Jurnal Desain Produk Nasional

Jurnal Desain Produk Nasional Volume 03 no. 02 Maret 2026

Being Empathetic to Preschool Children: Redefining the Design Process of Digital *Platform* to Support Early Childhood Development in Indonesia

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Abstrak

Penggunaan aplikasi digital yang kini meluas hingga ke anak-anak prasekolah menciptakan dua sudut pandang yang berlawanan. Pakar kesehatan sering memperingatkan orang tua tentang efek negatif waktu layar, sementara beberapa praktisi TI dan bahkan praktisi pendidikan menyoroti potensi *platform* digital bagi orang-orang termasuk perkembangan anak-anak prasekolah. Tulisan ini mengeksplorasi kemungkinan menciptakan *platform* digital yang menjembatani dua sudut pandang yang berlawanan dengan menciptakan konsep *platform* digital untuk memberikan waktu layar yang bermakna dan sehat untuk anak di Indonesia. Eksplorasi ini dimulai dengan mempelajari lanskap *platform* digital yang ditujukan sebagai media belajar untuk anak-anak prasekolah menggunakan kerangka kerja PRISMA. Kemudian hasil eksplorasi lanskap tersebut dibandingkan dengan *platform* digital yang telah terbukti berdampak positif pada anak-anak prasekolah. Dari hasil analisis perbandingan, penulis merekomendasikan pentingnya proses berempati kepada anak prasekolah terutama terkait kebutuhan dan kemampuan mereka. Untuk mendukung proses berempati, penulis merekomendasikan proses desain dengan beberapa metode riset dan kolaborasi lintas disiplin dengan pakar pendidikan anak, agar desainer atau pengembang benar-benar bisa merancang *platform* digital yang bermakna dan bermanfaat untuk perkembangan emosi dan kognitif anak prasekolah.

Kata kunci: *anak prasekolah, proses desain, platform digital.*

Abstract

The widespread use of digital applications to preschoolers has created two opposing perspectives. Health experts often warn parents about the negative effects of screen time, while some IT practitioners and even education practitioners highlight the potential of digital platform s for people including preschoolers' development. This paper explores the possibility of creating a digital platform that bridges the two opposing perspectives by developing the conceptof digital platform which could give meaningful and healthy screen time for children in Indonesia. This exploration begins by studying the landscape of digital platform s as learning media for preschoolers using the PRISMA framework. Then the results of the exploration of the landscape are compared with digital platform s that have been proven to have a positive impact on preschool children. From the results of the comparative analysis, the author recommends the importance of empathizing with preschool children, especially regarding their needs and abilities. To support the empathy process, the author recommends a design process with some research methods and cross-disciplinary collaboration with child education experts, so that designer and developer can truly propose a digital platform that is meaningful and beneficial for the emotional and cognitive development of preschool children.

Keywords: design process, digital *platform* , preschool children

1. Introduction

Nowadays, digital application users not only adults but children, even preschoolers. Interactive digital application is considered attractive as learning media according to some research papers (Mulyana & Presetyo, Rizki Tri, 2022; Sari, 2019; Rozi & Khomsatun, 2019). Number of preschoolers in Indonesia who have already use smartphone and get internet access reaches 33.44% from preschool population, mostly children between 5-6 y.o [4]. That fact indicates that digital devices become part of their life. Information technology is considered innovation to help children development. It is proven the presence of many digital application for them. However, there are health experts such as American Psychology Association who warn against excessive digital media use for children under 5 years old and limit screen time for maximum 1 hour [5]. Other negative effects of digital media exposure include physical concerns such as sleep quality, eye sight, obesity, mental health concern, and cognitive development [6].

However, there are two opposite point of views about digital usage by preschool children. Another point of view have been noticed by OECD through the book of Education in The Digital Age [6]. They pointed out that screen time cannot be simply viewed as the main culprit of the negative effects. How screen is used by children is quite diverse and includes set of cognitive, emotional, and social experiences and could not be measured limited to screen time quantity. Meanwhile the quality is also crucial to be reviewed to determine the negative effects. OECD proposed that the screen time effects must be studied by including some principles such as the type of media, content (such as educational, or entertainment), context (such as the how and whom the children use the screen), delivery interface, interactivity, and user characteristics. The digital media usage has multiple dimension, so that the whole aspects must be considered thoroughly.

