

Application Of User Centred Design In Building Android-Based Counting App User Interface To Support Early Childhood Education In The Era Of New Normal

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Abstract – The new normal era is now needed a learning method that can help education in Indonesia so as not to be hampered, one of which is the education of early childhood. Education for early usis children with online based is still felt so difficult to apply especially learning counting, this is because children at an early age are not too familiar to use online learning, teachers are also difficult to provide mentoring. Online learning for early childhood can be developed by building an android-based app, by implementing user centred design methods. This method can be used to build a counting learning interface so that children are more interactive and easy to understand the methods of calculating and implementing them. These results can be concluded that this counting application can be one of the solutions in early childhood education in the new normal era that can help stimulate children's development.

Keywords – User Centred Design, User Interface, Android App, New Normal Education.

I. INTRODUCTION

Education in Indonesia during the New Normal period uses the internet a lot in its application. Some educations find it too difficult to apply learning in the new normal era, one of which is the education of early childhood. This is because for early childhood children still need special assistance in education one of them in learning counting, because early usis children are still lay in the know calculations, and early childhood education is the first learning education to be able to get to know the world of education.

Technology also plays an important role in education especially in today's new normal era, technology can improve the way students learn to get better results [1]. Today's technological developments can make it possible to create an app that can be used to help support early childhood education, one of which is android-based applications by implementing an interactive and fun user interface.

Anwar et al in 2015 wrote applications and widged, Aplication Frameworks, Libraries, Android Runs Time, and Lineux Kernel as an outline of android architecture [2]. The user interface design is a set of tools/elements used to manipulate digital objects [3]. Rauschenberger et al in 2013 stated that a user interface design is considered good if it can function properly, not just considering the aesthetic aspects. In other words, in determining the form of the interface design (user interface), not only does it take the aesthetic

aspect of the visual, but also should consider the aspect [4].

Learning media counting for early childhood can be built with good attention to aspects to create an interactive and fun interface view by applying user centred design methods. User centered design method is a design process that focuses on the user. This method can be used to build a learning interface to make children more interactive and easier to understand methods of calculating and implementing them.

The user interface has the purpose of designing an effective interface for the software system. Effective means ready to use, and the results according to your needs. The needs here are the needs of the users. Users often rate the system from its interface, if the interface design is poor then it is often used not to use the software. Additionally, a poor interface often causes users to make fatal mistakes. The design must be user-centred, meaning the user is heavily involved in the design process. Therefore, there is an evaluation process carried out by the user on the results of the design [5].

Media Learning According to Mulyanta in Lubis the development of learning media for both formal and non-formal education using the main reference in the form of the prevailing curriculum in addition to the ease of use, interest, efficacy should also be considered. The criteria of good learning media ideally include 4 main factors, namely relevance, ease, convenience,

benefit [6].

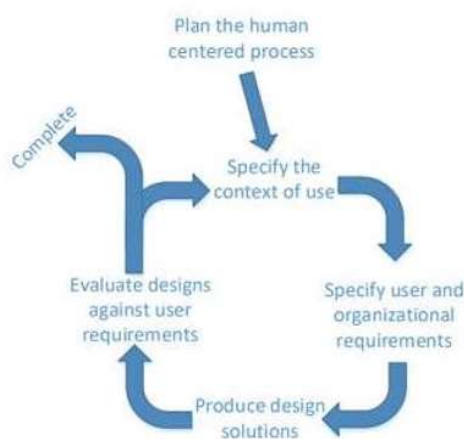
II. RESEARCH METHODOLOGY

This research includes a type of research and development research that aims to create an Android-based reading and counting learning app. The Research Site was conducted in the Programming Laboratory STMIK Palcomtech, by taking samples from several kindergartens in Palembang as users. The research methods used in this study are *User Centred Design* (UCD).

The principles to note in UCD [7] are:

1. Focus on the user
Design must be directly connected to the end user or prospective user through interviews, surveys, and workshops at the time of design. The goal is to understand the cognition, character, and attitude of the user as well as anthropometric characteristics [8].
2. Integrated design
Design must include user interfaces, assistance systems, technical support and procedures for installation and configuration settings [8].
3. From the beginning continues on the testing of users
The only approach that has been taken in the design of a user-centered system is empirically required observations about user behavior, feed back evaluation, troubleshooting insights into existing problems, and strong motivation to change the design [8].
4. Interactive design
Systems under development must be defined, designed, and tested repeatedly [8].

