,399	High
Relevance	4.00	8.00	6.53	883	High
Confidence	2.00	4.00	2.88	623	High
Satisfaction	2.00	4.00	3.17	464	High

Table 3 indicates a "fairly positive" assessment across all ARCS indicators. The Attention indicator (average 9.38), which received the highest score, shows that AR made a significant impression on students. The average satisfaction score of 3.17 indicates that respondents are overall satisfied with the learning outcomes achieved through AR. The Relevance score (average of 6.53) proves that respondents detect resources integrated with AR that are useful for their specific learning needs.

This result supports earlier studies by Cuendet et al. (2013) and Kan & Özmen (2021) that claim AR provides better visual appeal than fixed media. Students can engage with digital objects that seem to "come alive" inside their actual classroom by using Google Lens and QR Codes. AR technology greatly increases learning interest due to its interactive nature, according to Marrahi-Gomez & Belda-Medina (2024), Sari et al. (2024), Tsai (2020), and Wang (2025). Moreover, in their methodical review, Akçayýr

& Akçayýr (2017) concluded that AR may boost student engagement by providing visual cues that standard textbooks cannot offer.

Although not directly measured, the multisensory experiences produced by AR are perceived by students as a factor that may clarify abstract concepts. This aligns with the high scores in 'Perceived Usefulness,' suggesting that the visual and auditory integration in AR tools may help manage the mental effort required for language tasks. Future research should explicitly investigate whether this pedagogical shift leads to a quantifiable reduction in cognitive load. According to studies (Bursali & Yilmaz, 2019), students learning through AR have better memory retention because they are more emotionally engaged and pay closer attention during the learning process. In an EFL environment, a lot of focus is needed to avoid burnout when learning hard grammar or vocabulary.

Beyond the "Gimmick" According to the ARCS model motivation analysis, AR is a relevant educational tool rather than just a fad or a technical trick. With a Mean of 6.53, the relevance score suggests that pupils find AR relevant to enhancing their language skills. These data support the claim that intrinsic motivation rises when technology meets students' functional requirements. The significance of AR in this research depends much on the way of life of the kids as digital natives. Integrating digital tools commonly used in daily life, such as Google Translate, into the classroom helps learning feel more real and quicker, according to Mozaffari & Hamidi (2023) and Syed et al. (2022).

Furthermore, AR's success in offering a "feeling of reality" and dream components (Q14, Q16) is reflected in the great degree of Satisfaction (Mean 3.17). Immersion learning settings, according to Azimova and Solidjonov (2023), enable students to see the context of language use in real time, thereby boosting their communication confidence. (Mikusa, 2015; Tsai, 2020; Wang, 2025) also support this by showing that, due to quick feedback and a sense of achievement, EFL students' motivation is greatly increased through the use of AR-based games.

According to research by Marrahi-Gomez & Belda-Medina (2024), AR provides a calmer, less intimidating learning environment than one-way lectures. AR lowers the students' "affective filter" by changing the emphasis from individual performance to interaction with digital things. Additionally, highlights that AR-created materials make learning vocabulary more enjoyable, encouraging students to try new things with the language without worrying about making errors. The Way Forward. Overall, the findings of this study clearly demonstrate that AR will continue to play a significant role in the future EFL program at Universitas Lancang Kuning. However, in order to move from a "moderate" to a "high" perception category, synergy between the relevant instructional design and the simplicity of technical access is necessary.

This conclusion supports the assertion by Kramer (2012) and McLean & Wilson (2019) that technological sustainability depends on user experience. The potential of AR to create attention, relevance, confidence, and satisfaction (ARCS) will be maximized if technological challenges can be reduced. By showing that "low-barrier" AR technologies, such as QR Codes, are sufficient to elicit positive psychological changes in language learners when coupled with explicit instructional objectives, this study contributes to the body of knowledge on higher education in Indonesia.

To what extent is the relationship between students' perceptions of the utility of AR technology and their learning motivation in the context of English as a Foreign Language (EFL) learning?