Therefore, digital *platform* s for children should also consider their needs and capabilities in using digital application because children's activities nowadays such as learning, playing, and socializing involve digital technology. This paper explores the possibilities of creating digital *platform* s beyond screen time quantity, but also carefully ensure the quality, so that it could be truly useful and beneficial for preschool children. The exploration is done by analyzing landscape of digital *platform* made to fulfill pre-school children's learning need in Indonesia to know what should be improved and comparing the landscape to some digital *platform* s from another country which have successfully facilitate preschool children development to propose some recommendations of the design process.

2. Methodology

To map the learning digital *platform* landscape, the authors did systemic search about the digital *platform* s for preschool children in Indonesia which are divided into two *platform* type that are interactive e-book and educational game. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) framework was used to search relevant papers to show transparency of the procedure and technique [7]. There are five steps to do the search: 1) data identification, 2) data screening, 3) eligibility, 4) data selection and synthesis [7]. The search was done across various databases such as Proquest, Science Direct, ACM Digital Library and Google Scholar.

Only digital *platform* s specifically for preschool children which are published as papers that are included because they discuss the design process. Digital application which are not published as papers are excluded. There are 13 journals which have been taken as main papers to be reviewed and analyzed. The keywords used in the search were in Bahasa Indonesia and English. They are the combination of 'e-book interaktif/interactive e-book' or 'game edukasi/educational game' and 'preschoolers'. Especially for English language, the word of 'Indonesia' was added. From Proquest and Google Scholar, there were 433 for total. After screening the titles and abstract, only 70 papers that are related to digital *platform* for preschoolers. However, only 31 papers are considered eligible after reading abstract and full paper. The eligible papers are selected by looking at the targeted user (only preschool children) and the topic discussed. Papers which discuss more about the technical aspect such as the programming language or such are excluded because do not include the design process. After reading the whole papers, 13 papers are selected to be analyzed. There are some papers which has the same topic such as learning color and shape, alphabet and numbers. The authors only took one paper for each topic.

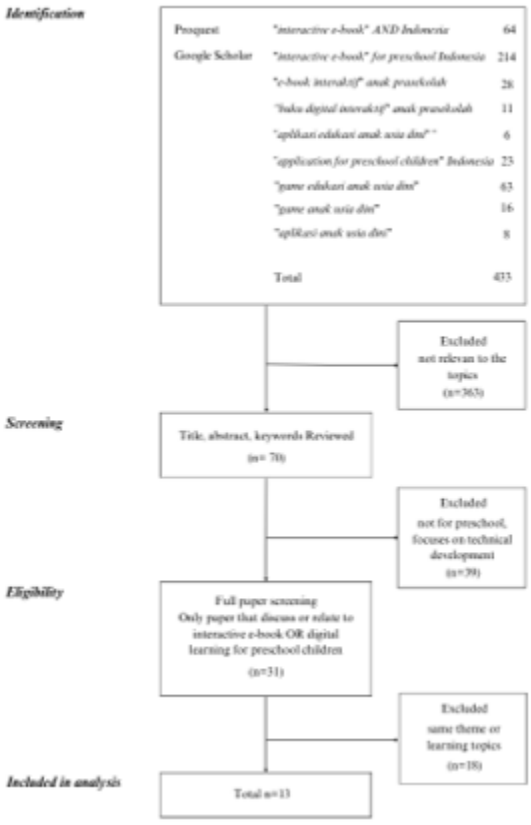

Figure 1. PRISMA Framework Result

3. Discussion

The landscape of digital applications for preschool children (4-6 y.o) focuses on cognitive abilities to learn everyday things and to prepare their abilities before entering primary school [8] [9] [3] [10] [11][12] [13] [14]. There is also specific topic such as sex education [15].

