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Designing C0-KIDS (Color and Number) Application for Intellectual Disabilities Students

Fatia Rosida[1*], A. Kanzul Fikri[2], Yuyun Bahtiar[3] Iin Baroroh Ma'arif[4]
[1,2,3,4]English Department, Universitas KH. A. Wahab Hasbullah
*Email: rosyidafatia0412@gmail.com

ABSTRACT
Education is the most important aspect of life, every Indonesian has an entitlement to it and should always pursue more education. In this research, the researcher designed an interactive media application to help with intellectual disabilities in English learning process. The media application was focused on listening skills namely the C0-KIDS application. The ADDIE model, which comprised five steps (analysis, design, development, implementation, and evaluation), was adapted for use in this study using the Research and Development (R&D) technique. Students with intellectual disabilities from SMPLB Tunas Harapana I Tembelang participated in this study. The researcher obtained the research's outcome from those procedures. 1) The material validation score was 92 (also in the Very Good Category), and the media validation result was 93 (also in the Very Good Category). Based on the findings, the researcher draws the conclusion that students with intellectual impairments should utilize the C0-KIDS program to learn English, particularly in the area of listening skills.

***Keywords**: C0-KIDS Application; Intellectual Disabilities; Research & Development*

INTRODUCTION
Education is a whole-of-life learning experience with multiple programs of formal, non-formal, and informal schooling. It aims to optimize individual capabilities so that they can play an appropriate role in the future. As education is the most important aspect of life, every Indonesian has a right to it and should always strive to improve in it. This implies that all Indonesian citizens have the right to education and should always strive to improve in it. Education, in general, is a process that aims to develop each person so they can survive and carry on with their lives (Alpian et al., 2019).

Nowadays, An essential function of education in the modern world. Education is the most important aspect. However, the presence of children with learning difficulties is almost always present in every classroom. In particular, the specific learning difficulty discussed in this research is intellectual disabilities. A lot of research into intellectual disabilities has been conducted on the basis of specific learning difficulties. The term 'specific' here refers to the fact that intellectual disabilities children have difficulties in their brains to receive information which makes them slow learners, especially in receiving foreign language lessons such as English.

In addition to being a language of communication, English is an essential international language (Syarifah et al., 2022). Even in Indonesia, English lessons are a compulsory subject, starting from elementary school to senior high school. English is currently a necessary language to learn since it is the most significant foreign language taught in Indonesia, from elementary schools to universities. It's crucial to learn English, especially for educational purposes(Ma'arif & Adha, 2021).

Teaching English to adults is different from teaching to youngsters. Children have a distinct character from adults. Moreover, teaching disabilities are also very difficult, because they need special attention from their teachers. Teaching English to students with special needs is a demanding thing for some reasons. One of the causes is English, which is thought to be challenging by the majority of pupils, including those without disabilities (Yunita 2018).

Through observations at SMPLB Tunas Harapan I Tembelang, the researcher found data that teachers have difficulty teaching English because students are easily bored, the impact is that students find it difficult to receive information from the teacher, even though they use paper media in the classroom.

The resolve this problem, this research tries to design a C0-KIDS application to help children more easily learn English when they are beginners, especially intellectual disabilities students. The title of the research conducted is "Designing C0-KIDS (Colour and Number) Application for Intellectual Disabilities at SMPLB Tunas Harapan I Tembelang". This research hopes that this media can provide students in English class, especially for beginners.

According to Abdullah and Nandiyah (2013), there are several definitions from experts related to children with disabilities students. According to (Turner & Hamner 1990) revealed that exceptional children are those who differ in some way from children in general. According to Gearheart, children with disabilities require unique programs, services, facilities, and materials in order to learn effectively. They also require educational standards that differ from those of an average child. It is determined that children with disabilities are those who, in terms of their physical, mental, sensory, and neuromuscular abilities, social and emotional behavior, or a combination of two or more of the aforementioned, differ from the average normal child. As a result, the child may require modifications to school assignments, the methods used to teach them, or other related services aimed at helping them reach their full potential.

