

Integrating the Acehnese folklore and augmented reality to enhance EFL speaking

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ABSTRACT

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This study investigated the effectiveness of integrating Acehnese folklore Amat Rahmanyang into an Augmented Reality (AR) based learning environment to enhance English as a foreign language (EFL) learners' speaking skills. Despite growing evidence supporting AR in language learning, Indonesia has explored the pedagogical integration of culturally grounded content, particularly local folklore from underrepresented communities like Aceh. This mixed methods study involved 25 first-grade students at SMA IT Al-Uswah, Sigli, Indonesia. It employed a one-group quasi-experimental design, combining pre-test and post-test assessments with thematic analysis of student interviews. The intervention utilized an AR application featuring the Acehnese tale of Amat Rahmanyang, delivered through interactive 3D animations, audio narration, and visual storytelling tasks. Speaking performance was evaluated using a CEFR-based analytic rubric. Quantitative findings indicated a significant improvement in students' speaking scores, with mean scores rising from 10.24 (A2 level) to 17.00 (B1 level), confirmed by a paired sample t-test ($t = 15.89$, $p < 0.001$). Qualitative data revealed increased learner confidence, enhanced cultural engagement, and greater awareness of pronunciation and vocabulary use. Students expressed that familiarity with the folklore made speaking tasks more meaningful and reduced anxiety. The study concludes that integrating culturally familiar stories within AR-enhanced instruction provides not only linguistic benefits but also emotional and cultural relevance, fostering a more engaging and effective learning environment.

Keywords: Augmented reality; EFL speaking skill; Acehnese folklore; Amat Rahmanyang Story; CEFR

INTRODUCTION

The integration of technology in English as a foreign language (EFL) classroom has become a powerful pedagogical shift aimed at enhancing students' engagement and improving learning outcomes (Dou & Huang, 2024; Jansen et al., 2020). Among various skills, speaking remains one of the most challenging to teach and acquire, particularly in contexts where English exposure is limited to classroom environment. The opportunities for real-world English use, coupled with contextual and psychological constrictions such as anxiety, low self-confidences, and lack of authentic communicative environments significantly hinder learners' oral proficiency development (Hibatullah, 2019; Kho & Ting, 2023). Consequently, educators must adopt innovative speaking to foster both communicative competence and learner motivation.

One promising avenue for language instruction involves the use of Augmented Reality (AR), where this media technology overlays the elements such as images, audio, and 3D models) onto real world environments to create immersive interactive language learning experiences (Jang et al., 2021). Research highlight that AR supported language activities can significantly enhance learners' vocabulary, speaking fluency, and engagement by situating language practice in meaningful and context-rich tasks (Chang et al., 2020; Christou et al., 2025; Jang et al., 2021).

Augmented Reality (AR) has demonstrated strong potential pedagogical tool for development EFL speaking skills, particularly by offering immerse, multimodal contexts that stimulate authentic communication scenario. A recent meta-analysis found that AR specially promotes fluency gains, providing immediate and context-based feedback through virtual prompts and real-world overlays (Klopfer & Squire, 2008), thereby mimicking authentic speaking environments even in -low-English-exposure settings. Similarly, another quasi-experimental study revealed that learners in both flipped and traditional classroom settings who received AR-enhanced instruction significantly outperformed their peers in post-test speaking performance. The gains were especially greater in interactive classes that combined in-person instruction with AR-supported tasks (Khodabandeh, 2022). Additionally, research has shown that integrating AR into foreign language instruction enhances students' motivation, improves vocabulary retention, and fosters greater communicative engagement, further supporting the effectiveness of AR across various educational settings (Simonova & Kolesnichenko, 2022).

Despite the growing literature on AR in EFL, few studies have examined the integration of local folklore, especially from underrepresented cultures such as Aceh into AR to support speaking proficiency. Most previous works rely on generic digital content, neglecting the cultural identity, emotional connection, and storytelling power that folklore can provide. Other researchers have also infused students' local culture or context in ELT by integrating religious values into textbooks (Farah & Khoiriyah, 2023; Farah et al., 2021; Farah, 2020). While several AR-based learning models have incorporated folklore from regions such as north Sumatra (Hadi et al., 2025), Bali (Aditama et al., 2022), or other widely recognized cultures in Indonesia. The Acehnese folklore remains largely unexplored in AR enhanced language

education. In response to this gap, the present study utilizes *Amat Rahmanyang* into AR where this folklore holds strong educational value. It conveys lessons about humility, persistence and social moral value, and religious, while its sequential plot, rich dialogue, and the characters' driven interaction make it highly suitable for speaking tasks such as retelling, role-playing and oral interpretation. In the broader context of language education, folklore provided not only rich linguistic input but also fosters intercultural understanding and communicative competence (Kramsch, 2017).