3.1 Review of Digital Learning *Platform* for Preschool Children in Indonesia

The 13 found papers are coded and analyzed based on purpose of using digital *platform* , the design process, and how children interact with the *platform* s. Knowing the purpose or intention of why authors or developers select digital *platform* is important to make sure that the intended purpose is align with users' actual needs and meaningful for them. From purpose point of view, almost of all found papers use attractiveness reason as justification of developing digital applications without observing why the conventional ways of teaching or media is ineffective. Most of the authors assumed that children were bored and not interested with the ways or media. Besides, there might be other external or internal factors caused them bored that also should be taken into account.

Table 1. The Landscape of Digital Learning Platform for Preschool Children In Indonesia

Title and Author	**Review**	
	Purpose and Context	***Design Process and Interaction Concept***
Interactive E-book Design of Traffic Sign Education for Preschool Children (2022)* [8]	To educate children about traffic sign due to high number of traffic accidents. There is no specific reason why use digital *platform* .	The authors did survey to children and field observation to identify which signs are included. The author also did observation how traffic signs were conveyed in a training event. The observation gave inspiration to the authors to use storytelling technique in the application. For design phase, they searched some references and created sketches to portray application flow. The user can click and drag to interact with the app. There is also dialogue text and mini quiz.
Development of ARBO Interactive E-Book based on Augmented Reality to Stimulate Preschool Children's Abilities to Identify Numbers (2023)* [9]	Considering that conventional media make children lazy to learn. There is no explanation why children bored with the conventional media.	The researchers (preschool teachers) use observation to develop the e-book. The design process started from analysis, state objective, select methods and media, utilize media, require participant, and evaluation. The analysis stated that may preschool children still did not know and write numbers. It was become the reason to

Title and Author	Review	
	Purpose and Context	***Design Process and Interaction Concept***
		develop the digital *platform* . To evaluate the e-book, they involved media and content expert to give quantitative rating. The interaction with the e-book is users shoud scan using smartphone to show and guess the number. The feature requires children to understand scanning procedure, so that it may needs parent's guidance.
Development of Education Game of Color Introduction using Adobe Flash Android Based* [3]	The researcher considered that preschool children started to boring use book and tangible material to learn about color. Many of them were not pay attention and busy with other stuffs when the teacher delivers the lesson.	The design process included communication or requirement analysis: SWOT and software needs, planning, modelling, and construction. In the analysis phase, the researcher did not specify the method and respondent. They only made software and hardware requirement. In the modelling phase, the researchers created a UML diagram to portray app functionalities such as guidance, about, start playing, and scoring. Start playing menu was not complete to portray the game mechanism. They also conducted evaluation testing by expert and by respondents which were not revealed. It cannot be confirmed that the application is useful and effective to replace conventional teaching method.
Carita: Character Building for Preschool Children through Interactive Webtoon (2021)* [11]	The authors want to introduce character building through story and encourage children to love reading activity through	The researchers used questionnaires to be filled by parents and families about their children's reading duration, audio book preferences, character style, digital vs paper preferences, and story genre.

Title and Author	Review	
	Purpose and Context	***Design Process and Interaction Concept***
	digital *platform* . The reason why digital is almost parents have smartphone. The researcher asked the parents about character style and asked expert and practitioner (unknown expertise) about the content.	The e-book provides story for children about daily lives in comical image (webtoon). The app design is not revealed. The researchers asked the teacher about the story quality. There is no evaluation about the application.
Augmented Reality Educational Game to Introduce Alphabet, Numbers, Colors, and Basic Shapes for Preschool Children* [2]	Traditional media used by teacher is considered unattractive. Children educational games need innovation using newest technology such as augmented reality.	The researcher used Game Development Life Cycle as reference in the design process: initiation (concept game), pre-production (concept and prototyping), production, and testing, beta testing, and release. Even though the researcher mentioned there was an observation, the observation results were not disclosed. The researcher only reveals the technical needs and jumped into the interface design without writing about the game design in conceptual level. The app contains audio/sound. It uses text as operational button. Children are desired to operate ‘Next” and “Play” button.
Augmented Reality: Daily Prayers for Preschooler Student [16]	Augmented reality is considered help preschool children to improve soft motoric.	The design process adopts the multimedia development method, that are concept, design, material collecting, assembly, testing, distribution. In the concept planning, the researcher did not mention the need of preschool children, and just stated the application concept without explaining the reason why augmented reality was used.

