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Development of E-Learning for Speaking Skills Course with Local Wisdom of Papua

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Abstract

Students must have speaking skills because they are very important for social interaction and work. This research aims to develop e-learning for the speaking skills course incorporating local Papuan wisdom. The type of research is development research. The concept of local wisdom applied specifically to learning materials includes social values and norms, traditional knowledge, customs, language, folklore, and culture. The research subjects involved 48 students from the Indonesian Language Education Study Program. This research was conducted at UNIMUDA Sorong. The research design uses the 4D (Four-D) model. The validity test was conducted by two validators and then analyzed using Aiken's V formula. The practicality test was conducted using student responses and then analyzed using Riduwan's formula. Effectiveness was tested using a t-test with normality and homogeneity tests as prerequisites. Based on the results of the research and discussion on e-learning for the speaking skills course with local Papuan wisdom, it is declared valid with an average score of 0.89 (very high validity). It is declared practical with an average score of 91.87 (very practical category). Effectively improves students' speaking skills based on the results of the t-test with a significance value of 0.000 (Sig. (2-tailed) data). This is less than the predetermined significance level of 0.05. The limitation of this research is that it only focuses on speaking skills. Only exploring Papua's local wisdom. Still unable to reach areas without internet access. This research contributes to the literature on speaking learning media that is responsive to local wisdom, particularly in the context of Papua. Supporting the theory that integrating technology and local wisdom can enhance language learning. The e-learning product produced is valid, practical, and effective, and can serve as a model for developing other language skills devices. Preserving local wisdom thru formal education.

Keywords: E-Learning, Speaking, Local Wisdom

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INTRODUCTION

Students must have speaking skills for several reasons. Through speaking skills one can convey ideas clearly, orderly, and convincingly. As a means of social interaction to establish positive relationships that are important in everyday life. Speaking is also one of the main means used in various jobs. Speaking also serves as the main tool in learning and teaching activities at various levels. Numerous studies have demonstrated the importance of speaking abilities, which are among the most important life communication skills. The better a person speaks, the more others will understand what he says (Waruwu, et al., 2024). Clampitt (2017)

speaking skills are very important and cannot be separated from everyday life. Nanni (2016) the application of good speaking skills will have an impact on student academic success.

There is no denying that one of the most crucial talents to acquire at all educational levels, including college, is speaking. The profession of education has acknowledged the significance of speaking abilities. Despite several attempts to improve speaking abilities, pupils' speaking abilities still fall well short of the desired level (Munirah, et al., 2023). Speaking skills are very challenging and complex, to master them requires a quality learning process, Sudarmo (2021). Speaking skills have an important and dominant role in communicating in companies and schools (Arputhamalar & Prema, 2022).

In its implementation, teaching speaking skills in the Indonesian Language Education Study Program at UNIMUDA Sorong still faces various problems, including the learning materials not accommodating the local wisdom of the students, which impacts their fluency and understanding. This is relevant to the research by Lihami and Wardah (2024), which found that fluency and understanding are problems in speaking skills learning. One of the main obstacles to speaking learning is that learning resources are not based on local and contextual wisdom (Nurdiana et al., 2023). One of the problems with education in Papua is the learning content, which has not been adapted to the geographical and socio-cultural conditions of the Papuan people. This situation is also supported by research conducted by the LIPI Team (Afriansyah, et al. 2019). The national curriculum is difficult for educators to implement in the classroom. Educators find it challenging to build learning based on the geographical, demographic, social, and cultural needs of Indigenous Papuans (OAP). Learning media that is still conventional and unflexible. Speaking skills using oral lectures, text memorization exercises, or the use of textbooks without technological innovation make learning monotonous and uninteresting (Suryadi et al., 2024).

Considering the concerns mentioned above, it is crucial to develop e-learning for speaking skills courses that incorporates local wisdom. The research findings of Abrar et al. (2018) advocate for the use of media and technology to assist Indonesian students in language learning and improve their speaking skills. A more dynamic learning environment may result from the use of electronic learning platforms. Anywhere and at any time, students can learn (Ehsan & Zaidan, 2024). One tactic to facilitate the effective acquisition of speaking abilities in higher education is the use of information technology (Riski, 2023). According to research by Erni et al. (2023), pupils' reading and writing abilities can be enhanced by utilizing E-modules based on local knowledge.