Because elementary school children are not capable of thinking abstractly, learning media plays a crucial role in stimulating their interest in what they are learning, particularly in lower grades when teachers must present the subject in a more concrete and realistic manner. We can conclude that there are three possible outcomes from using media in the classroom: the teacher, the students, and the learning process itself. Learning media is particularly beneficial to children's psychological development both didactically and psychologically. The learning-related psychosocial development of youngsters. The reason for this is that learning media, which serves as psychological teaching aids, significantly improve students' learning since they may make things that (Magdalena et al., 2021).

The foundation of any primary school course is listening comprehension. The foundation for effective communication and a successful professional career is listening. One of the English language skills that needs to be acquired is listening. Theoretically, listening comprehension is seen as an active process in which people focus on certain elements of auditory input, extrapolating meaning from passages, and connecting what they hear to prior knowledge (Listiyaningsih, 2017).

In this study, researchers developed listening skills in English language. The researcher developed the C0-KIDS application product which was designed to make it easier for students to receive lessons, especially for children with intellectual disabilities where they find it difficult to receive lessons. This application not only provided sound to facilitate students' comprehension of the subject matter but also provided songs related to the material.

C0-KIDS application is an application designed for disabled children, especially for intellectual disabilities which is about basic English Lessons. These include basic colors and basic numbers 1-10. This is an application designed for children who have intellectual disabilities. Children with intellectual disabilities have difficulties in learning such as reading, writing, remembering, counting, and many more. This application not only helps them to learn to distinguish between 6 basic colors in English (including red, yellow, green, blue, black, and white) but also helps them to understand the basic numbers 1-10 using English.

Meanwhile in this application provides quite a lot of games or exercises including color exercises consisting of 18 questions and number exercises consisting of 30 questions. Children with disabilities need a lot of practice in order to strengthen their memory. Therefore, the researcher designed this application which has many practice questions about the material in the application.

METHOD

- Research Design

According to Sari et al. (2019) state that the R&D method has several steps in its application, namely determining a research framework, assessing problems in the classroom, studying the theory of making the latest educational product, developing an educational product, validating the product to experts, and field-test of the product. The step to improve an established product or develop a new product that has been tested for effectiveness by experts.

The researcher used the ADDIE model in this study. An approach that is frequently used in research and development (R&D) to create and develop new programs and projects is the ADDIE (analysis, design, development, implementation, and evaluation) model. One of the most widely used models in the field of instructional design as a manual for creating a successful design is the ADDIE model. This approach is designed to address learning challenges pertaining to learning materials that are in line with the needs and characteristics of students. It is planned and programmed with sequences of methodical exercises. There are five steps in this model: analysis, design, development, implementation, and assessment (Widyastuti & Susiana, 2019).

- Research Procedure

The steps in the study design that are employed in the process are described in the research method. The researcher's research design was based on the ADDIE model. The ADDIE paradigm consists of five steps: analysis, design, development, implementation, and evaluation, as follows:

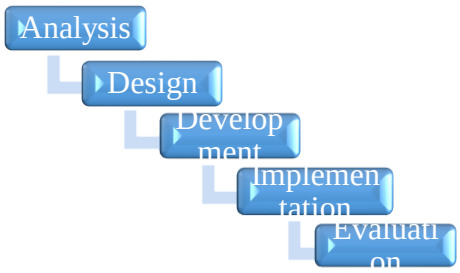


Figure 1. Design of ADDIE model

- Analysis

At this stage, the researcher did observation to conduct a needs analysis focused on students with intellectual disabilities at SMPLB Tunas Harapan I Tembelang. The purpose of this analysis is to provide important information for media development in accordance with the research subject, then the researcher analyzes the material, namely what is needed related to the material in accordance with the curriculum and their needs. In this case, the researcher conducts surveys and interviews directly with related parties as a data instrument, in this step, the researcher conducts interviews with English teachers in the classroom. Then make observations of students directly and observe the situation and conditions in the classroom and also interview directly with the research subject.

- Design

After conducting the analysis, the design stage was conducted to develop an effective solution to achieve the project objectives. At this stage, the first includes data collection criteria where the researcher designs a game product that contains material for SMPLB Tunas Harapan I Tembelang, especially for children with intellectual disabilities, including basic color material and basic numbers. Then create a flowchart that serves to describe the work steps of the system that is created so that makes it easier to design a product. The next step is that the researcher design this product using a PowerPoint hyperlink to make it easier to design applications. The next step is exporting this PowerPoint hyperlink using Ispring Suit 11. The result of Ispring exported by Cordova is to be used as an Android application.

