

Evaluation Score Math Education Game for Children Analythical Heuristic Processing Method With Construct Programming

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Abstract. This research build application with animation web based use construct programming, where this application build education for children with math basic. In this application there are seven game level can user finished for learning, each level discuss math for knowledge basic for children. Level 1 user play additional math education, level 2 user play subtraction math education, level 3 user play with math topic multiplication, level 4 user play with dividing math topic, level 5 user play to learn two dimensions of shape, level 6 user play three dimensions of shape, level 7 user play game math with telling basic. All level analyzed with system use Analythical Heuristic Processing (AHP) which influenced from few variable, that score each level, time solved game each level for user, and totaly level can be solved by user as last variable. In AHP dependency variable in application influenced result score for each user. Design character in this application use fani as woman character, design to learn math. All system in this application test form are usability for all form game level and AHP calculation in construct programming as well done.

Keywords: Analythical Heuristic Processing; Construct Web Programming; Children Math; Game Education; Design

INTRODUCTION

In this research provide the application for children learning actually in math scope in basic case. Learning need time and how make children like to learn. This is research try to make application can make children fun and interactive education. Education for children priority for desain, colour, and interactive study. Game for education has purpose to make children fun when they learning. Game has character thats desain game, desain object, desain composition colour. For play and learn many game education use concept drag and drop, concept answer the few question like system quiz, concept find and found. Game help increase motoric skills children with interactive game and how to collect poin game and time they can solve the game.

Colour comination be basic for combination game which build, for who the game build, if game for teenager the colour choose dove colour, if for children choose colour with bright colour or basic colour. The combination colour combine few colour, many rules for combination colour as Interactive Conceptual Communication for human physchologist we can choose, the most important is the combination can make interactive user more interactive learn game.

Desain and animation for build game is desain shape of button, desain background, desain object game, desain character are influenced by desain and colour combination. For animation

has purpose to make game interactive and children can solve all the questions without known how difficulty question.

Game mathematics basic that already build, have own characteristics game actually by desain and coloring game but have same purpose to make children more focus in learning because game can increase motoric ability for game influence by score and time they can solve.

In the previous article research some article discuss how to learn math in different way. Application learn math with traditional cultural game (Angraini, P., 2021) discussed learn shape. Research (Bang, H.J., 2023) learn for early childhood using application *My Math Academy* and analyze children focussed and evaluation in classroom for children. Research (Brezovszky, B.,2019), evaluate game with the influence of game use adaptive number knowledge to analyze user. Research (Chizary, F.,2017) analyze children where they play modern and traditional game in class. Research (Erşen, Z.B.,2022) Analyze game based qualitative, quantitative methodology. Research. Research (Hui, H. B.,2023), analyze children with cognitive ability. Research (Luo, T.,2022) analyze the effect game for children attitude. Research (Makamure, C.,2023) analyze learning for children in continues way give positif effect for there evaluation in this research math case study. Research (Nurjanah, R.,2022) analyze that game can increase critical thinking for children.

Research (Rahayu, C.,2022) analyze children in class with play and practical math with some simple object with fun. Research (RONDINA, J.Q.,2019) build game based by activities children with mathematics. Research (Stohlmann, M.,2021) discuss application math for middle scholl. Research (Ulhusna, M.,2020) analyze in application *Ludo game media* that can increase children learning math. Research (Umbara, U.,2021) analyze children learning with Dominoes Game.

In this actually research build application web based with purpose can accessed children based web. This application build with construct programming and desain with inkscape tools for children learning math interactive and solve problem in telling story with simple math calculation. Evaluation score use Analytical Heuristic Processing to build and count score user from all level there can solved.

METHODS

This application build based by waterfall methodology there start with observation, desain application and desain picture, application programming and test the application.

Observation

In this research, observation by collecting some question that can children understand, and collect some reference from previous articles.

Desaign

Desaign in this application divide in three subject, that is desain in UML use DIA application and desain diagram sistem, desain subject use Inkscape application, and desain evaluation score use AHP.

Desaign in UML and Diagram

User can activate the application math education game in this research, and then click button start to start the game, there will be view map some level in this application as seven level. This step actually represented in Figure 1.