It must be able to be applied in daily life through learning activities in order to acquire wisdom values. In order to ensure that the current culture is maintained and preserved and does not disappear, this local wisdom in education contributes insight into the local culture (Shufa, 2018). Students' comprehension of the electronic teaching materials can be improved by incorporating local knowledge into the learning process. Additionally, it can help students develop virtues like cooperation, tolerance, and environmental awareness—all of which are highly pertinent to today's global issues (Imanuria, et al., 2024).

Local wisdom reflects the culture and knowledge possessed by communities based on direct or indirect experience and mutual agreement (Nambiar et al., 2022; Narulta et al., 2022). Papuan local wisdom in speaking instruction is implemented by utilizing Papuan values, customs, language, folklore, and cultural expressions as learning materials. Utilizing local wisdom makes learning more meaningful, relevant, and contextual. Learning that utilizes local wisdom has been proven effective in developing critical thinking and problem-solving skills (Pugu et al., 2025).

METHODS

This research is a type of development research. The research location in this study is at UNIMUDA Sorong. This research uses the 4D (Four-D), (Solikin & Amalia, 2019). The 4D model has 4 main steps, namely defining, designing, developing, and disseminating. Definition: At this stage, an analysis is conducted on the situation and problems occurring in speaking instruction within the Indonesian Language Education Study Program at UNIMUDA Sorong. Design: At this stage, a prototype e-learning design for the speaking skills course incorporating local Papuan wisdom is being created. Development: The aim is to produce an e-learning course for speaking skills incorporating local Papuan wisdom that has been revised based on expert feedback and will be used for classroom trials in the experimental group. The model was implemented thru an experiment using a true experimental model with a control group and an experimental group design. Dissemination of research results is carried out in the form of scientific publications that can be accessed online.

The research sample consists of students enrolled in the speaking skills course in the Indonesian Language Education Study Program at the UNIMUDA Sorong during the even semester of the 2023/2024 academic year as the control group, and the even semester of the 2024/2025 academic year as the experimental group. The research sample was determined using non-probability sampling, specifically purposive sampling, considering students who consistently attended the research sessions. The data collection techniques are the questionnaire technique to obtain data from two expert validators and student responses. Furthermore, the test technique is used to obtain data on students' speaking ability, and the observation technique is used to obtain data on speaking skills.

The speaking ability test is conducted with reference to the assessment rubric. There are five types of speaking skills that are tested, namely the skill of being an emcee with indicators of language (word choice and sentence structure), fluency, expression, confidence, and variation in intonation. Storytelling skills with indicators of story mastery, facial expressions and gestures, intonation and articulation, creativity and uniqueness. Moderating skills with indicators of event opening, mastery of material and event flow, speaking attitude and ethics, closing. Vlogging skills with indicators of content relevance, structure and story flow, techniques and filming, articulation fluency, expressions and body language, delivery and appearance, creativity and originality. The assessment is conducted at the end of each speaking skill session, so the final score is the total of all scores.

The test is conducted using a post-test only control design, so the significance is seen from the comparison of the final scores of the control class and the experimental class.

Data obtained thru expert validator questionnaire techniques to support validity testing, student response data to measure practicality testing. Data obtained thru test and observation techniques are used to measure the effectiveness of the research. The validity test uses Aiken's V formula (Tomoliyus and Sunardianta, 2021), where each aspect is calculated for the content validity index with the following calculation:

$V = \sum s / [n (C-1)])$

$S = r - lo$

Lo = lowest assessment number

C = highest assessment number

R = the number given by the assessor.

The categorization of content validity which refers to the validity classification proposed by Guilford (Tomoliyus and Sunardianta, 2021) which can be seen in the table below.

Table 1. Validity categories

Number	Value	Criteria
1	0.80 < rxy < 1.00	Very high validity
2	0.60 < rxy < 0.80	High validity
3	0.40 < rxy < 0.60	moderate validity
4	0.20 < rxy < 0.40	Low validity
5	0.00 < rxy < 0.20	Very low validity
6	rxy < 0.00	Invalid

The practicality test of the teaching model was carried out by distributing questionnaires to experimental class students. The type of practicality data is quantitative data in the form of user assessment scores (students and lecturers) with the formula:

$$P = \frac{f}{N} X100\%$$

Description:

P = Final score

f = Score acquisition

N = Maximum score

The practicality category according to Riduwan, (2018) can be seen in the following table.