Title and Author	Review	
	Purpose and Context	***Design Process and Interaction Concept***
		Children scan picture (used as marker to the AR) using smartphone, then the animation that consist of interactive animation and sound emerge on the phone.
Development of Interactive Multimedia about Nature to Children between 4-6 y.o (2021)* [12]	Digital *platform* was chosen to make learning activities become attractive.	The design process including conducted field research, literature research, construct conceptual model, expert judgement, revision, and testing. Field research was done by observation and interview to teacher. The objective was to know teachers' difficulties in teaching themes about nature. The researchers did not reveal the observation result. After the learning media was made, they did test to expert. They also did pre-test and post-test to children with satisfying result. The game contains images of nature and text. Children can learn colours and images though guessing, and wording arrangement. Children are expected to read simple text.
Interactive Learning Media to Introduce Alphabet in Pelangi Kindergarten using Unity3D (2022)* [1]	Learning through traditional method such as using cards, picture, and book is considered boring. Thus, digital interactive media was chosen.	The design process adopted consists of some steps: concept, design, material collecting, assembly, testing, and distribution. The researchers did observation in the classroom to see learning activity and process. They also did interview to teachers and parents about alphabet learning. Unfortunately, the researchers did not mention the observation and interview results, so that they can used it to build conceptual design. Children are expected guidance text and button with text.

Title and Author	Review	
	Purpose and Context	***Design Process and Interaction Concept***
		There will be animation for each alphabet.
Designing Digital Story Book The Legend of Crying Stone and Interactive Game to Strengthen Moral Value for Children between 4-6 y.o (2021)* [13]	Globalization has changed local value and culture, so that it requires new media and method to strengthen local moral value to the next generation.	The researchers did observation to know existing storybook. They also asked the parents and students through questionnaire to know children book genre preference and gadget usage. Besides, they also asked children to choose graphic style preference. After the research, they created story script, and the visual concept include storyboard and character style. Then they created assets such as button and icons. The digital app contains button with visual symbol such as note, check, book, game, cross, arrow, home, exclamation mark, sound, search, and many more. Other than that, there is a pop-up message contain confirmation question that requires reading ability.
The Implementation of Thematic Electronic Smart Book at KB-TK Pertiwi Semarang [17]	Children in kindergarten school felt bored and did not pay attention to what teacher said. Digital *platform* is considered as innovation in learning. There is no evaluation stage by kindergarten children, but the teacher.	The smart e-book development started from analyzing preschool children development that related to cognitive, children characteristics that related to language skill and learning by playing. In the design stage, the researchers explained interface design plan including layout and features such as quiz. The smart e-book contains pictures, videos, and quizzes about several topics. It is used by teacher as learning media in the class. The layout is well designed. The colour, typography are also well thought.
Attracting Preschool Children Interest	The study background is to learn whether	

Title and Author	Review	
	Purpose and Context	***Design Process and Interaction Concept***
toward Reading through Storytelling Using Interactive Digital Book (2022) [10]	storytelling using digital book can improve children's interest on reading activity.	The digital book design is not shown in the paper because the objective is to study the storytelling method, not the media. However, the study proves that children's interest in reading can be improved through storytelling using digital book.
Learning Application for Recognizing Names and Functions of Body Parts for Early Age Children (2023) [18]	Digital *platform* is chosen as media because it available and easy to access. The availability and easy access is considered to help children reach learning objective. The current method is considered made children getting bored, lack of concentration, and tend to play.	The design process consisted of requirement gathering, develop prototype, evaluate prototype, system development, system testing, and use the system. The requirements which ware included in the paper only encompass technical requirements and features. The author or creator mentioned that the application is used by teacher and used as learning media. There is a main menu which focus displaying main part of body.

3.2 The lack of Analysis from Observation/Interview/Questionnaire Result

Most of the research follow certain design process, which even though the step name is different, the essence is the same. For example, analysis phase they collect data from users or children environment. However, several research only analyze the technical requirement, especially those which the authors are from IT background. Several research even do not reveal the analysis result and jump to design step. Those which reveal the observation/interview/questionnaire results for example done by [17]) do not correlate that results into design stage. Other researcher who revealed the analysis results and correlate that to design stage did not consider preschool children needs. They used the children's inability to learn numbers as the foundation in the design stage, while children in that age do not need to learn that [19].

