



## Stimulating Children's Numerical Literacy: The Effectiveness of Android-Based Traditional Sipak Tekong Games for Early Children Aged 5-6 Years

Tia Novela <sup>1\*</sup>, Iratna Dewi <sup>2</sup>, Mega Cahya Dwi Lestari <sup>3</sup>

<sup>1-2</sup> Early Childhood Education, Prima Nusantara Bukittinggi, University, Bukittinggi, Indonesia

<sup>3</sup> Institute of Modern Technology Daughter Rahmah El Yunusiyah, Padang Panjang, Indonesia

\* Corresponding Author: Tia Novela

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### Abstract

Literacy numeric is required skills for using number ideas and skills counting in situation daily as well as ability analyze quantitative data around child. Research This aiming for know influence game intervention captain android based on literacy numeric child. Research this use design pretest-posttest experiment with group control, with involving 30 children as object research, which consists of 15 children class experiment and 15 children class control. Research results show that sipak game activity captain android based influential to literacy numeric Kindergarten children. Sipak game activities captain This is android based interesting interest child, so that show significant difference between class experiments and classes control. Therefore that, for study more carry on it is recommended that educators child age early can always utilise activity which are interesting interest child in every learning.

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### Introduction

Children aged early start Study reading, writing and arithmetic far before they enter Formal school. The development process that involves literacy early started since born and continue moment children exposed to sounds, words, and concepts printed in the environment them. This process teach children small the basics literacy, which is very important for success reading and arithmetic in the years next. Ability counting children very different before they start attending school. (Manolitsis *et al.*, 2013) <sup>[1]</sup>. Considering that ability mathematics early is one of most reliable indicator For achievement academic later day (Duncan *et al.*, 2007), is important For understand Why a number of student start school with more preparation Good For control mathematics than Friend peers. According to part big research (Lyons *et al.*, 2014), proficiency mathematics is not something single, but consists of from various talent separate mathematics. Comparison magnitude, order numbers, understanding principle principal, and digit recognition are example skills counting frequent beginnings found. However, we No Certain How skills this each other related as people develop. There are several proof that various factors, including ability cognitive like memory Work language and attention sustainable (Howse *et al.*, 2003) <sup>[2]</sup>, influencing development skills counting this. A number of big research also shows that social status economy and environment counting at home (Kleemans *et al.*, 2012) <sup>[4]</sup> has broad impact on outcomes mathematics and development children. However, research about growth ability numeracy in children age early (i.e., those aged 3-5 years) often show at least One or more limitations following. Usually only there is one or two component skills numeric included. Method cross part used (Batchelor *et al.*, 2015), and the approach analysis that implies that all child growing along same path used. As a result, it is difficult For determine track development skills numeracy beginning or identify related factors with disparity growth from person - centered approach because No the existence of comprehensive longitudinal data about acquisition skills numeric in group age This. Has found that the cognitive processes associated with mathematics correlated with games (Haimson *et al.*, 2011). Correlation this show potential connection between knowledge game theory and thought processes mathematics (Harsison, 1996). Cognition mathematics and talent numeric can used in the cognitive process through the game. According to Pekrun (2006), affective processes related to with mathematics can also become predictor

significant skill.

Siegler and Alibali (2015) two researchers who focus on development cognitive children, in particular in matter learning Mathematics. Children build understanding they about draft mathematics basic, such as numbers, counting, and patterns. One of findings important from study they is that games involving skills mathematics base can give benefit big For development child in understand concepts more mathematics complex later day. They show that games involving numbers, calculations, or draft room can help children For Study with a better way interactive and fun. Games that involve strategy, calculation, or breakdown problem can increase understanding child to draft mathematics early, like order numbers, addition, and subtraction. Experience play can give chance For children For implement and strengthen understanding mathematics they, who in turn build strong foundation for learn concepts more mathematics abstract and complex moment they grow. This is emphasize importance contextual and enjoyable learning, because matter This can increase Power attraction and effectiveness teaching mathematics at age early. Based

on the results of observations in the field, the problem can be Formulated, how making music can develop the ability to recognize numbers in kindergarten children group B. Based on the facts in the field, children are less able to sort, children are less able to classify, and children are less able to solve problems. So, to fill the gap in this problem, this study aims to look at skills in recognizing numbers using the Sipak game media. Captain android based on children aged 5-6 years.

### Research Methods

Study this is quasi- experimental research with non-equivalent pretest-posttest control group design. Subject study consists of of 30 children, who are divided to be 15 children in the class experiment and 15 children in the class control. Data collected use scale assessment and observation. Instruments tested through quality testing tool measure and test validity Contents with professional judgment method. Data analysis for measure reliability done with using SPSS 20.0 for Windows, with Cronbach's Alpha technique. Testing hypothesis using the t-test statistical test with SPSS 20.0 for Windows help, which produces mark significance of 0,000.

