

The Helping Tool For Identification Of Mentally Retarded Children By Web-Based

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Abstract—Sometimes parents or people who close to mentally retarded children is difficult to understand the personality of Children with Special Needs (CSN), so it less appropriate to provide education and care of the child. One of the CSN who less visible weakness is mentally retarded. Actually, mentally retarded child can still optimize their potential if they study at the school, both in the Special School or Regular Schools, and give treatment according to the good handling. The identification of mentally retarded children especially during the early school entry are needed to support decision making in terms of providing the best education and care for the child. Web-based expert system built with PHP and other software tools that support identification results faster than manual identification. Sources of test data derived from CPM (Coloured Progressive Matrices) and various characteristics of mentally retarded children daily. The output of the tool is expected to be used to determine the level of intelligence in the form of a score of IQ (Intelligence Quotient) and classifications of mentally retarded children rapidly and accurately. Furthermore, these outputs could develop into consideration to make recommendations on proper education and care for mentally retarded children at school, home, or at care house.

Keywords : *Characteristics, Classification, CSN, IQ Scores, Mentally Retarded, PHP*

I. INTRODUCTION

Education is the most fundamental rights of every human being. The Base Act of 1945 chapter 31 Paragraph 1 said that every citizen has equal opportunity to obtain education. So, Children with Special Needs (CSN) such as blind, deaf, mentally retarded, quadriplegic, and children that difficult to learn also have the same opportunity to get an education. CSN in Indonesia usually educated formally

in Special School (Sekolah Luar Biasa/SLB in Indonesia term), for example mentally retarded children, but not all of them is less clever than normal

children in same age with them. Gratitude that now there is inclusive approach in education to transform the education system through the removal of obstacles that may hinder any student to participate fully in education. Inclusive education is a service for the Children with Special Need who are educated together with other children (normal children) to optimize its potential (Istiningsih, 2005, p. 12).

One of the CSN who could follow the educational inclusion and sometimes their physically characteristics irrecognizable is a mentally retarded or mental disabilities child. Actually, through the five senses, sometimes CSN experts or psychologist was able to recognize the potential and weaknesses of mentally retarded children. However, information era at the moment, the utilization of information technology can also support the proof of their recognition, especially needed for people with no knowledge of mentally retarded child. IQ test (Intelligence Quotient) can also be done manually by a psychologist to know the level of their intelligence, but it usually takes 3 to 6 days to find out the results of IQ scores and its recommendations. Typically, some SLB-C attempt to detect children who want enter SLB use data of mentally retarded characteristics without the psychologists help.

Based on that fact, so aid tool for the identification of mentally retarded children use this computer, among others made to meet the SLB-C need and the ability of psychologists, so it can recognize and assist in providing the best treatment and educational recommendations, then handling these children more quickly. Generally, mentally retarded children detected after entering school, it is necessary to give early detection so that there are no missteps in handling the child. One way of it is by IQ tests (Intelligence Quotient), because IQ test result can be used as an indicator of one's mental abilities. In addition, the conclusions of the signs through mentally retarded child characteristics could also be material to classify (categorize) the level of mentally retarded child. Through the output of this tool, mentally retarded

children that are considered able to follow inclusive education, can be directed to a regular school. Mentally retarded children who are recommended to the SLB, they should get a clear direction about the type of special schools which will be targeted so that minimize the error classification and distribution to the proper education and care based on their abilities and weaknesses.

II. REFERENCES REVIEW AND THEORY PLATFORM

A. References Review

Several previous studies include:

Yuwono research (2004), apply an expert system to diagnose diseases of chickens and its treatment. Research used Turbo Prolog, with data based on the needs of the tools for farmers or extension workers in diagnose poultry diseases that caused by viruses. The result of this study was the conclusion about chicken diseases and its treatments.

Riskadewi and Hendrik research (2005), used a forward chaining expert system with a Prolog method to monitor flight status based on rules that have been made. The purpose of this study is to assist pilots in making decisions quickly. The result of this study was the display of flight status and type of damage when the aircraft on the ground, taking off, flying, and landing.