Table 2. Practicality category

Number	Value	Criteria
1	80% < x ≤ 100%	Very practical
2	60% < x ≤ 80 %	Practical
3	40% < x ≤ 60 %	Moderately practical
4	20% < x ≤ 40 %	Less practical
5	0% < x ≤ 20 %	Not practical

Test the effectiveness of students' speaking skills using descriptive statistical analysis. Effectiveness is tested using a t-test, with the condition that if the

calculated t-value is greater than the table t-value and the significance level is less than 0.05 (α:5%). Data analysis was performed using SPSS 23.0 for Windows. The t-test was conducted after fulfilling the prerequisite tests, namely the normality test using the Shapiro-Wilk test and the homogeneity test using Levene's Test of Equality of Error Variances. If one of the t-test conditions is not met, the effectiveness test is performed using the non-parametric Mann-Whitney test.

RESULTS & DISCUSSION

Description of E-Learning for Speaking Skills Course with Papuan Local Wisdom

E-learning for speaking skill courses is developed comprehensively. With several features, students and lecturers can login to e-learning using their respective accounts. Login can be through android or leptop anytime and anywhere connected to the internet. The flexibility of e-learning access makes it easy for students to learn according to each student's learning style. Then it emphasizes responsible learning to train speaking skills.

Figure 1. Front View of e-Learning

The developed e-learning platform has several features, including a lecture journal. The lecture journal contains class schedules, meeting summaries, meeting dates, lecture modes, lecture rooms, lecture times, and lecture notes. Then attendance with statuses of present, permission, and absent. The student course feature allows access to the semester learning plan, lecture materials, assignments, uploading assignments, and discussion rooms. The course feature also includes a question bank and selected questions to evaluate students' abilities. Academic features include the end-of-semester assessment. The e-learning interface is as shown in the following image.

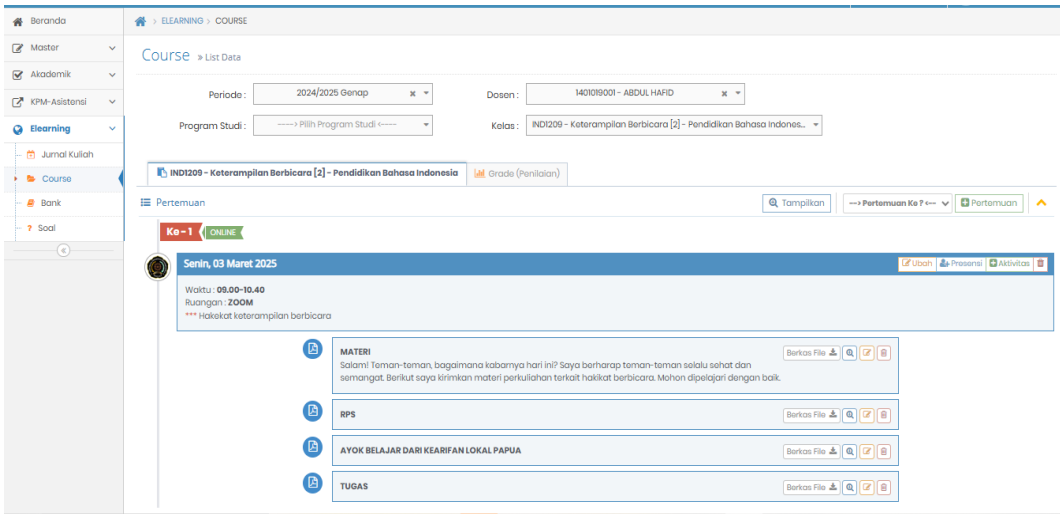

Figure 2. Display of e-Learning Content

In addition, lecturers can develop student activities flexibly. Lecturers can write the student activities themselves for each meeting. The purpose is so that the lecturer can determine activities according to the needs of the students as shown in the following image.