In light of these considerations, this study presents a novel approach by integrating the Acehese *Amat Rahmanyang* folklore into an AR-based EFL learning module focused on improving speaking skills. Unlike prior studies that use AR as a standalone technological tool, this research combines AR with authentic local narratives, enabling students to interact with stories, characters, and dialogues in their cultural context. As far as the literature reveals, no existing research has systematically integrated Acehese *Amat Rahmanyang* folklore into AR-based EFL speaking instruction. This makes the current work distinct in its pedagogical innovation, cultural relevance, and multimodal engagement. The research is guided by the following question: 1. To what extent does the integrating of Acehese folklore into AR-based learning environment improve EFL learners' speaking performance? 2. What are EFL learners' perception of how augmented reality integrated with Acehese folklore support their speaking performance?

METHODS

This study employed a mixed methods approach by integrating both qualitative and quantitative techniques to investigate the integration of Acehese folklore through Augmented Reality (AR) in enhancing the EFL learners' speaking skills. The research design followed an explanatory sequential model, beginning with quantitative data collection and followed by qualitative inquiry to explain and enrich the finding (Creswell, 2018). To examine the effect of the intervention, the researcher used a one-group quasi-experimental design, where a single group of participants received the treatment without a comparison or control group (Houcan, 2025). The study was conducted at SMA IT Al-Uswah, a private Islamic senior high school located at Sigli, Aceh, Indonesia. The school was selected as the research site due to its active implementation of digital-based learning and English instruction as part of its curriculum. Besides, this school provides a conducive environment for introducing educational technology such as AR, because of its supportive infrastructure, enthusiastic students and openness to culturally relevant learning innovation and method as much as possible to give an idea to the reader through the methods used. Sub-subhead on this method comprising at least one type of research; location research; materials law source; data collection technique; and data analysis.

Respondents

The respondents in this study were 25 first-grade students. The sample comprised 13 Male and 12 female students, all of who were enrolled in compulsory English course. The selection of participants was conducted using purposive sampling. It is widely accepted non-probability sampling technique used when researchers need to

focus on specific characteristics of population that are essential for the research objective (Etikan, 2016) based on specific criteria relevant to the research goals—namely. Hence, in this case, the researcher chose first-grade as respondents because they are in the early phase of their English Language development, making them ideal for intervention that aim to build foundational speaking skills and they are typically being introduced to more structured and expressive speaking activities, yet being struggle with confidence, pronunciation, and vocabulary use (Zhang, 2024; Andrian & Faudi, 2020). To address these challenges, the integration culturally familiar content such as Amat Rahmyang folklore—delivered through an engaging Augmented Reality (AR) medium—provides meaningful context and emotional connection that can stimulate speaking performance and increase motivation in EFL learners. Lai and Chang (2021) said that AR-based instruction, when embedded in authentic and culturally relevant scenarios, enhances learner engagement and oral production. Furthermore, a recent experimental study demonstrated that students using Ar-based story telling scored significantly higher in post-test story retelling performance compared to conventional reading activities (Şimşek & Koparan, 2025).

In this research, all the participants received equal exposure to the AR material and participate in both the pre-test and post-test speaking assessments. Informed consent was obtained from the school administration, and ethical consideration were followed to ensure students' voluntary participation and data confidentiality.

Instruments

There were two categories of instruments for this study—quantitative and qualitative aligned with the mixed methods design to comprehensively examine the impact of integrating the Acehnese folklore through Augmented Reality (AR) on EFL learners speaking skills.

In the quantitative phase, the researcher used three primary instruments. First, the transcript of the Amat Rahmanyang folklore, an authentic Acehnese folklore, was adapted into English and served as the core material for speaking tasks. The story was selected for its cultural relevance, narrative structure, and potential to elicit expressive language from learners (Asriani, 2021). The second, an Augmented Reality application was developed that combined pictures, and 3D animations, and audio narration of the story. The aim of the AR to provide an immerse and interactive learning experience that stimulated learner imagination and support vocabulary retention through the visual (Chang et al., 2020). To asses speaking performance, an analytic speaking rubric was employed

the qualitative phase, the researcher used open-ended questionnaires, semi-structured interviews, and teacher observation notes. The open-ended questionnaires were distributed to students after the intervention to gather personal reflection on the learning process (Neuert et al., 2021). The other instrument was a semi-structured interview. This interview allowed the researcher to explore learners' motivation, emotional responses more depth (Ruslin et al., 2022).

Procedure

This research was conducted through several systematic stages to ensure methodological alignment with the study's objectives. The first stage was the preparation phase, which began with the selection of Amat Rahmanyang, a traditional Acehese folklore, as the narrative material for the study. The researcher verified the story's authenticity with the Majelis Adat Aceh (MAA), a cultural authority responsibility for preserving Acehese heritage. The original folklore (hikayat) Amat Rahmanyang was obtained in Bahasa Aceh. Then translated into Bahasa Indonesia and subsequently into English. The translation and adaptation process involved consultation with content validation experts, including English language teachers and MAA representatives, to ensure the linguistic accuracy and cultural integrity.