Agustiningih research (2004), to test the validity and reliability of CPM intelligence tests on children with hearing impairment in Ares (SLB in Surabaya, Mojokerto, and Jombang). The result of this study was form a conclusion about the validity and reliability of CPM tests with series questions A, AB, and B that are compared with verbal IQ tests.

At the moment, via this study will make identification tool of mentally retarded children (one group of CSN) from 5,5 to 11 years use computer with facility of CPM IQ test and characteristics data of mentally retarded children to support the accuracy of identification results rapidly and can be more interactive because there are facility to consult. Output that is expected among other IQ scores, mentally retarded class, another name for this class, class definitions, and recommendations of the proper education and care for mentally retarded.

B. Expert System

Expert systems are computer-based application that is used to resolve the issue as though it is by the experts. The expert is a person who has special expertise that can solve problems because it usually can not be solved by a layman. For example a psychologist who can understand one's personality. Expert system is

considered successful if it is able to take decisions such as those done by real experts, both in terms of decision-making process and the outcome obtained (Kusrini, 2008, p. 3). In essence, the output of the expert system is approach output that is given by the experts directly, so, close to the ability of experts in making a decision or recommendation.

In Figure 1 illustrates the components that must be possessed by an expert system, namely:

- User interface: communication between systems and users.
- Knowledge base: knowledge collections in specific areas with expert levels in specific format too.
- Inference engine: a brain to seek the solution of a problem.

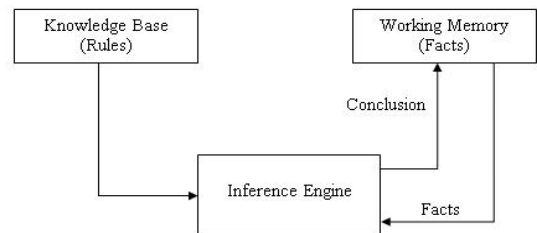


FIGURE 1. MODEL OF RULE-BASED EXPERT SYSTEM (SOURCE : FAIRUZ, 1994, P. 8)

Concept that is commonly used to the inference engine is trace backward (backward chaining), which is a process of reasoning that starts from the goals we want, browse through the facts that support to achieve goals. Moreover, it can also use the trace forward (forward chaining), which is a process of reasoning that starts from a condition have been known to the desired destination.

Working memory: the part of expert systems that save facts from consultation process. The database is organizing the data with the help of computers that allows data to be accessed easily and quickly. Access means the acquisition and manipulation of data such as add and delete data (Kadir, 2006, p. 2).

C. Mentally Retarded Child as CSN for Knowledge Base

CSN classification (grouping) according to the SLB type and CSN disorders (Amiruddin, p. 1; Defli, 2009, p. 1; Tim MOEC, 1977/1978, p. 18) are blind, deaf, mentally retarded, dumb, quadriplegic, autism, etc. Children was classified as an CSN or abnormal if the child was not included in the category as normal children (IQ grade between 90 to 110). Level of intelligence of children based on the comparison of IQ (Intelligence Quotient) are:

1. Intelligent Goup, IQ 110-130 is intelligent and IQ > 130 is very intelligent.
2. Normal Group IQ 90-110
3. Class of slow learners IQ 70-90
4. Mentally retarded group:
 - a. Slow learner IQ 70-90
 - b. Capable learners (*debil / moron*) IQ 50-70
 - c. Able to train (*embisil*) IQ 25-50
 - d. Need to be hospitalized (*idiot*) IQ 0-25.

