

Lingualand Media Development to Improve Beginning Reading Abilities of 5-6 Year-Old Children

Miftah Dilla ¹, Ria Novianti ¹, Rita Kurnia ¹

¹ University of Riau, Pekanbaru, Indonesia

miftah.dilla4846@student.unri.ac.id, ria.novianti@lecturer.unri.ac.id, rita.kurnia@lecturer.unri.ac.id

corresponding author: miftah.dilla4846@student.unri.ac.id

ABSTRACT

This study developed the digital learning media "Lingualand" to improve the early reading skills of children aged 5–6 years. Conducted at TK Al Fattaah Sawah Baru, Kampar, the study used the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) with subjects including content experts, media experts, linguists, educators, and 5–6-year-old children. Data were collected through observation, questionnaires, and documentation, then analyzed descriptively and quantitatively. Initial results showed early reading ability was in the emerging category (36.88%). Lingualand was developed as an interactive application containing letter recognition, vowels and consonants, and Malay-Riau cultural vocabulary with engaging audio and visuals. Validation indicated very high feasibility: content experts (87.50%), media experts (84.62%), linguists (87.50%), and educators (88.18%). A limited trial produced 95.31% (very high). Thus, Lingualand is deemed suitable as an interactive learning medium to improve early reading skills in young children.

Keywords: *lingualand, early reading, digital learning*

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INTRODUCTION

Education is a fundamental need for every individual, especially young children, as it lays the foundation for future development. Early childhood education is a developmental effort from birth to age six that uses stimulation to support children's physical and spiritual growth and development, preparing them for further education. Appropriate stimulation during this period has been shown to optimize child development (Astuti et al., 2021). One important aspect that needs to be developed is language, which serves as a means of communication for conveying thoughts and feelings (Shofia & Dirgayunita, 2024; Antariani et al., 2021).

Children's language development does not occur automatically; it requires environmental stimulation, especially from parents. However, many parents still do not understand their role in stimulating their children's language development (Pradita et al., 2024). In the process of language development, children go through three stages of representation: enactive (through actions), iconic (through images or visuals), and symbolic (through language and symbols) (Kurnia et al., 2022). This demonstrates that learning involving visual elements and symbols is crucial in supporting early childhood language development.

Aspects of early childhood language development include listening, speaking, language, and early reading skills (Nuzula Apriliyana, 2020). Early reading skills are an important basic skill because they involve recognizing letters, understanding sounds, connecting words with meaning, and drawing simple conclusions (Purnawati, 2021). This ability also serves as a foundation for children's subsequent learning and helps improve thinking and decision-making skills (Aryandani et al., 2021). However, in reality, kindergarten-aged children still experience reading difficulties due to the complexity of the language system involving symbols, sounds, and pronunciation rules (Dewi, 2019; Jeti & Manan, 2022).

In a global context, developing early childhood literacy skills aligns with the Sustainable Development Goals (SDGs), which emphasize the importance of quality education as the foundation for

sustainable development. Basic literacy skills, including early reading, are crucial for supporting children's readiness for learning (UNICEF, 2022). Therefore, innovative learning efforts are needed, including the use of engaging learning media appropriate to children's characteristics.

Learning media plays a crucial role in conveying information and helping children understand new concepts, skills, and competencies (Hasan et al., 2021). Appropriate use of media can create a conducive learning environment, increase interaction, and result in more effective learning (Yunita et al., 2020). With technological advancements, digital-based learning media has become a relevant solution for improving the quality of early childhood education. The use of digital technology not only increases children's interest in learning but also helps them develop 21st-century skills (Jumiati et al., 2022).

One innovative learning medium that can be developed is Lingualand, an interactive digital learning medium designed to improve early reading skills in children aged 5–6 years. This medium integrates game-based learning with a local Riau Malay cultural approach, making learning more engaging and contextual. Lingualand offers various features such as learning letters, vowels, and consonants, as well as cultural vocabulary, complemented by images and audio to facilitate children's understanding.