Secondly, the researcher involved the design and development of the AR media using the Assemlr platform, guided by the ADDIE instructional design model (analysis, design, development, implementation and evaluation). In the Analysis phase, the researcher identified learning objectives aligned with speaking skill indicators and selected the Acehese folklore Amat Rahmanyang based on cultural relevance and pedagogical suitability. During the Design phase, a storyboard and interaction flow were constructed, detailing narrative sequences, dialogue prompts, and speaking tasks to be integrated in the AR environment. The development phase included the creation of visual and auditory assets such as illustration, 3D, and character animations were created and embedded into AR application. This application ran on mobile devices in interaction with respondents. This application can be seen in the picture below.

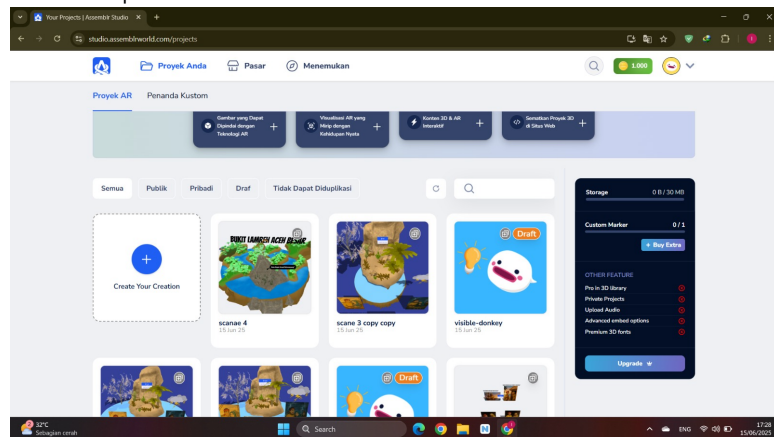


Figure 1. Assembler platform

A validation process was conducted to ensure the media's instructional and technical quality. Three experts (a media technology specialist, a language pedagogy expert, and an Acehese cultural scholar) evaluated the AR product using a standardized validation rubric assessing content accuracy, cultural appropriateness, instructional alignment, usability, and technical functionality.

The third stage was pre- test, where all students undertook an oral speaking task. They were asked to retell a generic narrative that was unrelated to the AR content. This task was designed to access their baseline speaking proficiency using an analytical speaking rubric, which measured fluency, pronunciation, vocabulary, grammar, and

comprehension. The rubric followed CEFR to ensure validity and consistency in evaluation.

In the next phase, intervention was carried out over two weeks, consisting of approximately four classroom sessions. During this period, students engaged with AR-based version of *Amat Rahmanyang* in the classroom. They complete a series of speaking tasks designed to promote oral language development. Retelling, dialogue reenactment, and story summarization-all conducted within the AR-supported storytelling framework. During these activities, the researcher also provided the pronunciation modeling and peer discussion in the class. These instructional supports were intended to help students practice expressive and narrative speaking in an interactive and culturally grounded context.

Finally, the researcher involved the qualitative data collection to complement the quantitative findings, following a mixed methods approach. Quantitative data from pre and post -test speaking scores were analyzed using a paired sample t-test with using SPSS version 23 to determine the effectiveness of the AR intervention. To provided deeper insight, the researcher selected the students to complete open-ended questionnaires and participated in semi-structured interviews to reflect on their experiences learning.

Data analysis

To obtain the data from pre- test and Post-test, the researcher employed a standardized speaking rubric adapted from the Common European Framework of Reference for Languages (CEFR). This rubric enhances interpretability and facilitates clearer communication of learners' proficiency levels within an international framework. The assessment included five components adapted from the CEFR. Each rated on a scale from 1 (poor) to 5 (excellent), resulting in a maximum total score of 25 and minimum of 5 (European, 2020). These components can be seen in the table below.

Table 1. Speaking assessment rubric

Criteria	1 (Poor)	2 (Fair)	3 (Good)	4 (Very Good)	5 (Excellent)
Fluency	Hesitant, frequent pauses	Some hesitation	Generally fluent	Fluent with minor hesitation	Fully fluent
Pronunciation	Hard to understand	Frequently unclear	Mostly clear	Clear and understandable	Excellent and natural
Vocabulary	Very limited	Basic, repetitive	Adequate range	Good variety	Rich and precise
Grammar	Frequent errors	Some major errors	Some minor errors	Mostly accurate	Accurate and complex
Comprehension & Coherence	Incoherent	Partial understanding	Understandable	Coherent and logical	Fully coherent and engaging

To ensure more accurate of students speaking performance, the researcher applied a CEFR to analytic rubric scores. This approach not only enhanced the clarity of the the evaluation result but also aligned the scoring with global language standards. The classification was outlined as follows:

Table 2. Analytic rubric score

Total Score	CEFR Level	Description
5–9	A1	Can speak with great difficulty, basic phrases only
10–14	A2	Can describe simple topics with limited vocabulary
15–18	B1	Can communicate in connected speech with some errors
19–22	B2	Can speak fluently and clearly with minor issues
23–24	C1	Can use complex language with strong control
25	C2	Can speak like a near-native speaker

To measure the standardized proficiency levels of students at SMA IT Al-Uswah, their scores were interpreted according to the CEFR-based categories provided in the table above. The classifications are as follows: a score of 5–9 corresponds to A1 (Beginner), 10–14 to A2 (Elementary), 15–18 to B1 (Intermediate), 19–22 to B2 (Upper Intermediate), 23–24 to C1 (Advanced), and a perfect score of 25 to C2 (Proficient). This classification provided a clearer understanding of the learners' progress and positioned their speaking ability within a globally recognized framework (Waluyo et al., 2024).

To analyze the quantitative data, both descriptive and inferential statistical techniques were employed. Descriptive statistics included the computation of mean scores, medians, and standard deviations to summarize students' performance in the pre-test and post-test (Tjoantara et al., 2022). To determine whether there was a statistically significant difference in learners' speaking skills before and after the AR-based intervention, a paired sample t-test was conducted using SPSS version 23 (Talikan et al., 2024). This test was appropriate because it compares two related samples—in this case, the same group of SMA IT Al-Uswah students assessed before and after the treatment. The t- test allowed the researcher to evaluate the effectiveness of the intervention based on measurable gains in speaking performance.

For the qualitative analysis, data collected from students open-ended responses, and semi-structured interviews were examined using thematic analysis. This process followed the six-phase such as familiarization, coding, theme generation, reviewing themes, defining themes, and writing the report (Neuert et al., 2021). This helped explain how and why student performance improved and how the integration of local culture and AR influenced motivation and engagement (Izlin & Widiyati, 2023).

RESULTS

Descriptive analysis of pre-test

To evaluate the effectiveness of the AR- based intervention using Acehese folklore, students' speaking skills were assessed through a pre-test and post-test using an analytic rubric aligned with CEFR standards. The rubric covered five components: fluency, pronunciation, vocabulary, grammar, and comprehension. The result score of pre-tests, it can be seen in the table 3.

Table 3. Pre-test

No	Name Code	Fluency	Pronunciation	Vocabulary	Grammar	Compre- hension & Coherence	Total
1	AR	2	1	3	2	2	10
2	AK	2	3	2	1	1	9
3	AS	2	3	3	2	1	11
4	CA	1	2	2	4	2	11
5	CN	1	1	1	1	1	5
6	DM	2	2	2	2	2	10
7	GJ	3	4	3	3	3	16
8	HT	2	3	2	2	1	10
9	KF	1	1	1	1	1	5
10	MA	2	3	3	3	3	14
11	MR	2	1	2	2	2	9
12	MS	2	3	3	2	2	12
13	MN	2	3	2	2	2	11
14	MK	3	2	2	2	2	11
15	NN	2	2	3	2	3	12
16	NN	3	3	3	2	3	14
17	QH	2	2	2	3	2	11
18	SA	2	1	1	1	2	7
19	SF	2	2	2	2	3	11
20	SY	1	1	1	1	1	5
21	SL	2	1	2	2	2	9
22	TM	1	1	1	1	1	5
23	VA	3	3	3	3	3	15
24	VAS	2	1	2	2	2	9
25	VY	3	2	3	3	3	14

The pre-test results indicated that the majority of students were functioning at a basic level of spoken English. While they demonstrated strengths in producing short phrases and using everyday vocabulary, their fluency and coherence were still limited. This is reflected in the average score of 10.24. A detailed distribution of the students' scores based on the analytic speaking rubric prior to the intervention is presented in Table 4 below.

Table 4. Analytic rubric score pre-test

No	Name Code	Speaking Assessment Rubric	Analytic Rubric score
1	AR	10	A2
2	AK	9	A1
3	AS	11	A2
4	CA	11	A2
5	CN	5	A1
6	DM	10	A2
7	GJ	16	B1
8	HT	10	A2
9	KF	5	A1
10	MA	14	A2
11	MR	9	A1
12	MS	12	A2
13	MN	11	A1
14	MK	11	A1
15	NN	12	A2
16	NN	14	A2
17	QH	11	A2
18	SA	7	A1
19	SF	11	A2
20	SY	5	A1
21	SL	9	A1
22	TM	5	A1
23	VA	15	B1
24	VAS	9	A1
25	VY	14	A2

The Pre-Test result revealed that the majority of students were at the basic to elementary level of speaking proficiency. Specifically, 44% of students fell into A(beginner) categories, while 48% were classified as A2 (Elementary), and only 8% reached the B1 (intermediate)level. This indicates that most students struggle with fluency, vocabulary use, and coherence. In this case, the students need for targeted intervention.