- Development

At this stage, the researcher develops the programmed structure, designs the content and materials to be developed, decides on the teaching methods and approaches to be used, and designs evaluation strategies to measure the success of the project. Once the product has been designed, the product and materials are consulted with experts for validation.

- Implementation

In this process, the researcher gives some questions in the form of questionnaires for the intellectual disabilities students at SMPLB Tunas Harapan I Tembelang. The purpose of this step is to know how effective the product developed by the researcher is. After that, the results from the questionnaires are used to evaluate and correct the product.

- Evaluation

The last step of the ADDIE model is evaluation. The purpose of the evaluation phase is to evaluate the success of the development project and the extent to which the set goals and specifications have been achieved.

RESULT AND DISCUSSION

- Result of Analysis

The researcher conducted observations and interviews to understand students' needs in learning activities, particularly in listening skills. They aimed to provide innovative learning media and teach English. They analyzed the state of English learning activities at SMPLB Tembelang, collected information from class teachers and students with intellectual disabilities, and gathered reference materials for media development.

The study reveals that students with intellectual disabilities struggle with English language learning due to difficulties in receiving information and understanding foreign languages. They often get bored with classroom activities and lack technology-based interactive learning media. The students' English skills are low, and they lack motivation. English teachers often use textbooks instead of interactive media, making students easily bored. The C0-KIDS application, designed as a technology-based learning media, aims to help students with intellectual disabilities improve their listening skills and engage more actively in learning activities.

- Result of Design

In this research, the researcher designed learning media especially focused on listening skills to help learning activities become more interesting. The product was made from PowerPoint with a hyperlink. Furthermore, then the design was exported by Ispring Suit 11. The research has designed an application with a storyboard.

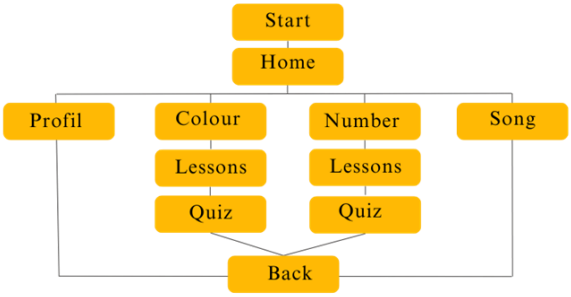


Figure 2. Storyboard of Product

- Result of Development

The researcher develops a programmed structure, content, and materials, decides on teaching methods, and designs evaluation strategies. After design, the product and materials are validated by experts in the media and material fields. Media validation involves experts in media development or technology, while material validation involves experts in teaching English to young children or disabled schools. Validation data is used to improve the product. The researcher gives the questionnaire to media experts and material expect about the effectiveness of the product. Validation data was obtained from the questionnaires given to them, and then the input and suggestions given by the media experts and material experts were used as references to improve the product. The researcher uses the Likert scale to get the value from the material experts' and media expert's data, as follows:

$$p = \frac{score\ data\ collection}{ideal\ score}$$

Description
P = percentage
Ideal score = highest score x number of respondents x number of questionnaire

Table 1. Instrument Analysis Scoring Validation

Score	Meaning
5	Very good / strongly agree with the statement
4	Good / agree with the statement
3	Fair / not sure about the statement
2	Low / disagree with the statement
1	Very low / strongly disagree with the statement.