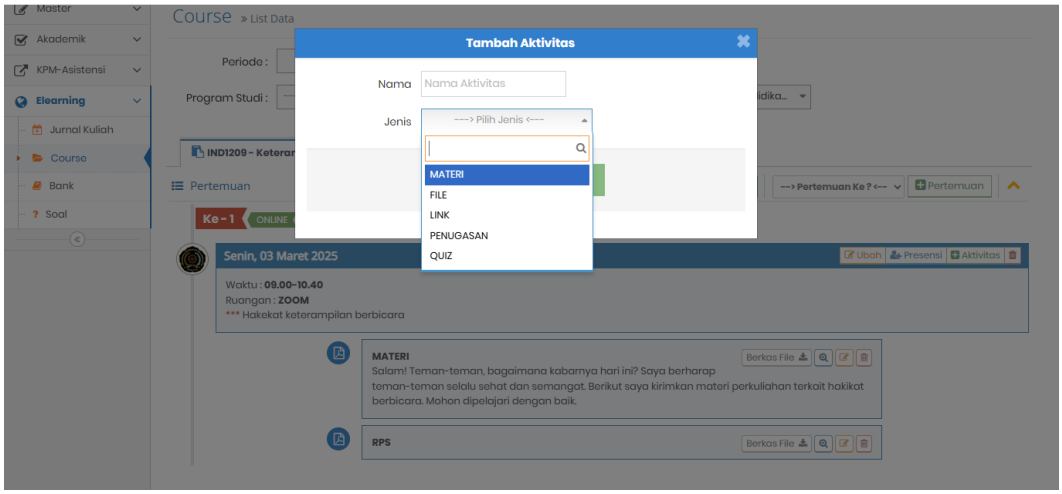

Figure 3. Student Activity Options

Each feature has a connection to the development of speaking skills. The feature of the lecture journal, and its connection to speaking skills, is that it includes a summary of learning activities, including speaking activities that have been completed. Facilitating the planning and scheduling of regular speaking practice. Encouraging consistent speaking practice, which is essential for improving skills. Attendance feature: The connection to speaking skills is that active presence in lecture sessions signifies more opportunities to practice speaking. Attendance data can be linked to evaluating engagement in speaking skills activities.

Course features and their relationship to speaking skills: semester learning plans help students understand expected abilities and other learning planning.

Course materials: Students can access course materials that have been integrated with local Papuan wisdom, allowing them to study anytime, anywhere, not just during face-to-face meetings. By uploading and submitting assignments, students can access and complete them to improve their speaking skills. Completed tasks can be uploaded immediately according to the specified time. Discussion rooms are beneficial as a medium for interaction in increasing students' understanding and speaking skills. Question banks and useful questions serve as instruments for measuring students' speaking skills. Academic features in the form of end-of-semester assessments are beneficial for measuring the final speaking skills.

The use of e-learning to develop two main competencies: speaking skills and mastery of information technology. Altınay, et al. (2016) educational institutions should facilitate students' learning experience. In supporting the acceleration of educational transformation, it is important to learn and master information and communication technology. This is also in line with research findings indicating that in the current era, the utilization of technology plays an important role in improving the quality of education, especially in Papua (Firman et al., 2025).

Validity Test

Feasibility in the form of validity of e-learning for speaking skills courses containing Papuan local wisdom was carried out by two validators. Validity testing was conducted using five aspects. Content eligibility consists of three components and seven criteria. Presentation eligibility consists of three components and eleven criteria. Language eligibility consists of four components and six criteria. Graphics eligibility consists of three components and ten criteria. The scoring criteria are as follows: TL = Not Eligible, b. KL = Less Eligible, c. L = Eligible, d. SL = Very Eligible. The validity instrument was adapted from the e-learning instrument validity research by Putri et al. (2021). In summary, the results of expert validation can be seen in the following table.

Table 3. Validity Test

Number	Aspect	Validator		S1	S2	∑S	n(c−1)	V	Description
		I	II						
1	Content Eligibility	26	25	19	18	37	42	0.88	Very High Validity
2	Presentation Eligibility	41	40	30	29	59	66	0.89	Very High Validity
3	Language Eligibility	24	23	18	17	35	36	0.97	Very High Validity
4	Graphics Eligibility	34	37	24	27	51	60	0.85	Very High Validity
	Total	216	213	158	155	313	348	0.89	Very High Validity

Based on the table above, the validity value by validator 1 (216), validator 2 (213), S1 value (158), S2 value (155), ∑S value (313), n(c-1) value (348), and V value (0.89). Thus, the e-learning of speaking course with Papuan local wisdom is declared valid with very high validity (0.89) and can be used.

Practicality Test

The practicability of e-learning for speaking course with Papuan local wisdom was conducted through student response questionnaire. Student response questionnaires were given to experimental group students. The student responses can be seen in the following figure.