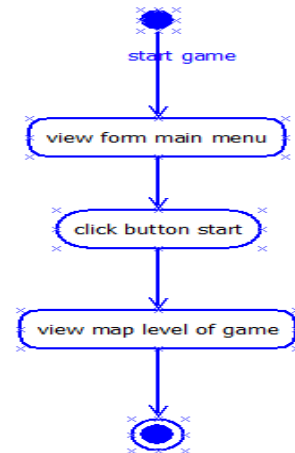


Figure 1. Start application game

After view map application then next step user can play the game from level 1 to level 7, and the last user know their score when click button evaluation score. Figure 2, desaigh UML for user in selecting level game.

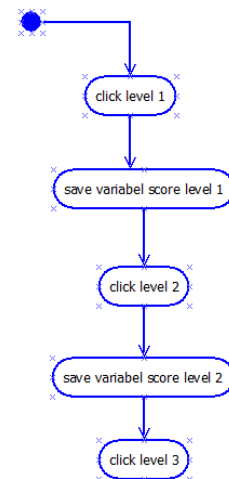


Figure 2. User select 1_2 level game

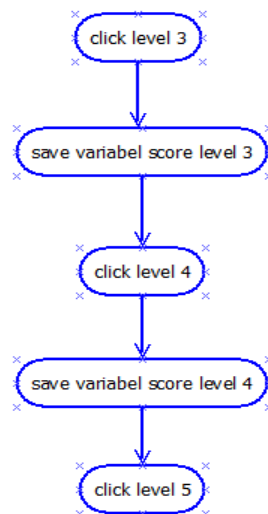


Figure 3. User select 3_4 level game

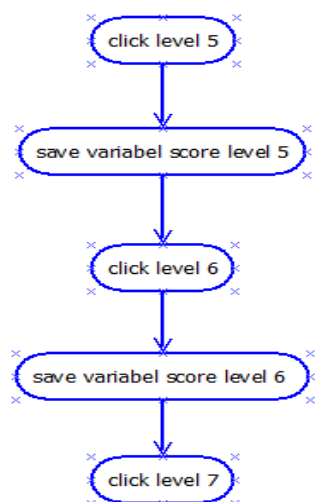


Figure 4. User select 5_6 level game

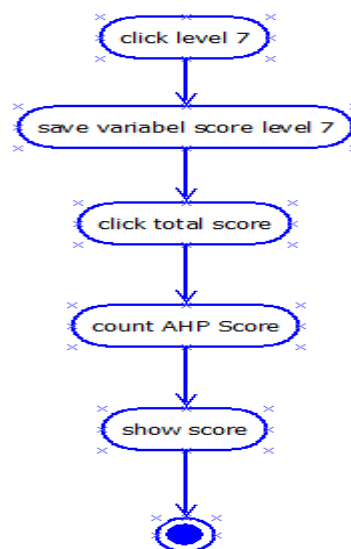


Figure 5. User select 7 and total score

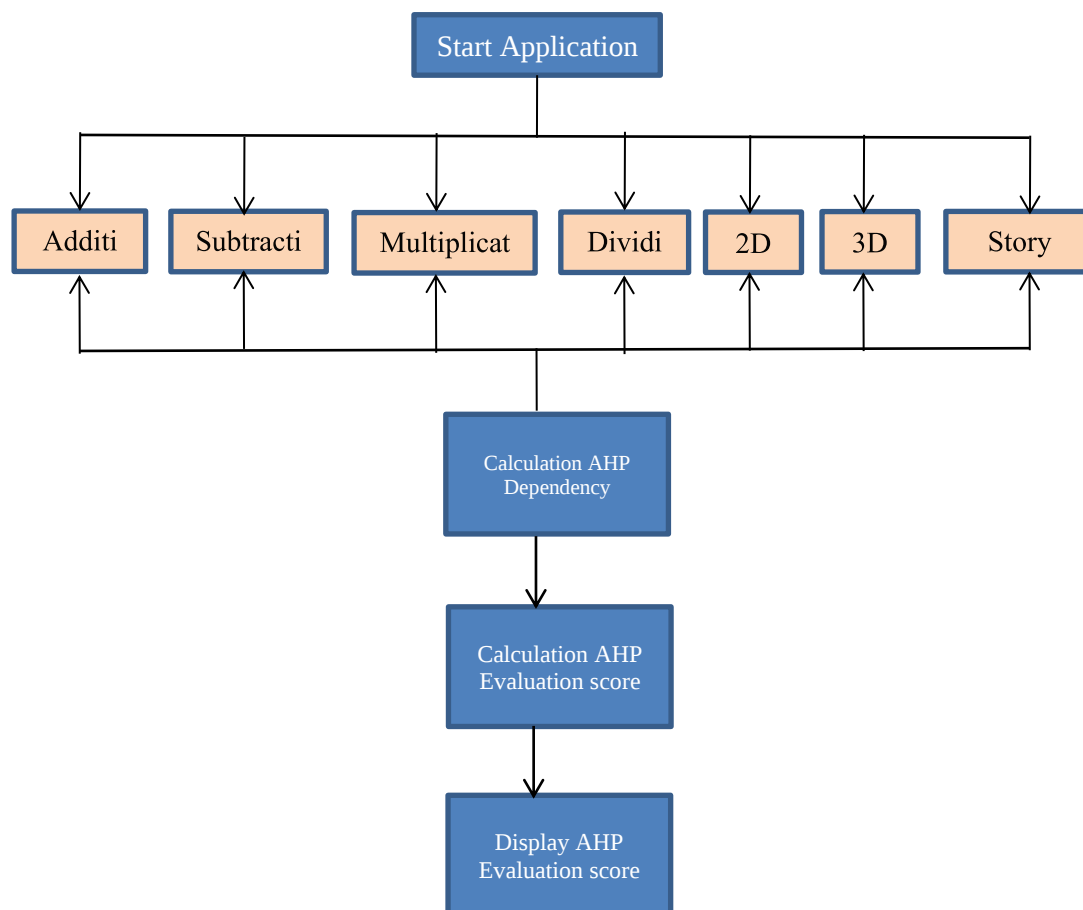


Figure 6. Diagram Sistem Game Education

Desain subject

Table 1, show desain subject in this

application for desain sprite by color wheel
(Chang, Bo.,2018),(Schloss, K.B., 2011),(Vijaya,
G.,K.,2020).