Based on a review of previous studies, Fitri (2020) found that developing a digital flipbook improved early reading ability in kindergarten children, while Maronta et al. (2023) and Itah Fahitah (2021) reported improvements in early reading ability after using digital flashcard media—although their experimental and classroom action research methods differ from this study; Antariani et al. (2021) stated that conventional big book media are highly feasible for improving early reading, and Purnamasari et al. (2021) showed a significant positive increase in early reading ability through busy book media. The main differences with the Lingualand study are the types of media (this study uses digital media compared with some prior studies that used conventional media) and the approaches and procedures (relevant studies used 4D, experimental, or classroom action research, whereas this study applies R&D with the ADDIE model and uses descriptive analysis and t-test).

Lingualand's strength lies in integrating local cultural elements into language learning, such as the use of characters dressed in traditional Malay clothing, which introduces cultural values from an early age. This approach not only improves basic literacy skills but also instills local wisdom and strengthens children's cultural identity. Furthermore, the use of audio-visual media provides a more interactive learning experience than conventional methods.

Based on observations at Al Fattaah Kindergarten in Sawah Baru, Kampar Regency, it was found that children aged 5–6 years still have problems with early reading skills, including not recognizing letters, distinguishing between vowels and consonants, reading their own names, and pronouncing vowels correctly. Furthermore, the learning media used have not optimally utilized digital technology. Therefore, the development of innovative learning media is needed to address these problems. This study aims to develop Lingualand media to improve children aged 5–6 years' early reading skills.

LITERATURE REVIEW

Beginning Reading Ability

Early reading skills focus on reading words and sentences, with greater emphasis on recognizing and pronouncing sound symbols in the form of letters, words, and sentences in simple forms (Arwita Putri et al., 2023) (Uswatun, 2022). When young children learn to read, they may first observe shapes, images, or objects around them to construct concepts of meaning (Kurnia R, 2020). Reading with understanding is defined as a student's ability to both decode (translate print to sound) and know what they read, at the level of words, simple phrases, and sentences (Gove & Cvelich, 2021)

Early reading skills are essential competencies that students need to master at the beginning of elementary school. These skills include recognizing letters, connecting sounds with symbols, and reading simple words and sentences. Early reading lays the foundation for learning across subjects. It helps students

understand information and participate actively in classroom activities. Therefore, strong early reading skills are important for supporting academic success and overall development (Futri et al 2025).

According to (Kurnia et al., 2022) there are several indicators related to the early reading abilities of early childhood, including: namely: (1) some children still have difficulty distinguishing vowels (a, i, u, e, o) and consonants (b, c, d, f, g, h, j, k, l, m, n, p, q, r, s, t, v, w, x, y, z), (2) some children still have difficulty mentioning basic words, (3) some children still have difficulty mentioning syllables, (4) some children still have difficulty distinguishing capital and lowercase letters, (5) some children still have difficulty connecting words and sentences.

Several factors can influence reading ability in early childhood, namely motivation, environment and family, reading materials (Rita Kurnia, 2020).

Lingualand Media

Media is anything that can be used to convey messages from the sender to the recipient, thereby stimulating the thoughts, feelings, attention, and interests of early childhood children in such a way that the learning process occurs (Aslindah & Suryani, 2021) (Anggita & Taopik, 2022). Learning media can also improve understanding, present material engagingly and reliably, and facilitate interpretation by condensing information (Kurnia et al., 2022).

Digital applications are technology-based learning media designed to deliver material interactively and engagingly through devices such as Android devices. Based on a literature review, the use of digital applications in early childhood learning still offers significant potential for development, particularly those that integrate local cultural elements. Therefore, the development of innovative, context-specific digital applications is crucial to more effectively support children's learning abilities (Novianti, 2025).

Technological advancements have brought about significant changes in education, with digital applications becoming effective, flexible, and engaging learning media through interactive presentations of text, images, audio, and video. Furthermore, integrating local cultures, such as Riau Malay, into digital applications makes learning more contextual and helps preserve cultural values and identity amid changing times (Novianti et al., 2023).

METHOD

This research was conducted at Al Fattaah Sawah Baru Kindergarten, Kampa District, Kampar Regency, with 18 children aged 5–6 years as subjects. The research used the Research and Development (R&D) method with the ADDIE model, which includes five stages: analysis, design, development, implementation, and evaluation. In the analysis stage, learning needs, child characteristics, and the integration of Riau Malay culture were identified. The design stage included designing the display, storyboard, and interactive media elements. The development stage produced an initial product in the form of interactive digital media equipped with audio, animation, and navigation features, which was then validated by material, media, and language experts. Next, the implementation stage involved trials with children to determine the media's effectiveness in improving early reading skills, culminating in an evaluation stage to refine the product.