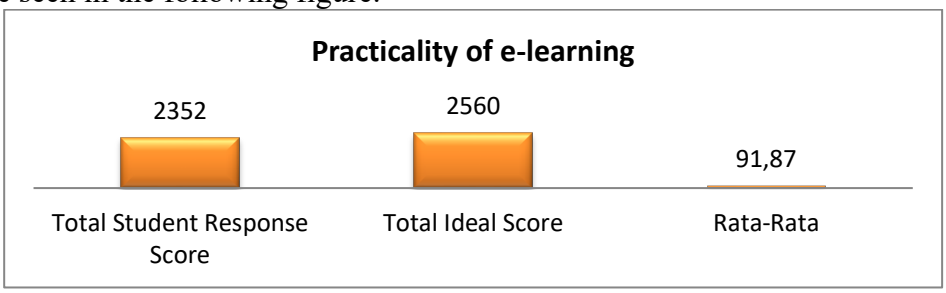

Figure 4. Practicality of e-Learning

The total score given by students regarding the application of e-learning for speaking skills courses with Papuan local wisdom is 2352, the ideal score is 2560. The average experimental class student response score is 91.87. Thus, the e-learning of speaking skills courses with Papuan local wisdom is declared practical with a very practical category because it is in the average value range of 80% < x ≤ 100%. This is supported by several relevant studies. Vitasmoro, et al, (2025). Problem-based online learning can be one solution to solve students' language skills problems. Hustanto, et al. (2024) In the digital age, incorporating digital technology—particularly augmented reality—has the potential to transform English language instruction, solve vocabulary problems, and accommodate the Alpha generation's preferred methods of learning.

Effectiveness Test

The type of speaking skills test used is a performance test. There are five types of speaking skills tested, namely the skill of being an emcee with indicators of language (word choice and sentence structure), fluency, expression, confidence, and variation in intonation. Storytelling skills with indicators of story mastery, facial expressions and movements, intonation and articulation, creativity and uniqueness. Skills to be a moderator with indicators of event opening, mastery of material and event flow, speaking attitude and ethics, closing. Skills to create vlogs with indicators of content relevance, structure and story flow, techniques and filming, articulation fluency, expression and body language, delivery and appearance, creativity and originality. Each indicator is accompanied by assessment aspects in the form of a rubric. The scoring of each aspect is within a range of 1-4. The assessment is conducted at the end of each speaking skill session, so the final score is the total of all scores. The test was conducted using a post-test only control design, so the significance was observed from the comparison of the final scores of the control class and the final scores of the experimental class.

The effectiveness test of the application of e-learning for speaking skills courses with Papuan local wisdom was carried out in several stages. Before conducting the t-test, the prerequisite test is normality test and homogeneity test.

The normality test used in this research is Shapiro-Wilk because the sample is less than one hundred. Normality test was conducted on the control group and experimental group with the following results.

Table 4. Normality Test

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
Control	.948	24	.246
Experiment	.925	24	.075

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the table above, the normality test value using Shapiro-Wilk in the control group with a significance of 0.246, while the experimental group gets a significance value of 0.075. Thus, the acquisition of control class and experimental class scores is normally distributed because the significant value is above> 0.05. To sharpen the difference obtained from the hypothesis test, which really comes from differences between groups and is not caused by differences within groups, the homogeneity test of variance between groups is carried out. The homogeneity test results are as follows.

Table 5. Homogeneity Test

Kontrol			
Levene Statistic	df1	df2	Sig.
1.317	4	15	.308

A significance value of 0.308 was obtained from the results of the homogeneity test conducted. This value exceeds the established significance level of 0.05, thus meeting the homogeneity standard. Additionally, to determine if the difference between the means is statistically significant, a t-test was used. Here are the results of the t-test comparing the experimental and control class groups.

Table 6. Test Table t

		Paired Samples Test							
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Control - Experiment	-10.41667	7.87907	1.60831	-13.74371	-7.08963	-6.477	23	.000

The results of the t test that have been carried out show that the significance value obtained is 0.000 (data Sig. (2-tailed). This value is smaller than the predetermined significance limit, which is 0.05, so it can be stated that there is a significant influence on the control group with the experimental group. Thus, the use of e-learning in skills courses with local wisdom of Papua speaking has a significant influence on students' speaking skills.

The implementation of e-learning effectively supports the development of speaking skills for various reasons, particularly its alignment with the 4D Model.

The e-learning framework is designed based on an analysis of the specific needs and contexts of Papuan students. It is essential to optimize the local wisdom found in each region, especially within educational activities (Ramanta & Samsuri, 2024; Sagita et al., 2022). Incorporating materials that reflect local wisdom makes the learning process more contextual, significant, and relevant to the real-life situations of the students. When learning incorporates teaching materials grounded in local wisdom, it results in a more significant and engaging educational experience for the students (Udiyana et al., 2022). Students use e-learning to study at any time and from any location, which promotes learning flexibility and independence. Previous studies have also demonstrated that e-learning helps students become more independent learners (Leasa et al., 2025; Dziuban et al., 2019; Fauzi & Siswati, 2023; Su, 2021).