Aiming to examine the relationship between perceptions of Augmented Reality (AR) use and

learning motivation (ARCS), a Pearson Product-Moment correlation analysis was conducted after defining perceptions and motivation separately. The direction and strength of the relationship between these variables were determined using statistical software.

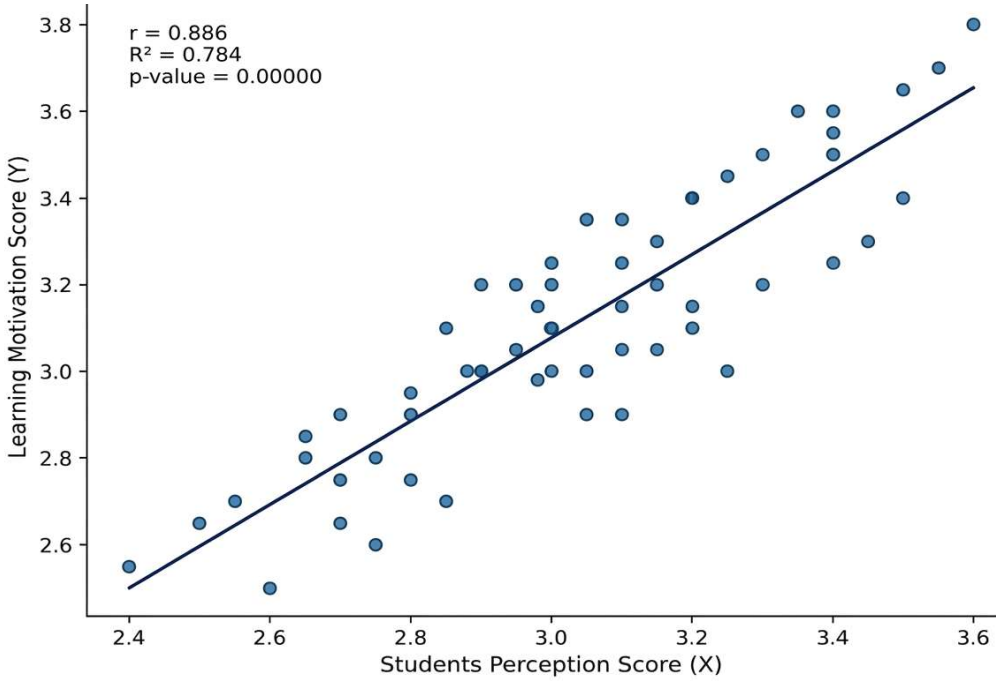

Figure 2. Correlation between students' perception and students' motivation

Figure 2 illustrates a significant positive trend in students' perceptions and motivations regarding the integration of Augmented Reality (AR) technology. The 'Motivation: Attention (ARCS)' indicator recorded the highest level of engagement, with nearly half of respondents selecting 'Strongly Agree,' confirming AR's role as an effective instrument for stimulating interest in the learning environment. Although the 'Perception: Ease of Use' and 'Motivation: Confidence' dimensions show a wider variation in responses reflecting moderate technical challenges the cumulative proportion of positive responses across all variables remains dominant. This indicates that despite usability barriers, the pedagogical value perceived by students through features such as Perceived Usefulness remains high, thereby establishing a solid foundation for technology acceptance at the higher education level.

The Attention component of the ARCS model is activated when students perceive AR as an engaging medium (i.e., it attracts attention). The interactive aspects of AR also foster positive emotional states that enhance memory persistence and sustained attention (Bursali & Yilmaz, 2019). This study confirms that students who analyze AR as a realistic and harmless tool report higher levels of happiness and confidence in using their English skills. In addition, the relationship between positive perceptions of AR and a decrease in students' "affective filter" has been established. When students perceive technology as a fun and engaging medium rather than a rigid testing tool, their language anxiety decreases, which in turn optimizes their intrinsic motivation (Belda-Medina & Marrahi-Gomez, 2023; Marrahi-Gomez & Belda-Medina, 2024). A high correlation also indicates that students, as a digital generation, recognize the pedagogical relevance of everyday

AR tools like Google Lens and QR codes in their lives.