The trial subjects consisted of experts (materials, media, language), teachers, and early childhood children in a limited trial. The assessment aspects used by validators in this study comprise several components for each area of expertise. Material experts assess the material's relevance, organization, and its effects on users. Media experts evaluate visual appearance, navigation, audio, and technical aspects of the media. Language experts focus on language aspects such as appropriateness, clarity, and readability. Meanwhile, educators assess the ease of use, visual appearance, media integration, and the benefits of the media in supporting the learning process.

Data were collected through observation, questionnaires, and documentation, then analyzed using quantitative descriptive techniques and t-tests. The research instruments included validation sheets, questionnaires, and observations of children's early reading abilities, which included letter recognition,

syllables, and simple words. Assessments used a Likert scale and child development criteria (NYD = Not Yet Developed, BGD = Beginning Development, DAE = Developing as Expected, DVW = Developing Very Well). To test the effectiveness of the media, a one-group pretest-posttest pre-experimental design was used, allowing improvements in children's reading abilities to be determined before and after using the media.

RESULTS AND DISCUSSION

This research and development aims to produce a digital learning platform, Lingualand, to improve the early reading skills of children aged 5–6 years. This medium has been validated by experts in material, media, language, and education, and is therefore deemed suitable for use. The research uses the ADDIE development model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation

Analysis

Analysis of Children's Early Reading Ability

Researchers conducted direct observations at Al Fattaah Kindergarten in Kampar on a group of children aged 5-6 years. From the results of the observation, problems were found related to early reading skills, namely that some children still have difficulty recognizing letters of the alphabet from A-Z, and some do not yet know the vowels and consonants completely. Children still have difficulty naming and distinguishing basic letters. Some can say their own names, but when asked to spell them, some still have difficulty. The following are initial findings regarding early reading in children aged 5-6 years, namely:

Table 1. Initial Findings Score

No	Indicator	Item	Ideal Score	Faktual Score	%	Category
1	Children can differentiate between vowels and consonants	2	64	26	40.63	BGD
2	Children can name basic words	1	32	14	43.75	BGD
3	Children can name syllables	1	32	13	40.63	BGD
4	Children can distinguish between uppercase and lowercase letters	4	128	48	37.50	BGD
5	Children can connect words and sentences	1	32	10	31.25	BGD
Total		9	288	111		
%					38.54	
Category						BGD

Based on the table above, the initial reading ability of children aged 5-6 years is in the developing category, with a score of 36.88% of the expected level. The indicator with the lowest score is the child's ability to connect words and sentences. The indicator with the highest score is the child's ability to name basic words.

Media Development Needs Analysis

The following are the results of observations at Al Fattaah Kindergarten, which were found regarding the need for media development:

1. Children's interest in reading is still low because the learning media used are less engaging.

2. The available learning media are not yet digital or interactive. While early childhood is characterized by learning through play, today's technological advances have made children more attracted to digital media. The lack of educational digital media that combines sound, images, and games results in suboptimal reading stimulation.

Based on this phenomenon, it is important to develop media that can accommodate the development of early reading skills in children aged 5-6 years. This research led to the decision to develop a learning medium called Lingualand.

Design

Based on the needs analysis, new, engaging, digital media that is easy for children to use is needed. In this research and development stage, researchers developed the product concept. They created an initial design for Lingualand media for children aged 5-6 in beginning reading skills. The following is a Lingualand media design for the early reading development of children aged 5-6 years:

No	Picture	Explanation
1		Lingualand media homepage view
2		Display of the letter learning page
3		View of the vowel and consonant letters page

4



Cultural vocabulary page view

Picture 1. Media Design

Development

Lingualand Media Creation

This stage is the production phase, developing the Lingualand digital media product from design to actual form. This stage will produce a web-based product. Then, IT experts from Information Technology Engineering will design the language and its appearance using Unity Hub. Lingualand's development is proceeding according to the initial plan.

Lingualand Media Validation

Once the Lingualand media is complete, the next step is expert validation to ensure it is suitable for learning. To test the suitability of the Lingualand media, validation will be conducted by material experts, media experts, language experts, and educators.