It is the common knowledge that in design process, initial phase will affect the next phase. So do with the analysis phase in the design process of the reviewed digital *platform* s. Moreover, some of the authors did not state the reason behind the selected technology for example augmented reality, such as the advantage gained by the children if they learn using the technology. Other than that, there is a

paper that did not explain why children need to learn about body, while teacher can just show directly with the real body instead of using application.

3.3 Unsuitable Design Concept for Children Cognition

Most of the interaction design concept on the reviewed papers does not consider the skills of preschool children. Most of the concept use text in navigation, either menu naming, guidance, button title, or even scan an object to show AR function which most likely could not be understood by preschool children. Preschool children are likely unable to read text, scan picture without guidance, or perceive semiotic signs without the help from parents, caregiver, or teacher. Some of the papers use complex navigation, layout, and bad color combination which can be confusing for preschool children whose cognitive abilities are still limited. Because children's visual perception below 10 years old is still not fully developed, they may not distinguish details of objects and moving objects from background [20]. It must be considered when designing a display for children. Therefore, designing interactive e-book and application for children must take other actors' roles into account such as parents, caregivers, or teachers. How parents or adults would be involved in the digital applications is not discussed there, but merely talk about children and the application.

Regarding application features and function, there are some papers/applications that are less suitable with children's needs. There are some applications which the objectives are not align with the best practice such as calculation and reading. Calculation and reading are not recommended, instead the most important things is shaping children's characters, improve early cognitive skills, encouraging them to understand verbal communication, and express surrounding environment [19].

3.4 Success Story of Digital *Platform* for Preschool Children

As previously mentioned, smartphone is considered cause distraction and interfere children development. In 2021, Harvard Graduate School of Education researchers developed some digital *platform* s that deconstruct the believe. They created some digital *platform* s to foster interaction of parents and children and help them to develop rich conversations that will enrich children's vocabularies and language skills. Those are Photo Play, Story Mixer, and Animal Antics. Photo Play lets parent and preschool children talking about the past photos which positively associated with language comprehension, vocabulary improvement, and enhance narrative skills [21]. The app provides prompt for parents by suggesting questions to be asked to their children. Story Mixer facilitates parents to guide their children in learning vocabularies. It lets children to listen to familiar vocabularies and verbalize phrases [21]. Animal Antics promote back-and-fort conversation for parents and children to encourage them to enhance language skills. Parents and children can record their own voice after choosing two animal characters in a scene, and play it back to hear their voices come out from the animals' mouths [22]. Those applications have been studied and proven to improve parent-child conversation and learning [21].

3.5 Comparison Between Preschool Digital *Platform* Landscape and The Success Story from Harvard

Digital learning *platform* for children in Indonesia are done by researcher from different disciplines such as information technology, multimedia design, preschool education and still separated each other. Thus made the analysis provided is not comprehensive. The analysis results were still not used

as cornerstone in the design phase. Some researchers even assumed that traditional teaching method is boring and can be replaced with technology-based without any further explanation or rational reason. The replacement or substitution paradigm is used as the basis of the *platform* development and affect the application design. It is quite different with Photo Play, Story Mixers, and Animal Antics which is positioned as *platform* s to support parent-children interaction which could support language literacy. Features in those apps are based on prior research about children in education research field [21]. Those applications are aimed to support learning process, not to substitute.

The Harvard researchers took careful consideration about the approach of how technology can serves early education including their concern about screen time [23]. The approach they took is that technology as enabler which empowering parents to help their children and encourage their kids. Parents want to support their kids, but do not know the best way or do not believe their capabilities. Therefore, the learning application are there to help them. That is why it is called enabler [21]. Another point of view of enabler is kids can use the technology by themselves, but in a structured way and get the benefit. According to the researchers, enabling approach will be much better if the technology is adding to the human interaction, so the technology enriches the relationships between parent and the kids. [23].