In line with the findings (Anis & Khan, 2023; Khan et al., 2019), students are highly motivated when they realize that technology can be used directly to meet their practical educational needs. This data correlation, as a final implication, supports the argument (McLean & Wilson, 2019) that positive user experiences contribute to the sustainability of technological innovation. When educators can reduce technological barriers and maintain students' positive perceptions, AR-based motivation will remain consistent and useful for long-term language learning. Overall, these findings confirm that AR is not just a complementary tool, but a transformative pedagogical asset that is perceived positively and can significantly improve students' psychological readiness and motivation to learn English as a foreign language.

Furthermore, the results of the correlation analysis confirm a very strong positive linear relationship between students' perceptions and their learning motivation. The data show a correlation coefficient of r = 0.886 and a significance value of p = 0.00000, indicating that each increase in positive perception of AR technology contributes significantly to enhancing student learning motivation. The coefficient of determination (R^2 = 0.784) indicates that approximately 78.4% of the variance in learning motivation can be explained by the student perception variable. The distribution of data points clustered along the regression line reinforces the conclusion that students' psychological attitudes toward the utility and accessibility of AR technology serve as a primary predictor for the successful internalization of motivation within the context of English language learning."

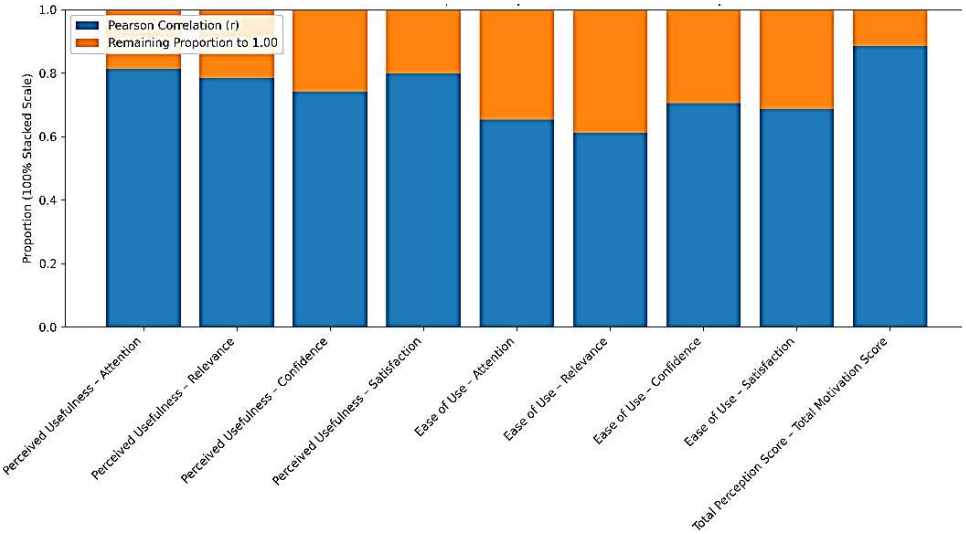

Figure 3. Correlation between perception components and motivation components

Based on Figure 3, there is a significant and consistent positive linear relationship between all dimensions of perception and students' motivation to use Augmented Reality (AR) technology. The Perceived Usefulness dimension shows a strong correlation, particularly for Attention (r = 0.812) and Satisfaction (r = 0.798), indicating that the functional benefits of AR are the primary drivers of student interest and learning satisfaction. Meanwhile, the Ease of Use dimension also shows a strong correlation, especially with Confidence (r = 0.705), which implies that the simplicity of operating AR tools directly enhances students' self-confidence in engaging in language

practice. Cumulatively, the relationship between the total perception score and the total motivation score yields an r = 0.886, indicating a very strong correlation in statistical terms. All significance values ($p < 0.001$) confirm that these correlations are substantial and not due to chance, indicating that a positive perception of technology is a crucial prerequisite for the formation of high learning motivation. Furthermore, these data support the finding that integrating 'low-barrier' AR technology successfully transforms static materials into more interactive experiences for students. Consequently, the results of this analysis empirically validate that an improvement in the quality of students' perceptions regarding the usefulness and ease of AR is directly proportional to the overall strengthening of their ARCS motivation."