Material Expert Validation

The results of the validation of the material assessment products carried out on validators 1 and 2 will be displayed in the following table:

Table 2. Assessment Validation Results by Material Expert Validators

No	Aspect	Item	%	Category
1	Relevance of Material	3	87.50	Very Worthy
2	Organizing Materials	4	90.63	Very Worthy
3	Effects for Users	3	83.33	Very Worthy
	Total	10		
	%		87.50	
	Category			Very Worthy

Based on the results in the table above, the assessment by material expert validator 1 and material expert validator 2 yielded a 87.50% agreement. Based on the percentage results from the feasibility test, Lingualand media can be categorized as "Very Worthy " as a learning medium for early reading skills in early childhood.

Media Expert Validation

The results of the product validation of the media assessment carried out on validators 1 and 2 will be displayed in the following table:

Table 3. Assessment Validation Results by Media Expert Validators

No	Aspect	Item	%	Category
1	Visual Display	5	82.50	Very Worthy
2	Navigation	3	87.50	Very Worthy
3	Audio	2	87.50	Very Worthy
4	Technical Aspects	3	83.33	Very Worthy
Total		13		
%			84.62	
Category				Very Worthy

Based on the results in the table above, the media assessments by media expert validator 1 and media expert validator 2 yielded a combined percentage of 84.62%. Based on the percentage results from the feasibility test, Lingualand media can be categorized as "Very Worthy" as a learning medium for early reading skills in early childhood.

Linguist Validation

The results of the validation of the language assessment products carried out on validators 1 and 2 will be displayed in the following table:

Table 4. Assessment Validation Results by Language Expert Validators

No	Indicator	%	Category
1	Word Choice	87.50	Very Worthy
2	Clarity of the content conveyed	87.50	Very Worthy
3	Accuracy of Writing Technique	75.00	Worthy
4	Sentence Effectiveness	87.50	Very Worthy
5	Content Relevance to Topic	100.00	Very Worthy
Total			
%		87.50	
Categori			Very Worthy

Based on the results in the table above from the language assessment by language expert validator 1 and language expert validator 2, it can be seen that both language validators scored 87.50%. Based on the percentage results obtained in the feasibility test of Lingualand media, it can be categorized as "Very Worthy" as a learning media for early reading skills in early childhood.

Validation of Teaching Staff

The results of the validation of the Lingualand media assessment product conducted on educators will be displayed in the following table:

Table 5. Validation Results by Expert Educators

No	Aspect	Ideal Score	%	Category
1	Ease of Use	20	100.00	Very Worthy
2	Visual Display	100	74.00	Worthy
3	Media Integration	60	100.00	Very Worthy
4	Media Benefits	40	100.00	Very Worthy

Total	220	
%	88.18%	
Category		Very Worthy

Based on the table above, the assessment of Lingualand media by teaching staff shows a 88.18% rating. Based on the percentage results obtained in the feasibility test, Lingualand media can be categorized as "Very Worthy " as a learning medium for early reading skills in early childhood.

Implementation

This stage involves implementing learning media into the school's learning process. A limited trial was conducted to determine the results, student responses, and the attractiveness of the learning media. Researchers conducted a limited trial at Al Fattaah Kindergarten in Kampar, with eight children aged 5-6 years. The following are the results of the limited trial of Lingualand media:

Table 6. Limited Trial Acquisition

No	Aspect	%	Category
1	The child's level of interest	100.00	Very High
2	Ease of use of Lingualand media	100.00	Very High
3	Practicality of using Lingualand	96.88	Very High
4	Children's level of understanding of the use of Lingualand media	84.38	Very High
Total			
%		95.31	
Category			Very High

Based on the results of a limited trial conducted on eight children aged 5-6 years, as shown in the table above, Lingualand media obtained a score of 122 with a percentage of 95.31%. Based on the limited trial data obtained on the eight children above, Lingualand media can be categorized as "Very High".