The stage of creating the Prototype User Interface will be adopted in the User Centred Design method with the following method stages:



Sumber [7] Figure 1. User Centred Design

Stages performed in User Centred Design include:

1. Specify the context of use.
Identify the person who will be using the system.

2. Specify User and Organizational Requirements

Identify user needs and organizational needs.

3. Produce Design Solution

Build the design as a solution from the system being analyzed.

4. Evaluation Design

Evaluate the design done at the previous stage.

III. RESULTS AND DISCUSSIONS

The results obtained in the research on the application of user centred design in building a user interface application counting based on android as supporting early childhood education in the new normal era are as follows: Mengidentifikasi orang yang akan menggunakan aplikasi.

1. This research identifies one of the kindergartens in Palembang precisely at Aisyiyah Bustanul Athfal Kindergarten.
2. Identify user needs and organizational needs.
From the results of interviews and surveys in Bustanul Athfal Kindergarten, this application can be built by applying the kindergarten curriculum in its development, this can produce applications suitable for children's development needs according to the level.
3. Build the design as a solution of the system being analyzed.
As a result of user identification and system needs, the application results are obtained as follows:



Figure 2. App APK Results



Figure 2. App Home View Results



Figure 3. Application Contents Display Results



Figure 4. Summing Application Contents View Results

5. Evaluate the design done at the previous stage.

The evaluation of the results of this application was conducted by interviewing directly to the teachers of Bustanul Athfal Kindergarten Palembang, and taking samples of some kindergarten students. The result of this application evaluation is to use the user experience questioner and get the following results:

Table 1. Questionnaire Distribution Table

No	Item	1	2	3	4	5	6	7	Skala
1	Menyusahkan/Menyenangkan	0	0	1	1	7	9	7	Daya Tarik Aplikasi
2	Tak dapat dipahami/ Dapat dipahami	0	0	0	1	3	11	10	Kejelasan Menu
3	Kreatif/monoton	0	2	7	6	3	4	3	Kebaruan Antarmuka
4	Mudah dipelajari/ Sulit dipelajari	1	3	1	3	2	7	8	Kejelasan Aplikasi
5	Bermanfaat/Kurang bermanfaat	0	2	3	0	4	7	9	Stimulasi Untuk Perkembangan Anak
6	Membosankan/Mengasyikkan	0	1	1	5	6	8	4	Stimulasi untuk Belajar

7	Tidak menarik/Menarik	0	0	0	0	6	15	4	Stimulasi untuk Bermain Quiz
8	Tak dapat diprediksi/ Dapat diprediksi	0	1	2	5	6	10	1	Ketepatan Menu
9	Cepat/Lambat	0	6	3	2	5	4	5	Efisiensi Antarmuka
10	Berdaya cipta/Konvensional	1	4	5	5	2	5	3	Kebaruan Isi
11	Menghalangi/Mendukung	0	0	2	0	8	11	4	Ketepatan Isi
12	Baik/Buruk	0	3	2	2	4	9	5	Daya Tarik Aplikasi
13	Rumit/Sederhana	0	0	1	1	8	9	6	Kejelasan Aplikasi
14	Tidak disukai/Menggembirakan	0	2	0	3	4	13	3	Daya Tarik Isi
15	Lazim/terdepan	0	1	4	2	7	10	1	Kebaruan tata Letak
16	Tidak nyaman/Nyaman	1	1	0	0	9	12	2	Daya Tarik Menu
17	Aman/Tidak aman	0	2	4	2	6	7	4	Ketepatan Isi Kuis
18	Memotivasi/Tidak memotivasi	0	1	5	4	6	7	2	Stimulasi Perhitungan
19	Memenuhi ekspektasi/ Tidak memenuhi ekspektasi	0	4	1	3	5	11	1	Ketepatan Mengenal Angka
20	Tidak efisien/Efisien	0	0	1	2	5	14	3	Efisiensi Quiz
21	Jelas/Membingungkan	1	2	2	2	2	11	5	Kejelasan Materi
22	Tidak praktis/Praktis	0	0	1	1	6	13	4	Efisiensi Gambar
23	Terorganisasi/Berantakan	0	1	3	2	6	11	2	Efisiensi Tata Letak Iterface
24	Atraktif/Tidak atraktif	1	1	0	4	4	13	2	Daya Tarik Kontent
25	Ramah pengguna/ Tidak ramah pengguna	1	0	3	1	1	12	7	Daya Tarik Aplikasi
26	Konservatif/Inovatif	0	0	1	2	4	10	8	Kebaruan Aplikasi