The findings of this study reveal a remarkably strong correlation (r = 0.886) between students' perceptions and their learning motivation, reinforcing the theoretical premise that psychological acceptance of technology is a fundamental catalyst for student engagement. The dominance of the Perceived Usefulness dimension in driving Attention (r = 0.812) and Satisfaction (r = 0.798) suggests that when students recognize the tangible benefits of AR for language acquisition, their curiosity and contentment increase significantly. This aligns with the Technology Acceptance Model (TAM), in which perceived utility is a primary determinant of user intention and behavior. In the context of EFL, this is further supported by Taskiran (2019), who argues that the immersive nature of AR games and tools significantly boosts motivation by providing a novel, interactive layer to traditional linguistic input. By transforming abstract language concepts into concrete visual experiences, AR effectively captures students' attention, the crucial first step in the ARCS motivational model.

Furthermore, the strong relationship between Ease of Use and Confidence (r = 0.705) highlights the importance of "low-barrier" technology in educational settings. When students find the technology accessible and easy to navigate, such as Google Lens or QR codes, their anxiety regarding technical failure diminishes, allowing them to focus on the linguistic task at hand. According to Tsai (2020), reducing cognitive load through user-friendly AR interfaces is essential for maintaining students' confidence in learning foreign language vocabulary. This sentiment is echoed by Wang (2025), who found that AR applications positively impact EFL learners' oral proficiency by creating a safe and interactive environment for practice. These findings suggest that the success of AR integration depends not only on its advanced features but also on how effortlessly students can incorporate these tools into their existing learning routines.

The high correlation between total perception and overall ARCS motivation also suggests a transformative shift in the instructional paradigm. By moving away from static, text-heavy materials, AR creates a multisensory learning environment that fosters a sense of "presence" or reality. Parmaxi & Demetriou (2020) emphasize that the pedagogical potential of AR lies in its ability to support social constructivist learning, where students are active participants rather than passive recipients of information. This interactivity is what ultimately leads to the high levels of satisfaction observed in this study. Moreover, Alizadeh et al. (2019) point out that in digital-era education, the integration of such innovative technologies is no longer an option but a necessity to meet the evolving needs of digital-native learners. Consequently, this study empirically demonstrates that enhancing students' perceptions of the utility and simplicity of AR tools is a strategic pathway to sustained, robust learning motivation in the EFL classroom.

■ CONCLUSION

The integration of Augmented Reality (AR) technology in teaching English language skills at Universitas Lancang Kuning has demonstrated

positive psychological implications for students. Although overall student perception fell within the moderate category, with an average score of 2.98, participants acknowledged AR as a highly engaging tool that can spark curiosity and stimulate language practice. The use of accessible AR tools, such as Google Lens and QR codes, has successfully transformed static learning materials into more interactive and realistic experiences for the digital generation. However, this study also identified technical challenges in application use that some students still find relatively complex.

Consequently, effective AR implementation in the future requires synergy between instructional designs that meet student needs and adequate technical support (scaffolding) from educators. The findings regarding the strong correlation ($r = 0.886$) emphasize that students' psychological attitudes toward the utility of technology serve as a primary predictor for the successful internalization of learning motivation. To ensure this technology serves as a breakthrough bridge in language teaching in the digital age, education practitioners and application developers are encouraged to continue improving the user interface's ease of use to reduce technical barriers and sustainably maximize AR's pedagogical potential.

■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

Generative AI tools (ChatGPT) were used solely to assist with the preparation and formatting of graphical figures. All analyses, interpretations, and manuscript content were conducted and verified by the authors. The authors reviewed and revised the AI-assisted outputs and accept full responsibility for the final article.

■ REFERENCES

Akçayýr, M., & Akçayýr, G. (2017). Advantages and challenges associated with augmented reality for education: A systematic review of the literature. *Educational Research Review*, *20*, 1–11.