Descriptive analysis of post-test

The post-test result demonstrated a marked improvement in students' speaking performance following the AR-based intervention. Most students achieved between 15 and 21, with the average score score increasing to 17.00 compared to the pre-test mean of 10.24. This result, it presented in the table 5. Below

Table 5. Post-test score

No	Name Code	Fluency	Pronunciation	Vocabulary	Grammar	Comprehension & Coherence	Total
1	AR	4	4	3	3	4	18
2	AK	4	4	3	3	4	17
3	AS	4	4	4	3	4	19
4	CA	4	3	4	3	3	17
5	CN	3	4	3	4	4	17
6	DM	2	2	3	3	3	13
7	GJ	4	4	4	4	4	20
8	HT	3	4	3	3	3	16
9	KF	4	3	3	3	3	16
10	MA	4	4	4	4	5	21
11	MR	3	2	3	3	4	15
12	MS	3	4	4	3	4	18
13	MN	3	4	3	3	3	16
14	MK	4	4	4	3	3	18
15	NN	3	3	4	5	4	19
16	NN	4	4	4	3	4	19
17	QH	3	3	4	4	4	18
18	SA	3	4	3	2	3	15
19	SF	3	3	3	3	3	15
20	SY	3	3	2	2	3	13
21	SL	3	3	2	2	3	13
22	TM	3	2	2	3	4	14
23	VA	4	4	4	4	5	20
24	VAS	4	3	3	3	4	17
25	VY	4	5	3	4	4	21

The Post-Test results indicate that 15 students (60%) achieved scores of 17 or higher, representing a clear progression toward the B1–B2 (Intermediate to Upper-Intermediate) proficiency levels as outlined in the CEFR framework. Notably, no participants remained at the A1 level, demonstrating significant gains in speaking performance. This improvement suggests that the integration of Acehese folklore through augmented reality effectively supported the development of students' fluency, vocabulary usage, grammatical accuracy, and overall coherence. Furthermore, the AR-based intervention contributed meaningfully to enhancing learners' expressive speaking abilities and boosting their confidence in oral communication. This pattern was further supported by the result log the analytic rubric scoring in the post.

Table 6. Analytic rubric score post-test

No	Name Code	Speaking Assessment Rubric	Analytic Rubric score
1	AR	18	B1
2	AK	17	B1
3	AS	19	B2
4	CA	17	B1
5	CN	17	B1
6	DM	13	A2
7	GJ	20	B2
8	HT	16	B1
9	KF	16	B1
10	MA	21	B2
11	MR	15	B1
12	MS	18	B1
13	MN	16	B1
14	MK	18	B1
15	NN	19	B2
16	NN	19	B2
17	QH	18	B1
18	SA	15	B1
19	SF	15	B1
20	SY	13	A2
21	SL	13	A2
22	TM	14	A2
23	VA	20	B1
24	VAS	17	A1
25	VY	21	A2

The table shown that the total of 17 out 25 students (68%) were classified at the B1 (Intermediate) level, while 5 students (20%) reached B2 (Upper Intermediate). Only 3 students (12%) remained at the A2 (Elementary) level, and none fell within the A1 category. These results clearly reflect the positive impact of the AR-assisted storytelling activities, as students demonstrated marked improvements across key speaking dimensions—fluency, vocabulary, grammar, and coherence. The shift toward higher CEFR levels affirms the effectiveness of combining local cultural narratives with interactive digital tools to promote communicative competence in EFL contexts.

Descriptive statistic

The finding based on the analysis of Pre-Test and Post _Test result. The descriptive statistics were presented in the table 7 below.

Table 7. Descriptive statistics of pre-test and post-test

One-group Test only	N	Mean	Std Deviation	Std Error	Df	T Value	Sig.(2-tailed)
Before Intervention	Pre-test 25	0.24	3.13	0.63	.4	5.89	0.00000306
After Intervention	Post-test 25	17.00	2.40	0.48			

The Pre- Test mean score 10.24 suggests that most students were performing at the A2 (Elementary) level, demonstrating limited ability in fluency and vocabulary. In contrast, the post-test means of 17.00 placed students within the B1 (Intermediate). This level signifies students' ability to retell stories, form connected sentences, and demonstrated more confidence in spoke English.

In addition, the table shown the t-value of 15.89 was very high, suggesting a substantial difference between pre- and post-test score, meanwhile the p-value (<0.001) confirm this difference was statistically significant. Therefore, the null hypothesis was rejected and conclude that the AR based integration of Acehnese folklore significantly enhanced students' speaking performance.

Students' perception from interviews

To complement the quantitative findings, semi-structured interviews were conducted with six selected students after AR-based speaking intervention. Thematic analysis (Kabir, 2024) identified three dominant themes: increased speaking confidence, engagement through cultural relevance, and improved language awareness.