Mentally retarded child is CSN who have abnormal intelligent (Depdikbud Team, 1977/1978, p. 46-58). Mentally retarded child is a child who has a mental condition and growth severely retarded when compared with normal children like as their age or intelligence below the average. Their classification (group) and characteristics are:

 - i. *Slow leaner*
Slow learner child is a child who has the intelligence between normal and retarded, it is located on the borderline, IQ between 70 to 90. The characteristics of slow learners, among others their condition and physical growth is the same, similar, or better than normal children.
 - ii. *Capable leaners (debil/moron)*
Debil characteristics include low IQ between 50-70, but they still can be educated with special programs and methods, his physical condition is not much different from normal children, but the development of intelligence seems slow, not agile movement, difficult to speech, difficult to adjust to environment, and others.
 - iii. *Able to train (embisil)*
Embisil characteristics include low-level intelligence, IQ between 25 and 50, unable to receive academic education, able to receive education in habits that is more focus on special education such as skills training, physical condition rather far different from normal children, and others.
 - iv. *Need to be hospitalized (idiot)*
The characteristics of idiots such as the intelligence level is too low, IQ less than 25, unable to receive education in academic and vocational education, can not understand something and hard trained in skills, mental development is very slow, and others.

D. CPM (Coloured Progressive Matrices) Test

CPM Test is one type of intelligence test that is used for ages 5,5 to 11 years. Its creator is JC Raven in 1938 as revised in 1960 and 1974. CPM test consists of three sets (A, AB, and B), there are 12 items in each of set.

E. Software Technology

Before computer programming is started, we should create an algorithm to help solve the problem. The algorithm is detail steps of the computer to solve a problem. The algorithm is not always expressed in human language, it can be expressed in terms of the pseudocode algorithm that uses various forms of notation to simplify the human sentence form. Sometimes the algorithm is presented in the form of a flow diagram (flowchart), which is a standard for describing the sequence of steps in a process.

Each of step in the algorithm is expressed by a symbol and the flow of each step (from one step to another) is expressed by arrow line. The basic structure of the algorithm is divided into three namely sequential, selection, and repetition (Kadir, Heriyanto, 2005, p. 10, 12, & 22).

Hardware that is sufficient to operate the tool of identification mentally retarded child is supported by software combination to form expert system, namely PHP as a programming language, MySQL to connect to the database, PHPMyAdmin for manage databases, Macromedia Dreamweaver as a text editor, Mozilla Firefox as a Web Browser, and Adobe Photoshop CS for image editing.

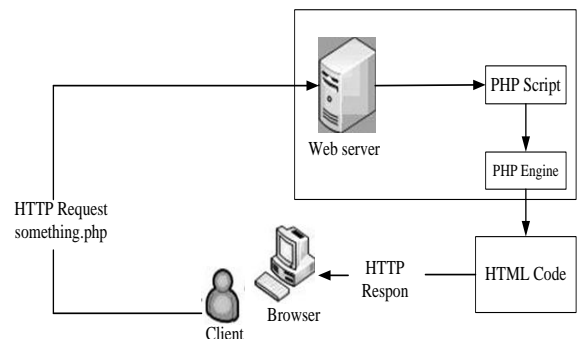


FIGURE 2. PHP SCHEMA
(SOURCE : KADIR, 2001, P. 6)

In Figure 2 notes that the PHP working model begins with the request of a web page by the browser. Based on URL (Uniform Resource Locator) or Internet address, the browser get the address from the web server, identify the desired page, and submit all information that is required by web server. Furthermore, web server will find the requested file and deliver its contents to the browser. When the requested PHP file has been reached by web server, then the contents immediately sent to the PHP engine and this engine that will process and deliver the results (in the form of HTML code) to the web server. Finally, the web server deliver to the client (Kadir, 2001, p. 4-5).

III. RESEARCH METODOLOGY

This chapter elaborate about detailed research ways, as follows:

A. Research Materials

The materials in this study are:

1. Books and journals

IQ test guidebook with CPM (Coloured Progressive Matrices) method, reference books about mentally retarded, and materials in the literature review and bibliography.

2. Mentally Retarded Children Characteristics

Mentally retarded child is entity whose data will be processed in a database application system. This entity will conduct business processes through the web that will be built by transmit characteristic data of mentally retarded children to a helping tool for identification.