AlGerafi, M. A. M., Zhou, Y., Oubibi, M., & Wijaya, T. T. (2023). Unlocking the potential: A comprehensive evaluation of augmented reality and virtual reality in education. *Electronics*, *12*(18), 3953.

Alizadeh, M., Mehran, P., Koguchi, I., & Takemura, H. (2019). Evaluating a blended course for Japanese learners of English: why Quality Matters. *International Journal of Educational Technology in Higher Education*, *16*(1), 6. https://doi.org/https://doi.org/10.1186/s41239-019-0137-2

Anis, M., & Khan, R. (2023). *Integrating multimodal approaches in English language teaching for inclusive education: A pedagogical exploration*.

Azimova, D., & Solidjonov, D. (2023). Learning English language as a second language with augmented reality. *Qo 'Qon Universiteti Xabarnomasi*, *1*, 112–115.

Belda-Medina, J., & Marrahi-Gomez, V. (2023). *The impact of augmented reality (AR) on vocabulary acquisition and student motivation*.

Bowen, J. A. (2012). *Teaching naked: How moving technology out of your college classroom will improve student learning*. John Wiley & Sons.

Bursali, H., & Yilmaz, R. M. (2019). Effect of augmented reality applications on secondary school students' reading comprehension and learning permanency. *Computers in Human Behavior*, *95*, 126–135.

Chen, Y. (2024). The effect of applying augmented reality to Chinese character learning on novice CFL learners. *Education & Information Technologies*, *29*(13), 17363–17386.

Childs, E., Mohammad, F., Stevens, L., Burbelo, H., Awoke, A., Rewkowski, N., & Manocha, D. (2023). An overview of enhancing distance learning through emerging augmented and virtual reality technologies. *IEEE Transactions on Visualization and Computer Graphics*, *30*(8), 4480–4496.

Cuendet, S., Bonnard, Q., Do-Lenh, S., & Dillenbourg, P. (2013). Designing augmented reality for the classroom. *Computers & Education*, *68*, 557–569.

Di Serio, Á., Ibáñez, M. B., & Kloos, C. D. (2013). Impact of an augmented reality system on students' motivation for a visual art course. *Computers & Education*, *68*, 586–596.

Graniæ, A., & Maranguniæ, N. (2019). Technology acceptance model in educational context: A systematic literature review. *British Journal of Educational Technology*, *50*(5), 2572–2593. https://doi.org/https://doi.org/10.1111/bjet.12864

Isaac, S., & Michael, W. B. (1995). *Handbook in research and evaluation: A collection of principles, methods, and strategies useful in the planning, design, and evaluation of studies in education and the behavioral sciences*. Edits publishers.

Julious, S. A. (2005). Sample size of 12 per group rule of thumb for a pilot study. *Pharmaceutical Statistics: The Journal of Applied Statistics in the Pharmaceutical Industry*, *4*(4), 287–291.

Kan, A. Ü., & Özmen, E. (2021). The effect of using augmented reality based teaching material on students' academic success and opinions. *African Educational Research Journal*, *9*(1), 273–289.

Khan, T., Johnston, K., & Ophoff, J. (2019). The impact of an augmented reality application on learning motivation of students. *Advances in Human Computer Interaction*, *2019*(1), 7208494. https://doi.org/https://doi.org/10.1080/17501229.2024.2333539

Kramer, K.-L. (2012). *User experience in the age of sustainability: A practitioner's blueprint*. Elsevier.

Kurniawati, I. D. (2018). *Media pembelajaran berbasis multimedia interaktif untuk meningkatkan Pemahaman konsep mahasiswa*. *DoubleClick: Journal of Computer and Information Technology*, *1*(2), 68–75.

Marrahi-Gomez, V., & Belda-Medina, J. (2024). Assessing the effect of augmented reality on English language learning and student motivation in secondary education. *Frontiers in Education*, *9*, 1359692.

McLean, G., & Wilson, A. (2019). Shopping in the digital world: Examining customer engagement through augmented reality mobile applications. *Computers in Human Behavior*, *101*, 210–224.