Increase speaking confidence

Students reported a noticeable boost in confidence when speaking English after the intervention. Familiarity with the story of Amat Rahmanyang, combined with the interactive AR visuals, helped reduce speaking anxiety. One participant explained: "I felt more relaxed because I already knew the story in Acehnese. So, I tried my best to say it in English even though I made mistakes."

Engagement through cultural relevance

Students expressed appreciation for using Acehnese folklore in the classroom, highlighting how cultural familiarity made the learning process more personal and enjoyable. This emotional connection fostered a deeper interest in participating in speaking tasks.

"It was more interesting than usual speaking class. I like the story because it's from our culture. I felt proud to tell it in English."

Improvement language awareness

Many students noted they became more aware of their vocabulary use and pronunciation, especially due to the visual and auditory features of AR. The interactive storytelling allowed them to mimic proper intonation and structure.

"The AR showed the pictures and sounds. I followed how the voice said it, and I could pronounce better."

These qualitative insights align with the quantitative findings, indicating that AR-based on folklore not only improved speaking performance but also positively impacted learners' motivation, cultural identity and linguistic self-awareness.

These findings support the hypothesis that integrating culturally familiar content, such as Acehese folklore, via AR technology can significantly enhance speaking abilities among EFL learners' oral communication skill. It echoes the finding of (Belda-Medina & Marrahi-Gomez, 2023), who reported that AR-enhanced learning environments foster greater engagement and oral performance. Similarly, Christou et al., 2025 highlighted that learners exposed to AR-based storytelling tasks demonstrated higher post-test retelling scores compared to those using traditional reading materials. The cultural relevance of the Amat Rahmanyang story may have further enhanced learner motivation and emotional engagement, contributing to the observed improvement in oral proficiency and emphasizing the role of meaningful, contextual content in language development.

DISCUSSION

The finding of this study provided strong empirical evidence that integrating Acehese folklore, Amat Rahmanyang into an augmented reality (AR) enhanced EFL learning environment can substantially improve learners' speaking proficiency. The significant increase from the pre-test ($M = 10.24$) to the post-test ($M = 17.00$), coupled with the shift in CEFR-aligned proficiency levels from predominantly A1–A2 to B1–B2, indicates that the intervention was both pedagogically effective and culturally meaningful. These results corroborate the initial hypothesis that AR-supported storytelling grounded in local cultural narratives would enhance learners' oral communication skills more effectively than conventional methods. The AR visual, auditory, and interactive elements are known to enhance learners attentional focus, working memory engagement, and oral output, which likely contribute to the increased speaking score observed in English study (Chang et al., 2020).

A key explanation for this improvement lies in the cultural resonance and narrative familiar offered by the Amat Rahmanyang folklore. Culturally embedded content foster psychological comfort, reduces affective barriers, and enhances willingness to communicate an essential predictor of speaking performance. Students' qualitative responses revealed that familiarity with the story made speaking tasks less intimidating, thereby lowering anxiety and enabling more fluent and confident production (Abidin et al., 2023). In addition, to cultural relevance, the multimodal affordances of AR played a transformative role in supporting language production. The interactive 3D visuals, animated characters, and contextual sound cues provided learners with concrete semantic scaffolding, allowing them to internalize vocabulary, comprehend narrative structure, and model pronunciation more effectively (Sagita et al., 2025). Another factor that contributed to the improved outcomes is the storytelling task itself promoted the development of communicative competence, as students were required to sequence events, use appropriate vocabulary, and construct coherent narratives (Nair, 2021). AR acted as a scaffold, enabling students to reconstruct the story more confidently and accurately. This aligns with sociocultural learning theory, AR mediate cognitive processes and enable learners to perform beyond their baseline capability.

The qualitative themes further support these findings. Students reported heightened confidence, stronger emotional connection to the task, and improved awareness of linguistic forms—factors that likely contributed to their performance gains. These perceptions complement the statistical evidence, suggesting that AR did not merely improve scores but also fostered positive attitudes toward speaking.

Hence, the combination of culturally relevant folklore and augmented reality created a meaningful, supportive environment that enhanced students' oral proficiency. The findings confirm that AR-enhanced folklore storytelling is an effective pedagogical approach for improving communicative competence in EFL contexts.

CONCLUSION

This study aimed to examine the effectiveness of integrating Acehese folklore through Augmented Reality (AR) in enhancing the English-speaking proficiency of first-grade EFL students at SMA IT Al-Uswah. Employing a mixed methods design, the research incorporated both quantitative data from pre-test and post-test scores and qualitative insights derived from student interviews and observations. The quantitative findings revealed a statistically significant improvement in learners' speaking performance, with the mean score increasing from 10.24 to 17.00. Additionally, students' CEFR levels progressed from predominantly A1–A2 to B1–B2, indicating notable gains in fluency, vocabulary use, grammatical accuracy, pronunciation, and overall communicative competence.