Table 1. Desain Element Few Subject Use InkScape Math Game Education

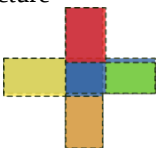
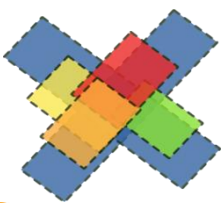
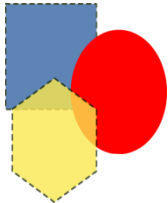
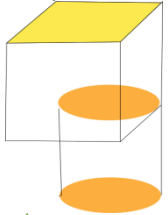
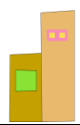
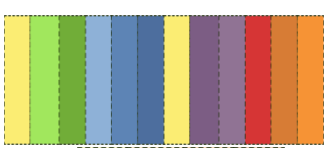
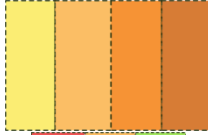
Desain Sprite	
Picture	Description
	Addition Symbol
	Minus Symbol
	Multiplication Symbol
	Dividing Symbol
	2D Shape Symbol
	3D Shape Symbol
	Background Map
	

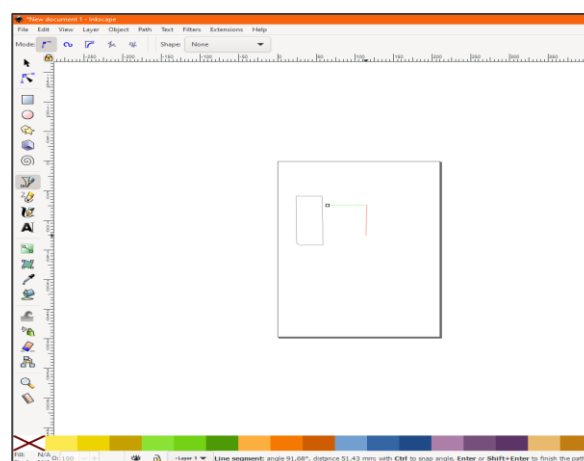
Table 2 . Combination Colour

Example Combination Based Color Whell	Combination
	Primary Colour
	Secondary Colour
	Tertiary Colour
	Monochromatic Colour
	Analogous Colour
	Complementary colour
	Split Complementary
	Triadic

For desain sprite in Inscape tools, use combination colour based on Table 2, and desain sprite as Figure 6.

