Decision Support for Determining Children Interest and Languages Ability Using Forward-Chaining Method

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A B S T R A C T

Early age in kindergarten is an effective age to develop various potentials and personalities possessed by children. This development effort can be done in various ways including through determination of interest. to facilitate the teachers in the process of determining a variety of different interests in each child such as constructive play, sports, exploring and entertainment, a decision support system application is needed. The decision support system analysis of determining the child's interest is carried out using the Forward Chaining method. In this application, the method is then translated into software. The software used for the grouping of areas of interest is based on data from the characteristics of each child which is then included in the rules that are made so that there will be some conclusions about each of these children. The existence of this application can help teachers in determining various kinds of interests and language progress in children.

Keywords: areas of interest, language progress, decision support, systems, forward chaining.

1. Introduction

Early childhood, especially in kindergarten, is an effective age for developing various potentials and personalities possessed by children. This development effort can be done in various ways including through the determination of areas of interest in children.

To manage data on each of these interests, we need a method that can be used to explore the characteristics of various fields of interest. This method is known as a decision support system. With the help of software, a decision support system will conduct a data analysis process to find hidden patterns or rules within the scope of the data set of areas of interest. In this case study, this decision support system is carried out using the forward chaining method which is then translated into software.

This application was built in order to be able to provide recommendations for selected SMEs in accordance with the interests of talent in each student, the data in this application was taken from data processed from the questionnaire. After the data collection stage was completed, continued by analyzing the intelligence values of the 15 members UKM. At this stage of the analysis, we will look for the most prominent intelligence values of each UKM that are used to represent the characteristics of the UKM. At the data collection stage, the questionnaire contained 90 "Yes and No" questions for 9 intelligence categories. Every question with a value of "Yes" answered by the respondent will add one point according to the question category with a maximum of 10 points if you answer all "Yes". Searching the intelligence value of each UKM is done by calculating the Arithmetic Means value from the intelligence values obtained from the 15 respondents who represent their UKM. After the intelligence value is obtained by calculating the Arithmetic Means, the three highest multiple intelligence values are searched which will be the basis for determining the rules for [3]

2. Literature Review

2.1. Forward Chaining

Forward chaining method is a search method or forward tracking technique that starts with information that is developing rules to produce a conclusion or goal. (Russel S. Norvig P, 2003) [4]. Forward Chaining is very good if working with problems that begin with the recording of initial information and want to achieve a final solution, because the whole process will be done sequentially going forward. The following is a diagram of forward chaining in general to produce a goal.

2.2. Interest

Interest is a process that is constant to pay attention and focus on something that interests him with feelings of pleasure and satisfaction.

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Interest is a mental device consisting of a mixture of feelings, hopes, convictions, prejudices, fears or other tendencies that direct individuals to a certain thought. So, it can be concluded that interest is a development process in mixing all available abilities to direct individuals to an activity that is of interest [5].

Table 1. Interest table.

Code	Interest
M01	Playing Constructive
M02	Exploring
M03	Sport
M04	Sing / Dance

Table 2. Characteristics of habituation.

Code	Characteristics
P01	Pray before and after eating
P02	Sing a simple religious song
P03	Able to mention places of worship
P04	Able to say hello
P05	Always be friendly
P06	Carry out school rules
P07	Likes to share
P08	Helping each other friends
P09	Ability of tasks from the teacher
P10	Likes to help clean the environment
P11	Easy to get along

Table 3. Characteristics Cognitive

Code	Characteristics
K01	Being able to group objects in various ways that are known to children
K02	Able to show as many objects, plant animals that have shapes and colours
K03	Able to recognize smooth rough, light weight, short length etc.
K04	Able to pair objects according to their partners
K05	Able to numerate or mention sequence numbers
K06	Able to show 2 groups of objects that are the same, not the same, more and less
K07	Able to refer to geometric shapes
K08	Able to arrange puzzle pieces into whole shapes
K09	Able to fill containers with stones, sand etc.
K10	Able to mention additions and subtractions

Table 4. Characteristic physic and motoric.

Code	Characteristics
F01	Able to take care of himself with a little help
F02	Able to make various shapes with plasticine, playdog and clay
F03	Able to sew baste with shoelaces
F04	Able to cut freely
F05	Able to catch and throw silent balls in place
F06	Able to walk forward on the track on the catwalk board
F07	Able to jump with a height of 20-30 cm
F08	Able to climb and hang
F09	Able to take care of himself with a little help
F10	Able to make various shapes with wax, playdough and clay
F11	Able to sew baste with shoelaces

Table 5. Characteristics Art

Code	Characteristics
S01	Able to draw with media (pencils, crayons, etc.)
S02	Able to draw freely from the shapes of circles and squares
S03	Able to draw simple people completely
S04	Able to play with various musical instruments
S05	Able to colours simple drawing shapes
S06	Able to create shapes from sticks
S07	Capable of plaiting from paper
S08	Able to play colours with a variety of media
S09	Able to paint with fingers
S10	Able to sing 15 children's songs
S11	Able to recite poetry from various songs
S12	Able to make sounds from various tools

Table 6. Rule.