The qualitative findings substantiated the quantitative results, highlighting increased learner engagement, cultural connectedness, and motivation. Students reported that the AR-based storytelling of Amat Rahmanyang not only enhanced their language awareness but also reduced speaking anxiety due to the familiarity of the content and the visual-auditory support provided by AR. In conclusion, this study provides empirical evidence that integrating local folklore via AR can be an effective instructional strategy to promote speaking competence among EFL learners.

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CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

AUTHOR(S) CONTRIBUTION

Nurjannah, N.: Conceptualization (lead), methodology (lead), writing original draft (lead), review (supporting), securing funding. Zuhra, I.: Conceptualization (supporting), methodology (supporting), Muhammad Darwis: writing –original draft (supporting), Maulina, S.: review (lead), editing (lead), Conceptualization (supporting), methodology (supporting), Salat, J. and Khairuddaraini, K.: writing – original draft (supporting), review (lead), editing (lead).

REFERENCES

- Abidin, Y., Mulyati, T., Yuniarti, Y., & Nurhuda, T. (2023). The effects of integrating folklore and mixed reality toward student's cultural literacy. *International Journal of Society, Culture and Language*, 11(1), 307–319. <https://doi.org/10.22034/ijsc.2023.1995761.2963>
- Aditama, W. P., Iwan Sudipa, I. G., & Purnama Yanti, C. (2022). Indigenous Bali of lontar prasi using augmented reality for support strengthen local cultural content. *Eduvest - Journal of Universal Studies*, 2(11), 2278–2287. <https://doi.org/10.59188/eduvest.v2i11.612>
- Andrian, A., & Faudi, F. (2020). Enhancing students' speaking ability by using Story Telling Technique (STT). *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 3(4), 3314–3332. <https://doi.org/10.33258/birci.v3i4.1365>
- Asriani. (2021). Educational values in Amat Rhang Manyang an Aceh folklore in Krueng Raya Aceh besar. *e-prosiding Pascasarjana ISBI Bandung*, 1(1), 108–115.
- Belda-Medina, J., & Marrahi-Gomez, V. (2023). The impact of Augmented Reality (AR) on vocabulary acquisition and student motivation. *Electronics*, 12(3). <https://doi.org/10.3390/electronics12030749>
- Chang, Y. S., Chen, C. N., & Liao, C. L. (2020). Enhancing english-learning performance through a simulation classroom for EFL students using augmented reality—A junior high school case study. *Applied Sciences*, 10(21), 1–24. <https://doi.org/10.3390/app10217854>
- Christou, E., Vassiliou, P., & Parmaxi, A. (2025). Augmented reality in language learning: A systematic literature review of the state-of-the-art and task design considerations. *Innovation in Language Learning and Teaching*, 1229, 1–28. <https://doi.org/10.1080/17501229.2025.2504706>
- Creswell, J. W. (2018). A mixed-method approach. In *Writing Center Talk over Time*. <https://doi.org/10.4324/9780429469237-3>
- Dou, A., & Huang, C. (2024). Integrating smart technology into english language curriculum enhancing student engagement and learning outcomes. *Education Insights*, 1(3), 8–14. <https://doi.org/10.70088/yr8kfm65>
- Etikan, I. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1. <https://doi.org/10.11648/j.ajtas.20160501.11>
- European, C. (2020). Companion volume. In *New Cambridge Modern History* (Vol. 278). <http://universitypublishingonline.org/cambridge/histories/ebook.jsf?bid=CBO>