Additionally, students actively engage in performative activities that are practical exercises in speaking abilities, such as hosting, moderating, telling stories, giving speeches, and creating vlogs. Previous studies on students' self-confidence in speaking in front of the class, which were bolstered by educational media, also support this. Students find it easier to finish tasks when they have access to digital resources and case selections (Fitri et al., 2022). The benefits of this study also make use of contextual local knowledge, which raises student engagement with speaking skill assignments. This platform is ideal for today's digital generation's learning style because it is simple to use on a leptop or Android device. Learning is enhanced by support for interactive elements including discussion boards, assignment submissions, and adaptable lecturer activities. According to earlier studies, students' speaking abilities can be improved through flexible online learning (Su, 2021).

Papuan indigenous knowledge is not merely a subject; it is the mainstay of the curriculum, promoting diversity, inclusivity, and cultural preservation. The findings of this study are corroborated by a number of pertinent investigations, such as one by Kiswati et al. (2023), which found that customized IT learning materials that were adapted to the needs of students might improve language learning outcomes and motivation. However, because it incorporates Papuan local knowledge, this e-learning growth is more thorough for achieving language skills. Technology's role in enhancing language proficiency is also pertinent to Yulian et al.'s research (2022) that one of the most important requirements for inclusive education, particularly for language learners, is technology. For students with little language proficiency, technology-mediated language learning might be convenient.

The utilization of local wisdom in speaking courses makes it easier for students to produce language critically because of significant prior knowledge of the topics studied. Research by Bera, et al., (2022) indicates a significant increase in language skills of students who learn with contextual strategies. Furthermore, language learning with local wisdom content is one of the effective ways to preserve the existence of local culture (Misriani, et al., 2023). Applying the concept of local wisdom in language learning, students gain linguistic competence and cultural competence (Albantani & Madkur, 2018).

CONCLUSION

The research concludes that it has created e-learning for speaking skills courses using Papuan local wisdom based on the outcomes of data analysis and debate. Two validators evaluated the e-learning speaking skills course using Papuan local knowledge, and Aiken's V formula was used to assess the results. It has been deemed valid with extremely high validity (0.89) and is usable based on the analysis's findings. Speaking skill courses using e-learning and Papuan local knowledge are deemed useful. Based on student responses, the extremely practical category had an average score of 91.87. According to the t test results, the significance value is 0.000 (data Sig. (2-tailed), indicating that the e-learning of speaking skills courses using local Papuan wisdom is helpful in solving the problems of students' speaking skills. This value falls below the predefined significance level of 0.05.

Recommendations from the results of this study are -learning for speaking skills courses with Papuan local wisdom that has been proven valid, practical, and effective should be implemented widely, especially in universities in the Land of Papua. It is recommended to develop variations of this e-learning for other language skills (writing, reading, listening), so that language learning is more intact and based on local culture. This development model can be replicated by adjusting local content from various other regions in Indonesia, so that it becomes a national strategy in strengthening cultural identity through language learning. The results of this study can be used as a basis for consideration for policy makers in the field of higher education, especially in the development of digital media that is adaptive to the local cultural context.

This research contributes to the literature on speaking learning media that is responsive to local wisdom, especially in the context of Papua. It supports the theory that the integration of technology and local wisdom can enhance language learning. The e-learning product produced is valid, practical, and effective, and can serve as a model for developing other language skill tools. Preserving local wisdom thru formal education. The limitation of this research is that it only focuses on speaking skills. It only explores the local wisdom of Papua. It has not yet reached areas without internet access.

Suggestions for further development of this research include expanding the development of other language skills since the focus of the research is solely on speaking skills. Subsequent development can explore local wisdom from other regions. The existing e-learning can be enhanced by adding interactive multimedia elements such as animations or augmented reality that support speaking skills in real contexts. It is necessary to develop an offline version or an Android-based application that can be downloaded in advance, so that students in 3T areas (Frontier, Outermost, and Disadvantaged) can still participate in learning optimally. Further research is recommended to be conducted thru cross-university collaboration, particularly in the eastern region of Indonesia, to examine the effectiveness of implementing e-learning based on local wisdom more broadly and variably.

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