B. Research Tools

Alat yang digunakan dalam penelitian ini adalah menggunakan komputer dengan spesifikasi cukup untuk menjalankan *software* aplikasi alat bantu identifikasi anak tunagrahita. Tools that is used in this research is computer with enough specification to run applications software of identification tools of mentally retarded child.

C. Research Time and Method

This research was conducted from March until May 2011 based on waterfall method. Steps in waterfall method are:

1) Defining Needs

Defining needs by collect classification data and characteristics of each sign in mentally retarded children, collect IQ tests material from SLB teacher and OBSESI psychologist.

2) Analyzing Needs

Analyzing needs include mapping and data analysis, then determine standards of criteria evaluation for identify the classification.

3) Design of Systems and Software

Design systems and software to determine the searching method, design application forms in the form of sub-systems functions division, Data Flow Diagrams (DFD), flowcharts, data structures, Entity Relationship Diagram (ERD), decision-making scheme, algorithms, user interfaces, setting up hardware, and installing the required software.

4) Coding

Coding is write programming code (script) use PHP and its supporters.

5) Testing and System Integration

Integrate system then test it. Test was conducted internally, directly to mentally retarded children, spread

the questionnaire, and compare with the results of manual tests by psychologists.

6) Implementation and Maintenance

Its implementation is make research reports according to performance and tool evaluation while preserving the stability of the system by maintenance and repair it if there are mistakes.

D. Research Flowchart

Identification process in this tool can be viewed as a flowchart in Figure 3.

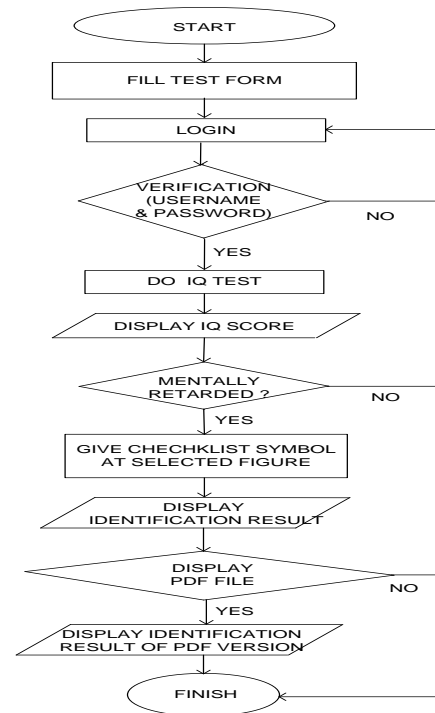


FIGURE 3. FLOWCHART OF IDENTIFICATION OF MENTALLY RETARDED CHILDREN FOR A TESTED USER (TESTEE)

Input data of mentally retarded child needs to be done in advance via the registration form. Figure 3 is a system run by ordinary and mentally retarded kids with parents or people close to the mentally retarded child. Overall process goes according to the waterfall method, ending with a conclusion about the classification of mentally retarded children with recommendations of handling, education, and proper care.

IV. RESEARCH RESULTS AND DISCUSSION

This tool provides an IQ test for children that will detect whether they include mentally retarded or not. When the results of IQ tests showed that the child does not include mentally retarded, so, he or she don't need to continue give a check in the checklist on

characteristics test page. However, when including mentally retarded according to the results of IQ tests, so, next he or she must do characteristics test.

Questions that is given on IQ tests include 36 questions randomly, testee will select one of the right image from six pictures by fill the hole in the left side of picture. The characteristics test include various characteristics of the child's everyday for selected (checked) in the characteristics that is suit or owned by the mentally retarded child. Based on the answers of IQ test and the mentally retarded child characteristics test, then the system will track final answer in form of mentally retarded class (slow learner, capable learner, able to practice, or need hospitalization). It also provides information about recommendation of handling, education place, and mentally retarded childcare places as an alternative solution for their development.