9781139055895

- Farah, R.R., & Khoiriyah, K. (2023). Implementation of CLIL program in Islamic affiliated school: Teaching assistants project. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 11(1), 92-103. <https://doi.org/10.24256/ideas.v11i1.3691>
- Farah, R.R., Waloyo, A.A., & Sumarsono, P. (2021). Incorporating English and Islamic knowledge into workbook development for primary school students. *Indonesian Journal of Language teaching and Linguistics*, 6(2), 189-202. <https://doi.org/10.30957/ijoltl.v6i2.673>
- Farah, R.R. (2020). Infusing Islamic-related content through trivia cards: Research & development in ESP classroom. *EduLite: Journal of English Education, Literature, and Culture*, 5(1), 78-88. <https://doi.org/10.30659/e.5.1>
- Hadi, W., Tansliova, L., Hutagalung, T., & Saputra, S. K. (2025). Augmented reality as an innovative tool for digitizing north sumatran folklore: Enhancing educational tourism media literacy for children with special needs in Indonesia. *Theory and Practice in Language Studies*, 15(6), 2009–2020. <https://doi.org/10.17507/tpls.1506.29>
- Hibatullah, O. F. (2019). The challenges of international efl students to learn English in a non-english speaking country. *Journal of Foreign Language Teaching and Learning*, 4(2). <https://doi.org/10.18196/ftl.4240>
- Houcan, Z. (2025). Introspective Method. The ECPH encyclopedia of psychology, 762–762. https://doi.org/10.1007/978-981-97-7874-4_29
- Izlin, R., & Widiyati, E. (2023). Teachers' perspective on using multimedia technology for teaching English. *IJIET (International Journal of Indonesian Education and Teaching)*, 7(2), 172–182. <https://doi.org/10.24071/ijiet.v7i2.6048>
- Jang, J., Ko, Y., Shin, W. S., & Han, I. (2021). Augmented reality and virtual reality for learning: an examination using an extended technology acceptance model. *IEEE Access*, 9, 6798–6809. <https://doi.org/10.1109/ACCESS.2020.3048708>
- Jansen, R. S., van Leeuwen, A., Janssen, J., Conijn, R., & Kester, L. (2020). Supporting learners' self-regulated learning in Massive Open Online Courses. *Computers and Education*, 146(November 2019). <https://doi.org/10.1016/j.compedu.2019.103771>
- Kabir, S. M. A. (2024). Thematic analysis: A practical guide. *Pasaa Paritat Journal*, 39(January), 142–145. <https://doi.org/10.58837/chula.ppj.39.8>
- Kho, M. G.-W., & Ting, S.-H. (2023). Overcoming oral presentation anxiety: A systematic review of tertiary ESL/EFL students' challenges and strategies. *Qeios*, 1–27. <https://doi.org/10.32388/c9an5z>
- Khodabandeh, F. (2022). Investigating the effectiveness of augmented reality-enhanced instruction on EFL learners' speaking in online flipped and face-to-face classes. *Language Teaching Research*, 136216882211109. <https://doi.org/10.1177/13621688221110991>
- Klopfer, E., & Squire, K. (2008). Environmental detectives-the development of an augmented reality platform for environmental simulations. *Educational Technology Research and Development*, 56(2), 203–228. <https://doi.org/10.1007/s11423-007-9037-6>
- Kramsch, C. (2017). Culture in foreign language teaching. *Bakhtiniana*, 12(3), 134–152. <https://doi.org/10.1590/2176-457333606>
- Lai, J. Y., & Chang, L. T. (2021). Impacts of augmented reality apps on first graders' motivation and performance in english vocabulary learning. *SAGE Open*,

- 11(4). <https://doi.org/10.1177/21582440211047549>
- Nair, V. (2021). A systematic review of digital storytelling in improving speaking skills. *Sustainability*, 13(17), 9829
- Neuert, C. E., Meitinger, K., Behr, D., & Schonlau, M. (2021). Editorial: the use of open-ended questions in surveys. *Methods, Data, Analyses: A Journal for Quantitative Methods and Survey Methodology (MDA)*, 15(1), 3–6.
- Ruslin, R., Mashuri, S., Rasak, M. S. ., Alhabsyi, F., & Syam, H. (2022). Semi-structured interview: A methodological reflection on the development of a qualitative research instrument in educational studies. *Journal of Research & Method in Education*, 12(1), 22–29. <https://doi.org/10.9790/7388-1201052229>
- Sagita, M., Yuliasri, I., Faridi, A., & Pratama, H. (2025). Integrating Augmented Reality (AR) in higher education : A breakthrough in EFL reading instruction. *English Learning Innovation (englie)*, 6(2), 199–216. <https://doi.org/10.22219/englie.v6i2.40839>
- Simonova, O., & Kolesnichenko, A. (2022). The effectiveness of the augmented reality application in foreign language teaching in higher school. *SHS Web of Conferences*, 137, 01025. <https://doi.org/10.1051/shsconf/202213701025>
- Şimşek, B., & Koparan, B. (2025). The effects of virtual reality and augmented reality technologies on students' story retelling performance. *PLoS ONE*, 20(5 May), 1–22. <https://doi.org/10.1371/journal.pone.0323445>
- Talikan, A. I., Salapuddin, R., Aksan, J. A., Rahimulla, R. J., Ismael, A., Jimlah, R., Idris, N., Dammang, R. B., Jamar, D. A., Sarahadil, E., & Ajan, R. A. (2024). On paired samples t-test: Applications, examples and limitations. *Ignatian International Journal for Multidisciplinary Research*, 2(4), 943–951. <https://doi.org/10.5281/zenodo.10987546>
- Tjoantara, A. N., Ratri, D., & Maslan, R. (2022). Analisis desain karakter makhluk folklore dari jepang dalam buku cerita anak bergambar. *ANDHARUPA: Jurnal Desain Komunikasi Visual & Multimedia*, 8(01), 93–108. <https://doi.org/10.33633/andharupa.v8i01.4655>
- Waluyo, B., Zahabi, A., & Ruangsung, L. (2024). Language assessment at a thai university: A CEFR-based test of english proficiency development. *REFlections*, 31(1), 25–47. <https://doi.org/10.61508/refl.v31i1.270418>
- Zhang, J. (2024). Review of research on motivation and EFL students' speaking performance. *Lecture Notes in Education Psychology and Public Media*, 58(1), 25–32. <https://doi.org/10.54254/2753-7048/58/20241710>