- The result of media validation expert

The validator of this media was Mr Ino Angga Putra, M.Pd as a lecturer at the Faculty of Education in the Learning Media Development course. The media assessment used by the researcher to evaluate the C0-KIDS application was in the form of a questionnaire. The second media validator was Mrs Siti Suafaidah, S.Kom., M.Si as a lecturer at the Faculty of Information and Technology. The results of media validation from the validators were as follows:

Table 2. The Score of Media Validation

Number	Media Validation Aspect	Number Question	Score
1	Design	1-2	20
2	Texts/Typography	3-5	24
3	Image	6-10	49
4	Audio	11-12	17
5	Packing	13-14	19
6	Usage	15-16	19
7	Navigation	17	10
Total Score			158

The data was calculated with the formula:

$$p = \frac{Score\ data\ collection}{Ideal\ score}\ x\ 100\%$$

Description:
P = percentage
Ideal score = highest score x number of respondents x number of questionnaire

$$p = \frac{158}{5\ X\ 2\ X\ 17}\ x\ 100\%$$

$$p = \frac{158}{170}\ x\ 100\%$$

$$= 92,9 = 93$$

So, the results of the average calculation above obtained a result of 93 including the category “Very Good”. It can be concluded that the media validation of this product was suitable for use as learning media.

Therefore, this media received suggestions from media validators to be revised to make it better. Suggestions from the expert validation were that the introductory voice in the opening and the introductory voice of the quiz contained in the application must use English, the opening of the learning video must use English and the Core Competencies & Basic Competencies must also use English. The following media was a before and after of the product as suggested by the expert.

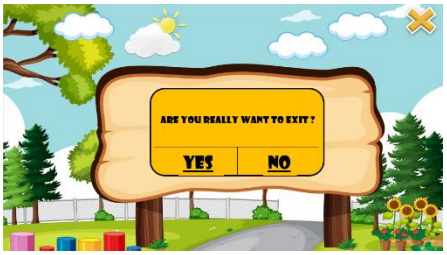
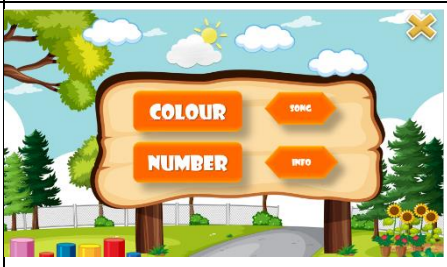
Before Revision	After Revision
	
There was E in word "Exite"	Become "exit"
	
In the menu page there were two buttons	In the menu page there were four buttons

Figure 3. The result of Validation

- The result of material expert

The first expert in this part was Mrs. Luluk Choirun Nisak Nur, M.Pd as a lecturer of English Department, Faculty of Education at KH. A. Wahab Hasbullah University. The material assessment used by the researcher to evaluate the C0-KIDS application was in the form of a questionnaire. The second expert in this part was Mrs Endah Purmaningsih as an English teacher for people with intellectual disabilities at SMPLB Tunas Harapan I Tembelang. The results of the material validation of the first validator were as follows:

Table 3. The Score of Material Validation

No.	Media Validation Aspect	Number Question	Score
1	Curriculum	1	9
2	Usage	2-5	35
3	Opening	6-7	18
4	Core of App	8-13	57
5	Closing	14-16	28
Total Score			147

The data was calculated with the formula:

$$p = \frac{Score\ data\ collection}{Ideal\ score}\ x\ 100\%$$

Description:
P = percentage
Ideal score = highest score x number of respondents x number of questionnaire

$$p = \frac{147}{5\ X\ 2\ X\ 16}\ x\ 100\%$$

$$p = \frac{147}{160}\ x\ 100\%$$

$$= 91,8 = 92$$

So, the results of the average calculation above gave a result of 92. Included in the "Very Good" category it can be concluded that the validation of this product can be used as a learning media.

The suggestion from the expert validation was to correct the typo in the "excite" section, then the menu section was divided into four parts, namely goals, materials, profiles, and songs. The following media was a before and after of the product as suggested by the expert:

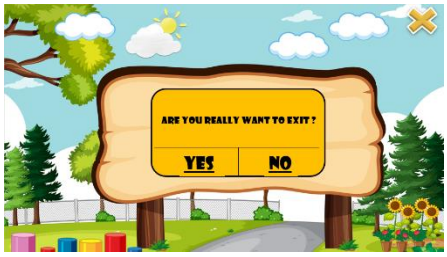
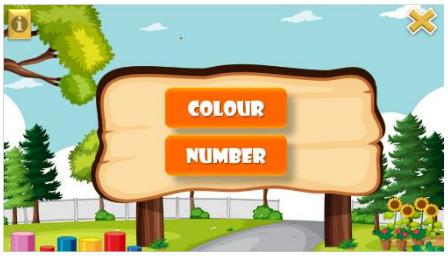
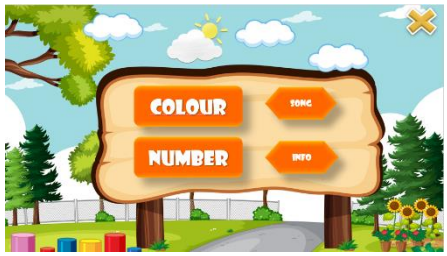
Before Revision	After Revision
	