A. Evaluation of Research Results

Web page consists of two parts, there are front end and back end. Front End is used to convey general information (in menus such as home, profile, and reference), there were no interaction with users. But, there are two menus that can interact with users, here are identification menu as the main subject of this tool and consultation menu as supporters. Meanwhile, Back End is a page that is used by administrators and representatives of teachers and psychologists to manage data. Teacher and psychologist get access rights to manage consultation menu. Admin can manage all menus. They can login based on user access rights. General users can access general information without login.

B. Testing

In this research was conducted test on the access of front end and back end.

1) Tests on the Front End and Back End

Front end contains some general information in menu of home, profile, and reference. Example of this reference page can be seen in Figure 4 through <http://localhost/atg/index.php> in web browser Mozilla Firefox.

Figure 4 is display of SLB-C references. Reference page also displays information about nursing homes or mentally retarded nursing.



FIGURE 4. REFERENCE PAGE

More information about SLB-C and nursing can be viewed by click the photo in the rightmost column, so that it can connect to the web page of SLB-C or nursing (which already has a special website).

Front end that can interact with the user are menu of identification and consultation. In Figure 5 shows that the testee must register via the registration form at the beginning of the identification page.



FIGURE 5. START PAGE IDENTIFICATION

The algorithm that is used in this application form is a combination of selection algorithm and repetition algorithm, namely: insert name data, address, gender, date of test, date of birth of child who will be tested (testee), the desired username and password; Store data that had been filled; Calculate the age from the test date minus date of birth; If any registration data that have not been included, then there is a warning that there is data that has not been filled in or selected; If there is testee aged <5.5 years, then there is a warning

that her or his age is not met requirement to take the test. Meanwhile, if there is testee aged > 11 years, then there is a warning that the ages are not eligible to take the test. Based on these algorithms, it is known that there are age restrictions for the identification of this mentally retarded children, i.e. aged 5.5 to 11 years. Age is calculated from period that is correspond the test date minus date of birth. If age is less than or greater than this limit, it will display alert as warning that the ages are not allowed to pass through this identification process. Next, work on IQ tests as presented in the question example in Figure 6.

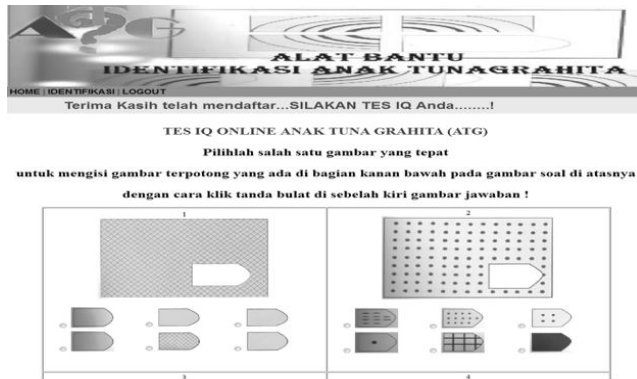


FIGURE 6. IQ TEST PAGE

Sequential algorithm to display the IQ test page are:

1. Insert all the IQ test answers to a number of 36 questions with each consisting of six possible answers.
2. Save and calculate the right answer weight then adjust the IQ score results based on weighting table of CPM test scores.
3. Displays the name data, age, and IQ scores.

Based on the algorithm above, the testee will enter data by select one of radio button in the left of the picture options. Answer choices will be saved to add up the weight of the overall answer so produce conclusions about IQ scores that will be displayed along with name data and testee age. If based on IQ test results were not included mentally retarded, it is not required to continue to the characteristics test of mentally retarded children. If included mentally retarded, then proceed with the characteristics test, such as the warning on the display of Figure 7.