Evaluation

Revisions to Lingualand media were made based on validator suggestions, including improvements to lettering, the addition of indicators, objectives, and usage guidelines, the addition of a letter-selecting game, and the replacement of images and the addition of text on several pages. These improvements were made in accordance with guidance from material, media, and language experts to ensure the media is more suitable for use. The following are the results of the product revisions based on validator suggestions:

No	Before Revision	After Revision
1	 On the vowel and consonant page above, there are no syllables in the word vowel.	 On the vowel and consonant letters page above, there are already syllables in the words in the vowels.

No	Before Revision	After Revision
2	 On the vowel and consonant letter page above, there is no game for selecting letters for vowel and consonant letters.	 On the vowel and consonant letters page above, there is a game for selecting letters for vowels and consonants.
3	 On the cultural vocabulary page above, the picture of bolu kemojo does not match the actual picture, and there is no additional audio, and the writing is still in all capital letters.	 On the cultural vocabulary page above, the picture of bolu kemojo is in accordance with the actual picture, and there is additional audio

Picture 2. Media Revision

DISCUSSION

Early reading is a crucial step in early childhood education. One aspect of development that must be nurtured in children is language development, particularly reading skills. This is because reading forms the foundation for children's future literacy skills. According to Kurnia (2022), early literacy is highly beneficial for children's language development, particularly in reading and writing skills. Preschool literacy has a positive impact on children's academic success. Developing early reading skills in children is crucial from an early age, especially between the ages of 5 and 6, so that children can recognize letters, expand their vocabulary, and facilitate their reading learning for later education (Astuti et al., 2021).

Learning to read can be done using media to prevent monotony and prevent children from getting bored easily. Media plays a crucial role in delivering learning. The media is expected to capture children's attention. Engaging learning media will add variety to learning, making it easier for educators to convey learning materials (Kurnia, Safitri, et al., 2022). Media is needed in the learning process to increase children's interest and appeal to them. Therefore, researchers developed a product called Lingualand for children aged 5-6, specifically for beginning reading skills.

Media development is carried out to increase the number of interesting and varied educational media, so that learning in schools is not monotonous and can increase children's interest in learning. According to Daniyati (2023), learning media can also assist teachers in delivering lesson materials to students. This process ensures that all lesson materials are easily understood by students, making learning interesting and enjoyable. Lingualand is a digital interactive learning platform specifically designed to develop early reading skills in children aged 5–6 years. This platform is developed as an educational application that combines game-based learning with a local cultural approach, namely Riau Malay culture. Through an attractive, animated, and colorful display, Lingualand invites children to learn to recognize letters, spell words, and read simple sentences in a fun and meaningful way. Lingualand provides three main menus: learning letters, vowels, and consonants, and cultural vocabulary, which displays concrete images to help children understand the material

more easily. With an audio-visual approach, this platform can provide a more interactive learning experience than worksheets or lecture methods.

Lingual and media can serve as a learning support to improve children's early reading skills. According to Azkia (2023), the application of digital technology in learning can make learning more effective and engaging by presenting rare or dangerous events, showing out-of-reach events, and making it easier for children to understand the material. The media, designed by researchers, is digitally based for children aged 5-6 years. This media has audio and visuals, making it easier for children to understand reading and writing. Lingualand is a highly suitable medium for developing early reading skills in young children because the material is very simple and the level of difficulty is adjusted to the child's age. In addition to improving reading skills, Lingualand can also stimulate cognitive development in children by stimulating logical thinking and problem-solving skills through games like guessing sounds and matching pictures.

Based on the validation calculations by material experts in Table 2, the average score was 87.50%. Based on the percentage obtained in the feasibility test, this media can be categorized as "Very Worthy," with the highest indicator at 100%. Then, in Table 3, the media validation results showed an average score of 84.62%. Based on the percentage obtained in the feasibility test, this educational media can be categorized as "Very Worthy." In Table 4, the validation results from the validator's language experts showed an average score of 87.50%. Furthermore, the table shows that the media characteristics indicator had the highest average percentage at 100% in the "Very Worthy" category.

In Table 5, the validation results by educational experts show an average score of 88.18%, indicating that the feasibility test results for this media can be categorized as "Very Worthy". Furthermore, the table shows that the highest average is 100% for the category "Very Worthy". Based on this result, it can be concluded that the media developed, namely Lingualand media, is highly suitable for improving reading ability from early childhood.