Mikusa, M. E. (2015). *The effect of technology self-efficacy and personal engagement on students' and teachers' attitudes toward technology use in education*. Appalachian State University.

Mozaffari, S., & Hamidi, H. R. (2023). Impacts of augmented reality on foreign language teaching: a case study of Persian language. *Multimedia Tools and Applications*, *82*(3), 4735–4748.

Parmaxi, A., & Demetriou, A. A. (2020). Augmented reality in language learning: A state of the art review of 2014–2019. *Journal of Computer Assisted Learning*, *36*(6), 861–875.

Pramanik, S. (2024). Immersive innovations: Exploring the use of virtual and augmented reality in educational institutions. In *Developments and Future Trends in Transnational Higher Education*

Leadership (pp. 229–243). IGI Global.

Rafikha, H., Ula, N., Rahmah, H., Khaira, N., Fitri, K., Ulfa, P. R., Syathi, R., Darma, A., Farhani, C. R., & Aliyah, W. D. (2024). *Seven innovative ways to learn english for non-native speaker*. USK Press.

Sari, U. P., Suwarma, D. M., Subroto, D. E., Roswati, R., Jenuri, J., & Hita, I. (2024). Pengaruh pemanfaatan teknologi augmented reality terhadap tingkat ketertarikan belajar siswa dalam penyampaian materi pembelajaran. *Journal on Education*, *6*(3), 17672–17679.

Seel, N. M., Lehmann, T., Blumschein, P., & Podolskiy, O. A. (2017). Instructional design for learning: theoretical foundations. In *Instructional Design for Learning*. Sense Publishers. https://doi.org/10.1007/978-94-6300-941-6_1

Solak, E., & Cakir, R. (2015). Exploring the effect of materials designed with augmented reality on language learners' vocabulary learning. *Journal of Educators Online*, *12*(2), 50–72.

Syed, T. A., Siddiqui, M. S., Abdullah, H. B., Jan, S., Namoun, A., Alzahrani, A., Nadeem, A., & Alkhodre, A. B. (2022). In-depth review of augmented reality: Tracking technologies, development tools, AR displays, collaborative AR, and security concerns. *Sensors*, *23*(1), 146.

Tamba, R. R. M. (2021). *Motivational teaching strategies, student motivation and L2 use: Indonesian Higher Education EFL context*. University of York.

Taskiran, A. (2019). The effect of augmented reality games on English as foreign language motivation. *E-Learning and Digital Media*, *16*(2), 122–135.

Tomoviæ, A. (2021). *Engagement theory based interpretative phenomenological analysis of computer science students' perceptions of their learning engagement using mobile devices*.

Tsai, C.-C. (2020). The effects of augmented reality to motivation and performance in EFL vocabulary learning. *International Journal of Instruction*, *13*(4), 987–1000.

Wang, Y. (2025). The impact of an augmented reality application on EFL learners' oral proficiency. *Innovation in Language Learning and Teaching*, *19*(1), 83–98. https://doi.org/https://doi.org/10.1080/17501229.2024.2333539

Widyawati, T. I., Indah, R. N., & Syaifulloh, B. (2025). Qualitative exploration of EFL students' preferred instructional approaches by native and non-native English teachers. *Journal of English Language Studies*, *10*(1), 24–38. https://doi.org/https://doi.org/10.30870/jels.v10i1.29778

Yilmaz, R. M., & Goktas, Y. (2017). Using augmented reality technology in storytelling activities: examining elementary students' narrative skill and creativity. *Virtual Reality*, *21*(2), 75–89.

Zawacki-Richter, O., & Jung, I. (2023). *Handbook of open, distance and digital education*. Springer. https://doi.org/https://doi.org/10.1007/978-981-19-2080-6

Zawacki Richter, O., Cefa, B., & Bai, J. Y. H. (2025). Towards reproducible systematic reviews in open, distance, and digital education An umbrella mapping review. *Review of Education*, *13*(1), e70031. https://doi.org/https://doi.org/10.1002/rev3.70031