**Table 1:** Instrument

Content	Age 5 - 6 years
Algebra	Sorting, Grouping, Pattern Making, Solve the Problem
Number	Compare, Order (First, second, and third), Dividing material among friends, Counting, One - one relationship
Geometry	Geometry is more than naming shapes. Geometry includes understanding spatial relationships, position, 2 dimensional and 3 dimensional objects
Measurements	Understand the attributes of objects - objects, Construct the concept of non-standard measurement, application of numbers to measure, serialize
Data Analysis	Collecting information, organizing information in simple terms, Asking, and answering questions regarding the infossrmation collected by the organization

### Results and Discussion

Based on the results of observations in class experiment that is skills literacy prominent numeric that is indicator ability breakdown problems, such as : (1) Using soccer games boss ( theme vehicle ) capability observe, observe and understand something, can seen in games, children can observe the game, understand information What only what is in the game ( observation ). (2) Ability collect data and information (collecting). Children collect data about the game sipak tekong (theme vehicles), such as amount door cars, and the number wheel moor bike. (3) Ability process information (communication), child process moreover Formerly information What only related with soccer game (4 ) Ability child convey information. Children begin to communicate information What only in soccer games captain and son can ask as well as answer question to the teacher.

Based on results research, there is significant t - test results indicating that there is difference mark observed between class experiment with game intervention captain android based with class control that uses method conventional. This is supported by research about influence gaming activity against skills literacy numeric like Taylor and Leung's (2020) research states that that child age early Study reading and arithmetic with various way. During activity art language in preschool and kindergarten childhood, written words mixed with visual image, language oral, gestures, numbers and signals others. When various Form literacy introduced in context meaningful class, all students, but especially those who have a background behind multilingual / multicultural, utilizing roles and structures social, cultural and emotional which are regular they observe and experience at home and in the community They. According to Whitehurst and Lonigan (1998), developing ability based on code and focus on meaning is part from literacy numeric beginning. When

children Study understand material written and story as well as narrative, education systematic based on code and capabilities that focus on meaning potential develop skills required child For succeed in the world of literacy (Dixon-Krauss *et al.*, 2010). Development and acquisition Language children rely on the support of adults who are consistent give bait back, grow an environment that encourages curiosity know children, and expand exposure they to language (Mol & Neuman, 2014) <sup>[10]</sup>. With Thus, development skills literacy numeric beginning promoted in environment that offers various practice linguistics and expose children in various vocabulary and experience linguistics (Neuman, *et al.*, 2018) <sup>[10]</sup>.

Findings important other is excitement children when do activity play the game of Sipak the boss who can increase skills literacy numeric they without they realize. Especially when children allowed play their game in accordance with desire they each, giving they knowledge new. Culture family, rituals and relationships between children age early and environment social they very formed through game traditional, which functions as regulator social and emotional behavior and conditions children (Barrett, 2006). Taking part in music is activity multifaceted that can functioning as scaffolding For increase involvement children, expression self, and practice ability academic (Anvari *et al.*, 2002). Children can build environment culture they together and learn ability new about experience and environment they through the game sipak captain Android- based (Lessard & Bolduc, 2011) <sup>[5]</sup>. Besides that, activity music can give framework work that can predictable, repetitive language, experience kinesthetic, and narrative that enhances involvement all children and learning independent when they entered to in routine class. (Vaiouli & Friesen, 2016). In addition that, music push engagement and collaboration in

context education and giving students sense of belonging in class with singing, playing, listening, and responding For learn whatever (Vaiousli & Ogle, 2015). For to obtain more knowledge Good about potential profit music in involvement children and skills literacy numeric early, future research can researching impact curriculum music in environment child age early (combine metric quantitative and qualitative). In addition that, for enhance development programs professional, important for researching need educator child age early and available support. Study cohort big and study term long can done For more explore possibility contribution music to development academic and engagement all child small in the environment child age early.

### Conclusion

Using Android -based games is one of them method pleasant For Study counting for child. The child will capable count amount vehicles and number part vehicles in the game. Required good understanding about the core and relationships between numbers to be able to see connection between operation, through intervention with game activity thing This will more easy overcome. Ability solve problem can stimulated with exchange opinion, submit questions, or have a conversation with child, through intervention activity sing matter This become stimulating activities ability literacy counting with make child more happy. Material can in the Form of imagination, event real things that happen around children, or media games and songs.

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