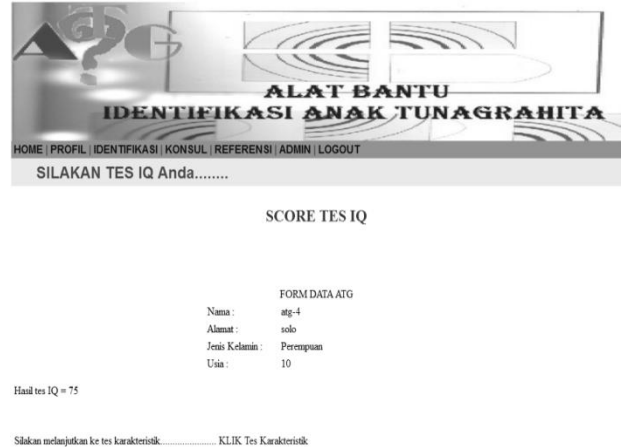


FIGURE 7. EXAMPLE OF TEST RESULT OF MENTALLY RETARDED IQ

In Figure 7, there are advice to atg-4 to continue to characteristics test, because his IQ score was 75 (one of those slow learners). Display of test characteristic as exemplified in Figure 8.



FIGURE 8. EXAMPLES OF THE CHARACTERISTICS OF THE TEST PAGE

Sample of identification results are shown in Figure 9. Results of identification as in Figure 4.6 should be ensured its validity, it is necessary to consult with experts, namely psychologists.

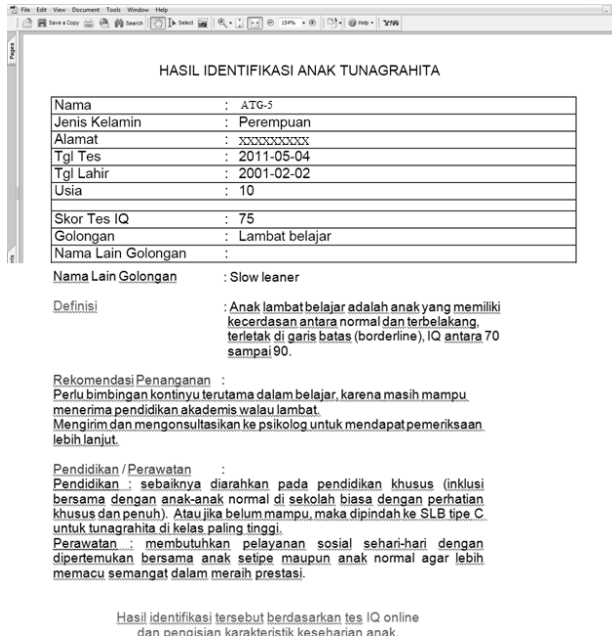


FIGURE 9. EXAMPLE OF IDENTIFICATION RESULTS (PDF FILE)

This tool comes with a interaction menu with the user in the form of consulting by psychologist and teacher. Users can choose to consult with teacher or psychologist according to their needed.

Back End application is user menus that provide access rights to general users and special users (admin, teacher, and psychologists are appointed). Admin reserves the right to manage the data on all the menus in the tool of this identification, while teachers and psychologists only can manage a special page of each consultation. Management page for data management by the administrator, teachers, and psychologists consists of facilities that is used to edit, delete, add, and store.

2) *Internal Testing and Analysis*

Tests carried out by evaluation systems internally, practice and answers demanded from the sample or the respondent through the questionnaire that is filled by the child that to be tested (testee), teachers, and psychologists. System evaluation internally can determine whether the system is able to work according to its function or not.

TABLE I EXAMPLES OF THE EVALUATION SYSTEM USE FUNCTIONAL METHOD

NO.	FUNCTION	STATUS
1.	Access home menu	Good
6.	Login test	Good

7.	Display all of Test Questions	Good
8.	IQ test questions scrambles	Good
	Etc	

One way to evaluate the system is use the functional method (black box) as in Table I, namely to check the function of each menu provided by the system (Pressman, 2002, p. 551; Pressman, 2005, p. 424).

3) *Directly Testing on Testee*

The second test was conducted use purposive sampling techniques, namely making techniques/determination of samples with a certain consideration, usually directed at a particular expert and the object of the leading experts in qualitative research (Sugiyono, 2007, p. 68). Specific experts in this study were experts in handling and assessing the mentally retarded child's personality (represented by SLB-C teachers and psychologists), whereas the object of the experts are children or mentally retarded students of SLB-C. Purposive sampling technique can use a determination of the number of samples based on Table II, namely the determination of the number of samples from a particular population that was developed by Isaac and Michael (Sugiyono, 2007, p. 70).