There are several studies aligned with Lingualand media research, namely those based on the findings of Ruciani & Saputro (2025), who studied the development of gamification-based Wordwall media for early literacy in children aged 5-6 years, concluding that Wordwall media is effective in increasing early literacy. Maronta (2023), who studied the effect of digital-based flashcards, found a significant effect on the early reading skills of children in the 5-6 years group B at RA Perwanida 3 Raha. Fitri (2020), who studied the development of digital flipbook media to improve early reading skills in children at TK Al-Azhariyyah Sekargeneng Lamongan, concluded that flipbook media can be a feasible and appropriate alternative for supporting early reading.

Penelitian Kurnia (2022) yang berjudul "Tingkat Literasi Membaca Anak Usia 5-6 Tahun: Trobosan Melalui Media Pembelajaran Mekatronik". Pada penelitian ini menggunakan metode *true experimental design* dengan rancangan *Pra Eksperimen PreTest-Post Test Control Group Design*, dapat disimpulkan bahwa terdapat perbedaan berupa peningkatan pemahaman membaca sebelum dan sesudah eksperimen. Khusus pada kelas eksperimen persentasenya sebesar 42,13% yang berada pada rentang sedang. Oleh karena itu dapat ditarik kesimpulan bahwa terdapat pengaruh alat peraga mekatronik rakyat Melayu terhadap kemampuan literasi anak usia 5-6 tahun di TK Kartika 1-21 Pekanbaru sebesar 42,13%.

Nirwana (2022), who researched the development of Android game-based learning media for children aged 5-6 years, found that ABaCa game-based learning media can improve early literacy skills in phonological awareness, writing knowledge and concepts, and letters and words. Ctaviani et al. (2025), who researched the design of an early literacy learning model for children aged 5-6 years based on interactive multisensory technology, concluded that multisensory technology-based learning that integrates visual, auditory, kinesthetic, and tactile stimulation can significantly improve children's early literacy skills.

Based on the research conducted, it has a close relationship with previous studies on learning media to improve early reading skills. Research by Ruciani & Saputro (2025) shows that gamification-based Wordwall media is effective in improving early literacy in children aged 5-6 years. Research by Maronta (2023) and Fitri (2020) also confirms that digital media can increase children's interest in learning to read

compared to using conventional media. This supports the use of Lingualand, which uses digital media based on game-based learning. Meanwhile, Nirwana (2022) shows that Android game-based learning media have a positive effect on children's literacy in phonological awareness, writing knowledge, and concepts, as well as letters and words. Likewise, Ctaviani et al (2025) stated that multisensory technology-based learning that integrates visual, auditory, kinesthetic, and tactile stimulation can significantly improve children's early literacy skills.

This research continues and expands on these findings by presenting more innovative and interactive media through digital game-based learning, thereby advancing early childhood education. Based on the validation results and relevant research, the development of Lingualand Media to improve early reading skills in children aged 5-6 years is valid and worthy of trial.

CONCLUSIONS AND RECOMMENDATION

Based on research and development results, Lingualand digital learning media was successfully developed as an interactive media to improve the early reading skills of children aged 5-6 years, using the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. Lingualand media was designed in Canva and developed in Unity Studio, featuring materials on letter recognition, vowels and consonants, and Riau Malay cultural vocabulary. The validation results showed that Lingualand media was in the "Very Appropriate" category with a percentage of assessments from media experts of 84.62%, material experts 87.50%, language experts 87.50%, and educators 88.18%, so it is suitable for use as an interesting, easy-to-use learning media, and in accordance with the characteristics of early childhood.

Lingual and learning media need further development to enable wider, optimal use in early childhood. Schools can use Lingualand as an alternative digital learning medium to enhance the quality and engagement of children's learning, while teachers can use it as an innovative, interactive platform to deliver early reading materials. Furthermore, future researchers are expected to develop more comprehensive features, such as 3D displays, downloadable applications, a variety of materials, and more sophisticated technology integration to maximize the impact on child development and digital learning media research.

Credit authorship contribution statement

First Author: Methodology, Formal analysis, Data curation, Conceptualization. Second Authors: Resources, Project Administration, Methodology. Last Author: Funding acquisition, Formal analysis, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethical Declaration

All participants provided informed consent prior to their involvement in the study. They were informed about the study's purpose, procedures, and their right to withdraw at any time without consequence.

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