Rule	Code P	Code K	Code F	Code A	Interest
1	P01, P02, P08, P10, P11	K03, K04, K06, K07, K08, K09	F01, F02, F04, F08	S01, S02, S03, S05, S07, S06	M01
2	P01, P03, P04, P05, P08, P10, P11	K01, K02, K06	F01, F02, F06, F07, F08, F09, F10, F11 F12	S04, S12	M02
3	P01, P05, P04, P08, P11, P09	K09, K03, K04, K08	F05, F06, F07, F09, F10	S09, S04, S12	M03
4	P02, P04, P07, P11, P06	K05, K07, K10	F04, F10, F09	S04, S10, S11, S12	M04

3. Methods
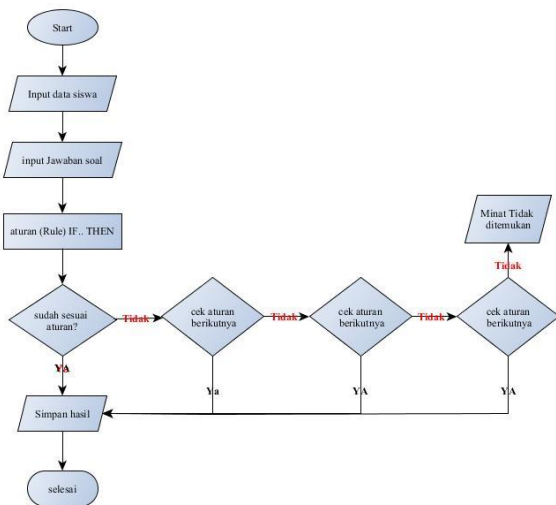
This research methods flown like Figure 1

Figure 1. Research flown

4. Result

The implementation of this research was implemented in several PAUD in the ranks of the Religion Department in Bangkalan. The appearance of the application of determining interest and language progress in children is using main page, interest and determination page. On main page serves as the first interface for application / teacher program users. Main page layout shown on Figure 2. On Interest test page the teacher will answer questions about the criteria of interest, after finishing answering the question a bottom will appear to save the results, while the button exit to cancel the process and return to the main menu. Interest page shown on Figure 3. On determination interest page there are a number of buttons including: save button to overwrite new data, edit button to edit data, search button to find data, refresh button to clear columns and delete button to delete data. Figure 4 shown result page.
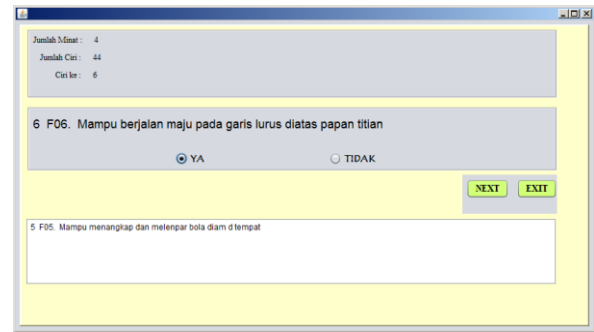

Figure 2. Print Screen Main page

Figure3. Print Screen Test page for determining interest
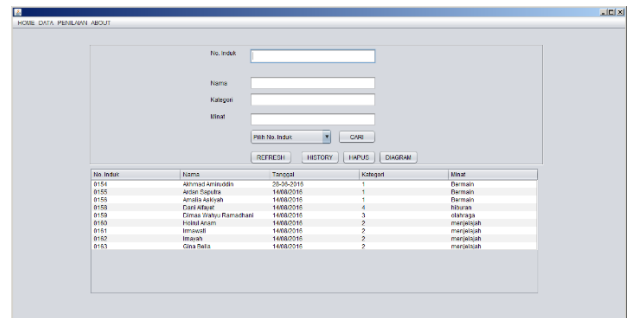

Figure3. Print Screen Results page of interest

5. Conclution

Based on the analysis of the system that has been produced, the following conclusions can be drawn:

- This application manages the value of the test results entered by the teacher using forward chaining.
- The output generated by this application is in the form of students and their interests determined based on the rules that have been determined.
- The rules in this application are based on case studies or the experiences of decision makers of the relevant case studies, in making decision support systems.
- In this expert system application determination of interest, the data contained in the application program can be changed or added if there is new data.

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