There was E in the word "Excite"	Become "exit"
	
There were two menus for the application.	There were two menus for the application.

Figure 4. The Result of Media Validation

- Result of Implementation

At this stage, the researcher implemented the product on intellectual disabilities students at SMPLB Tembelang. After the students tested the application, the researcher tested the students using the quiz included in the application. The researcher then gave the students a questionnaire to determine the feasibility of the product for the English language learning process. The result of the questionnaire was used to improve the product. The responses of the respondents were calculated using a Likert scale. From the result of the response questionnaire, the researcher obtains the following data:

Table 4. The Data of Questionnaire

Students	Question										Score
	1	2	3	4	5	6	7	8	9	10	
1	4	5	5	4	5	4	5	4	5	4	45
2	5	5	5	4	5	4	5	5	5	5	49
3	5	5	5	5	5	5	5	4	4	4	47
4	5	5	4	5	5	4	4	5	5	5	47
5	5	5	5	5	4	5	5	5	5	5	49
6	4	5	5	4	5	5	5	5	5	5	47
Total											284

The data was calculated with the formula:

$$p = \frac{Score\ data\ collection}{Ideal\ score}\ x\ 100\%$$

Description:
P = percentage
Ideal score = highest score x number of respondents x number of questionnaire

$$p = \frac{284}{5\ X\ 6\ X\ 10}\ x\ 100\%$$
$$p = \frac{284}{300}\ x\ 100\%$$
$$= 94{,}6 = 95$$

The average calculation above, the result was 95, which was included in the "Vert Good" category. It can be concluded that students with intellectual disabilities need active and creative media such as the C0-KIDS application, which is a technology-based interactive learning media. C0-KIDS application was able to facilitate students and teachers in the teaching and learning process.

- Result of Evaluation

The purpose of the C0-KIDS application was to help students with disabilities at SMPLB Tunas Harapan I Tembelang to understand English learning. In this section, the researcher discussed the ex the researcher discussed the explanation of how the product can provide students with Disabilities at SMPLB Tunas Harapan I Tembelan. Based on the data obtained from student response questionnaires, it was shown that the products produced by the researcher were suitable for use as English learning media, especially for students with intellectual disabilities.

CONCLUSIONS

In this research, the researcher designed English learning media. The media was the C0-KIDS application. The purpose of this development research was to help students with intellectual disabilities in the teaching and learning process in learning English, especially in listening skills.

In this case, the researcher received the evaluation result from the media experts, which was 93, which was in the category "very good". In this case, the researcher received a score of 92 from the material validators for the C0-KIDS application. These results are included in the "Very Good" category. The result of media validators and material validators means that this learning media can be used to support the teaching and learning process of English, especially for intellectual disability students at SMPLB Tunas Harapan I Tembelang. There are some suggestions from the validators to improve this learning media, such as:

- For teacher

In this modern era, teachers are expected to be more creative in creating English learning activities. In order to increase students' enthusiasm for learning especially in English lessons which are considered difficult lessons by some students. The C0-KIDS application is designed for English learning for intellectual disabilities. Teachers can use this app on an LCD projector during the learning and teaching process.

- For students

C0-KIDS application is present to encourage motivation to learn English for intellectually disabled students. Using this application students can learn English more actively and enthusiastically.

- For another researcher

This research can provide information about the conditions and ways of learning English for students with intellectual disabilities. As well as providing information about technology-based learning media, there are some data that can be used by future researchers in further research. Future researchers should focus on the learning motivation of students with intellectual disabilities, especially during the English language teaching and learning process.

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