Desaign Combination Colour

Combination colour which have good combination colour use rules combination colour (amadine.com) that good combination Human Interactive Communication based research before. Table 2 show combination rules based on reference.

**Figure 7.** Desain sprite in Inkscape

Desain Evaluation Score with AHP

Analythical Heuristic Processing (Hakim, S.N.,2021) in this application based on level game math education and priority define by admin. Analythical Heuristic Processing (AHP) is one of evaluation way in decision use few variable in system that analyze, in this research use variable score user get and time user need each level.

Table 3. AHP Variables

Variables	Level
Score User	1
Time User	
Score User	2
Time User	
Score User	3
Time User	
Score User	4
Time User	
Score User	5
Time User	
Score User	6
Time User	
Score User	7
Time User	
Level Finished	All Level Finished From User

Table 4. AHP Priority

Variables	Rangking
Level Finished	1 (Most Important Criterion)
Time User Level 7	2 (second Important Criterion)
Score User Level 7	3 (third Important Criterion)
Time User Level 6	4 (fourth Important Criterion)
Score User Level 6	5 (fifth Important Criterion)
Time User Level 5	6 (sixth Important Criterion)
Score User Level 5	7 (seventh Important Criterion)
Time User Level 4	8 (eighth Important Criterion)
Score User Level 4	9 (ninth Important Criterion)
Time User Level 3	10 (tenth Important Criterion)
Score User Level 3	11 (eleventh Important Criterion)
Time User Level 2	12 (twelfth Important Criterion)
Score User Level 2	13 (thirteenth Important Criterion)
Time User Level 1	14 (fourteenth Important Criterion)
Score User Level 1	15 (fifteenth Important Criterion)

Output from AHP evaluation in this application are weight from each variables which

calculated before with AHP methodologies as table 5.

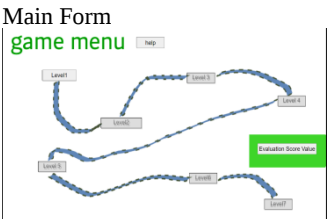
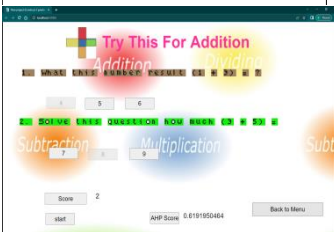
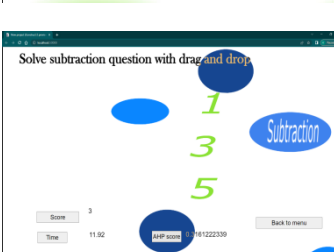
Table 5. Weight AHP Priority

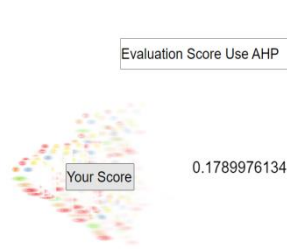
Variables	Weight
Score User Level 1	0,0135523
Time User Level 1	0,011488908
Score User Level 2	0,020198982
Time User Level 2	0,022663179
Score User Level 3	0,02817064
Time User Level 3	0,029691538
Score User Level 4	0,042516378
Time User Level 4	0,044040436
Score User Level 5	0,063673642
Time User Level 5	0,070238396
Score User Level 6	0,085491195
Time User Level 6	0,100446103
Score User Level 7	0,13330421
Time User Level 7	0,143738495
Level Finished	0,190785598
Total Weight	1

RESULTS AND DISCUSSION

For the result and discussion show in table 6.

Table 6. Few Result Form Application

Form	Result
	true
	Level Map, true
	Addition Form, true
	Subtraction Form, true



Evaluation
Form, true

CONCLUSION

For conclusion the result from all form in this research application already tested for all form and well done, for result AHP as weight in table 5 in program already tested and the result as true.

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