5	Daya tarik		Kejelasan		Efisiensi		Ketepatan		Stimulasi		Kebaruan	
6	Items	Correlation	Items	Correlation	Items	Correlation	Items	Correlation	Items	Correlation	Items	Correlation
7	1, 12	0,48	2, 4	0,37	9, 20	0,43	8, 11	0,39	5, 6	0,04	3, 10	0,14
8	1, 14	0,70	2, 13	0,17	9, 22	0,55	8, 17	0,24	5, 7	0,08	3, 15	0,05
9	1, 16	0,60	2, 21	0,46	9, 23	0,40	8, 19	0,24	5, 18	0,25	3, 26	0,10
10	1, 24	0,43	4, 13	0,24	20, 22	0,86	11, 17	0,58	6, 7	0,52	10, 15	0,41
11	1, 25	0,53	4, 21	0,63	20, 23	0,28	11, 19	0,30	6, 18	0,42	10, 26	0,20
12	12, 14	0,27	13, 21	0,03	22, 23	0,38	17, 19	0,50	7, 18	0,44	15, 26	0,32
13	12, 16	0,24	Average	0,32	Average	0,48	Average	0,37	Average	0,29	Average	0,20
14	12, 24	0,66	Alpha	0,65	Alpha	0,79	Alpha	0,70	Alpha	0,62	Alpha	0,50
15	12, 25	0,57	Alpha	0,32	Alpha	0,59	Alpha	0,42	Alpha	0,27	Conf. Int.	0,03
16	14, 16	0,82	(5%)	0,82	(5%)	0,89	(5%)	0,85	(5%)	0,81	Alpha (5%)	0,75
17	14, 24	0,46										
18	14, 25	0,30										
19	16, 24	0,26										
20	16, 25	0,25										
21	24, 25	0,82										
22	Average	0,49										
23	Alpha	0,85										
24	Alpha	0,72										
25	(5%)	0,92										

Figure 5. UEQ Analisis Tools

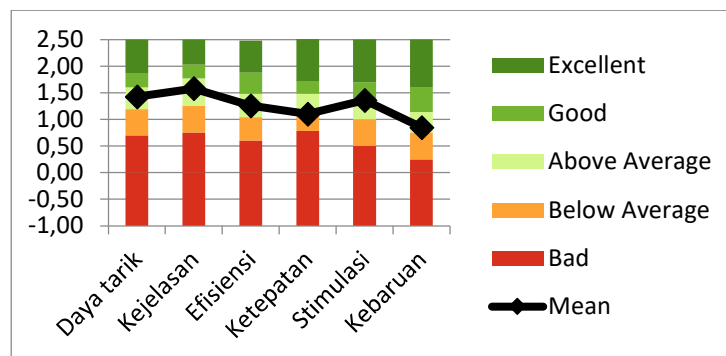


Figure 6. UEQ Analisis Tools Grafik

From the evaluation results obtained for this application is the level of attractiveness there on the above average scale which means it has above average value, as well as for clarity, efficiency, accuracy and novelty, as well as stimulation points that are at good level . These results can be concluded that this counting application can be one of the solutions in early childhood education in the new normal era that can help stimulate children's development.

IV. CONCLUSION

The conclusions obtained in this study are apikasi counting with the name Si-Bebe can be made well, the results interface, attractiveness, efficiency, clarity, accuracy, novelty also have above average results as well as stimulation levels that are at a good level of interview results and take samples of kindergarten children in using it. These results can be concluded that this counting application can be one of the solutions in early childhood education in the new normal era that can help stimulate children's development.

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