TABLE II EXCERPTS OF DETERMINING TABLE THAT CONSIST OF THE NUMBER OF SAMPLES FROM A GIVEN POPULATION (SOURCE: SUGIYONO, 2007, P. 71)

N	s		
	1%	5%	10%
10	10	10	10
15	15	14	14
20	19	19	19
25	24	23	23
...
950000	663	348	271
1000000	663	348	271
∞	664	349	272

Notes : N = total of population
s = number of samples at a certain error rate

Testing was conducted in SLB-C Setya Darma, Surakarta (Solo), Central Java. The overall number of SLB students that is aged 5.5 to 11 years (according to CPM test standards) are 8 students (4 kindergarten students, 4 elementary school students in grade 1 and 3), and their teachers are 3 (kindergarten teacher, first grade teacher, and elementary school teacher in third grade), more data in Appendix V. Sample plus a

representative sample from a psychologist. Thus, the total population are 12 people consist of 8 students (children group) and 3 teachers plus a psychologist (adult group). Based on Table II, with a population of 12 and 5% error rate, estimated the number of samples on the error rate is 11, then the samples taken in the study can be seen from Equation 1 and 2.

$$k = (p/N) \times s \quad (1)$$

$$P = \sum (k) \quad (2)$$

Notes : k = number of samples per group
 p = number of populations per group
 P = Number of samples entirely

Calculation of the sample according to Equation 1 and 2 are:

The number of sample groups of children = $8 / 12 \times 11 = 7.33$ rounded to 7 students.

The number of sample groups of adults = $4 / 12 \times 11 = 3.67$ rounded up to 4 people.

Thus, the number of samples in this study is $7 + 4 = 11$ people (consist of seven students and three teachers, and the next day plus a representative sample of psychologists). Tests that was conducted on a samples/respondents include practice testing and opinion charging or respondent answer through the questions in the questionnaire.

Based on questionnaire of adult group showed that 100% of the adult group states have not used the computerized identification tool, because usually it manually or written on paper. Assessment percentage of each question topic can be known from Equation 3.

$$Q = (J/R) \times 100\% \quad \dots\dots (3)$$

Descriptions:

Q = the percentage of the value of a similar answer per question

J = number of a similar answer per question topic

R = number of respondents

Assessment of identification tool according to the student opinion or children groups is shown in the graph in Figure 10.

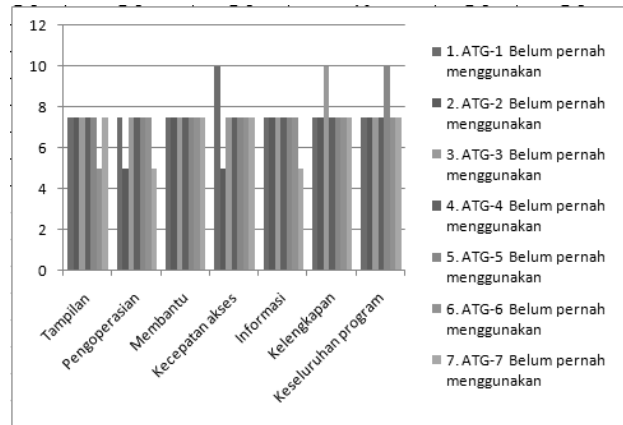


FIGURE 10. GRAPH OF THE QUESTIONNAIRE FILLING RESULT BY THE STUDENT/CHILD

Based on Figure 10 shows that the seven students/SLB-C children have not used the computerized identification tool, usually manual or written on paper. Filling in the questionnaire of 7 SLB-C students to get the percentage based on Equation 3 as follows:

- a. 85.7% said good appearance and 14.3% said less good.
- b. 71.4% 28.6% easy to operate and somewhat difficult to operate this equipment.
- c. 100% said this tool was helpful in identify mentally retarded children.
 - a. 71.4% answered very fast access; 14.3% stated that access was fast; and 14.3% stated that access to it rather quickly.
 - b. 85.7% stated that easy to get information, while 14.3% stated they were quite easy to get information from these tools.
 - c. 85.7% rate this tool very complete and 14.3% rate was a complete tool.
 - d. 14.3% of the total rate of these tools were very good and 85.7% in assessing the overall program was a good tool.