3.6 Being Empathetic to Preschool Children Development Needs

Preschool children development in cognitive and emotion cannot be simplified by just learning alphabet, colors, shapes, etc., but need to build social connection and early cognitive skills. Thus, designer or developer who want to create digital learning *platform* for preschool children should be more empathetic to what children actually need. Researchers from Harvard Education consider several things related to child development before utilizing technology to support parents and preschool children in order make the right features [21]. They reviewed some socio-cultural theories about child development such as the importance of oral language development in improving reading and other literacy skills. Children's learning can be strengthened through social interaction during early childhood. Social interaction is strongly related to oral communication skills and affect language comprehension [24]. From the literature review, the researchers determined what kind of interaction do the children need. Therefore, they can design purposeful learning activities: making the technology as enabler for parents to make meaningful interaction and connect in a conversation with their children which will help the literacy development [25].

Beside the children themselves, understanding their support system such as adult presence is also important. Adult's involvement in children online or offline activities brings many benefits. The benefit of reading e-book improved when the adult is involved in the learning process and also increase their involvement in children learning experience [26]. Activities that are supported with dialogue makes children gain larger vocabularies than regular reading [27]. In online context, shared media that promotes collaboration and co-operation give the different impact compared to watching online video alone [6]. Technology is more effective for preschool children learning when it is shared with other people such as parents, caregivers, or friends [28].

Other than that, accompanying preschool children during using digital devices might help the adult to guide their children about the limitation and positive utilization of digital device instead of hard

restriction. It might create strong fundamental knowledge of how to positively utilize digital device among children. Therefore, digital application could be a tool to improve preschool learning activities while also let the parents build bonds, and guide children towards more positive use of digital devices. Thus, it adds good context in screen time that would become more meaningful and beneficial. Moreover, if the application contain text, parents would be the main users and will guide their children in using the application.

In interface design level (prototyping phase), designer of digital *platform* for children need to understand children cognitive in interacting with the digital *platform* . Interface design should be designed by pay attention to general HCI guidelines for adults [29]. The visual and interface must be adjusted based on the fact that their visual perception is still not fully developed, [20].

Below are the three main HCI principles with certain adjustment for children.

1. *Perceivability*. The design (illustration and wording) should be easily perceived by children: what they can do, how do they do certain task, what picture is all about, so that they can understand what are shown in the application and engage with conversation with friends or parents. This can be done by simplifying interface and select proper color combination so that children can clearly see the main objects and do not have over memory load.
2. *Operability*. The user interface should consider children skill of motor and physic, so that affordance and constraints must be easily understood by children.
3. *Developmental Fit*. The design must consider children's limited vocabulary, so that textual instruction or text-based interaction could be limited [20]. Parental guidance can be added to make them aware of their children in operating digital *platform* and engage in conversation.

Beside pay attention to the general rules, each digital *platform* should have clear learning purpose based on child development theory and expert concern. For cognitive purpose, preschool children learn language and literacy such as oral language skills, vocabularies, or something that can enhance their understanding toward environment and verbal expression. Such purposes can be facilitated by educational games or application. Storytelling and narrative could also be used to enhance language and literacy which is usually in the form of interactive e-book. Many storytelling e-books use illustration assets and sound to convey story. Subtle things in the story characters such as facial expression and sound cues may be perceived differently. Research in China found that children in there do not understand a sound cue due to a cultural difference[30], [30]. Considering child development and local culture need to be considered in this context.

Children mental model and current cognitive abilities must be considering in design development [30]. Mental model is related to their understanding of how the world works. For example, in coloring or drawing, they already knew that eraser is used to erase wrong lines or color. While in the world of application, people often use undo and redo action. Children would be familiar with the use of eraser instead of undo and redo. Regarding to cognitive abilities, children surely have smaller working memory compared to adults. Therefore, reducing memory load is crucial. It can be done by simplifying page contents and limiting interaction in one page.

3.7 Recommendation to Develop Empathy toward Preschool Children Needs

Unlike adults or adolescent who can talk about their real problems, preschool children still do not know what they need which can support their learning activities. Thus, it is important to analyze the fundamental of children's skill development and expert's concern about screen time limitation. Multi-discipline collaboration could help the designer to comprehend the fundamental. The researcher background may affect the approach they used to create digital *platform* for preschool children. Researchers from Harvard have educational background who are then collaborated with people from other discipline such as design and information technology. It is important to get accurate comprehension to design application that would really give benefit for the children instead coming from researcher's assumption or survey to parents or teachers.

Beside the collaboration, methods to gain data and information about children and parents, including what kind of environment they do live in and context of digital devices utilization. Survey and interview are most common method to perform this phase. However, when it comes to the need of culture and environment comprehension, participatory design method could be an option or complement to survey or interview. Participatory design is an approach used to understand interests, values, and culture of community members before designing product or intervention [31]. Participatory design is used by Anderson-Coto, et.al as a method to comprehend values and cultures of low-income Latine families to design mobile application to support playful learning space for children. They use participatory design to determine cultural practices and values to be embedded in educational game elements such as characters, storyline, and game mechanics. They tried to notice and include participant contribution into design. They translated a local community's core values into feasible design ideas.

Children participation in design have been explored by many papers. They can contribute to ideation phase of a product or system as a community practice at their own level. Their input can be useful if the participation technique is suitable and meaningful. Video prototyping can be used as one of the techniques [20] and also be an effective tool to comprehend non-verbal behavior and genuine interaction between parent and their children. Understanding parents/teacher and children behavior towards learning activities cannot be done by using assumption, interview, or survey using questionnaire such as happened in the reviewed paper, but by digging information or observation. Their behavior toward digital *platform* s or how they perceive about digital media is also important before designing learning intervention for the children.

Designing digital *platform* for preschool children interaction should be preceded with understanding their social aspects and cognitive abilities. Therefore, designer can define the digital *platform* positioning in preschool children development such as enabler, substitution, etc., and analyze the involvement of their parents. Multidiscipline collaboration could be the way to start defining the meaningful and healthy screen time. Then design approach is then derived to determine research or data collection method. All the process are unseen or cannot be seen in the digital *platform* . The unseen process is then visualized through features, interface design, and interaction between the *platform* and children.

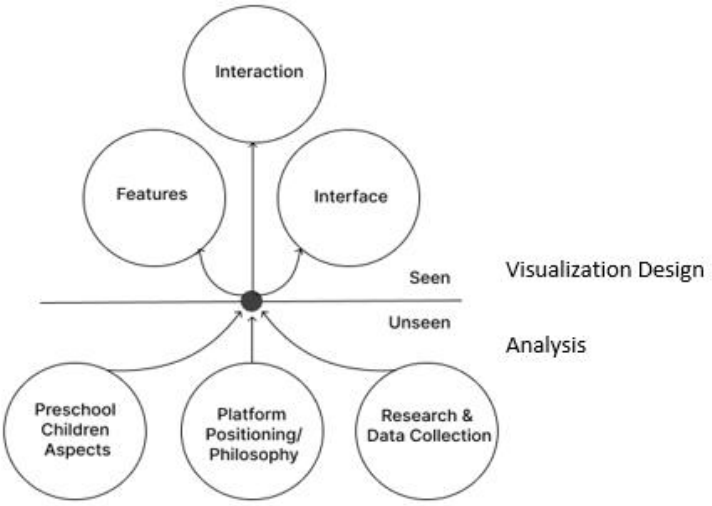

Figure 2. Analysis and Design Phase of Design Process for Preschool Digital Platform

After the digital *platform* is made, user testing needs to be done. One of the ways is by observing children's responses and behavior when using a digital *platform* . User testing can be done in some methods such as laboratory, in the field, and think-aloud [20]. Application evaluation cannot be validated only by expert, but the children and parents/caregivers should be the main evaluators.

4. Conclusion

Digital *platform* with the right context and content might be a powerful tool for parents to leverage early childhood development. Along with the technology trend and preschool users that would likely increase, digital *platform* can be utilized to support their cognitive growth instead of considered as threat for their future. From the Indonesian digital *platform* landscape, most of the development plan still not consider what needed most by the children. To create an impactful digital learning *platform* for preschool users, empathizing their need is essential. Empathizing with them can be done by collaborating with child development expert, psychologist, etc., and select suitable and proper research method.

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