Furthermore, the results of the questionnaire answers from group of children and adult combined, as shown in Table III.

TABLE III COMBINATION OF TESTING RESULTS OF THE CHILDREN AND ADULTS GROUP

N O	CONSIDERED VARIABLE	ANSWERS			
		a	b	c	d
1	Display	Very good	Good	Less good	Not good
	Answering number :	1	9	1	0
2	Operation	Very easy	Easy	Less easy	Difficult
	Answering number :	0	8	3	0
3	Help identification	Helpful	Help	Lack of helping	Not helpful
	Answering number :	2	9	0	0
4	Access speed	Very fast	Fast	Somewhat fast	Not fast
	Answering number :	1	9	1	0
5	Get information	Very easy	Easy	Less easy	Difficult
	Answering number :	0	9	2	0
6	Completeness	Very complete	Complete	Enough complete	Incomplete
	Answering number :	1	9	1	0
7	Total program	Very good	Good	Less good	Not good
	Answering number :	1	10	0	0
TOTAL ANSWERING		6	63	8	0

Table III shows that the highest value for the whole program is "good". The results must be compared with direct test results by psychologist.

4). *Testing via Comparison with Manual Test Results*

Comparison between identification result use this tool with identification based on directly IQ test by psychologist can be known from its differentiations and similarities. Its differents are notes about intelligence level, guidance and the way to make decision about IQ score and their ability level, data source that influence sentence in definition or conclusion and recommendations, IQ score result from 6 students (shows 50% different, because 3 studentas have same score and 3 another students have different score), time to get identification result with identification tool more quickly than use manual test.

The identification similarities of mentally retarded child between use this tool and direct test by psychologist are :

- *Testee* Data is displayed in the end of identification.
- There are output : IQ score result, mentally retarded classification – group – definition – and its conclusion.
- The meaning of definition or conclusion is rather same.
- One of the way to know testee characteristics is interview with teacher.
- IQ score result and mentally retarded classification is rather same.
- The data source of IQ test is CPM method.

Strength of this tool are :

- Can help psychologist and SLB teacher to know children classification for consultation materials and their classification in class according to intelligence level or children capability.
- SLB teacher can give contribution about evaluation from mentally retarded characteristics and use identification result in recommendation form to suit handling according to children classification especially at study in school.
- Parents can give contribution about evaluation from mentally retarded characteristics, consultate and get knowledge about mentally retarded, so they can give attention to handle children especially in the home.
- Psychologist and SLB-C teacher who get special access right to manage consultation page by answer questions from someone who consultation.
- Mentally retarded children can study to use computer technology directly by answer IQ test questions from drag and drop of motoric activities..
- Data in this tool can be update without change *source code* program, so it is dynamically and ordinary user more easy to update it, not must do by human that know about computer programming.
- Identification from this tool can show output more quickly than manual identification result.

Weaknesses of this tool are :

- The main object of this tool is mentally retarded children, so maybe they are still difficult to operate computer or need help from the others such as teacher or their parent.

- Identification result from this tool must be consulted with psychologist who have right to make it legal/valid, because there is ethic code of psychologist as limitation to access it, especially in data limitation because there are some special cases that are unpublsh. The main data source of mentally retarded characteristics from SLB-C teacher, but just a little from psychologist. On the other hand, CPM test from psychologist is unpublsh except pscyologist permit to online publish.
- Data update at data management page was conducted one by one, can not update together more than one item.
- There are not store facility of identification result yet and searching menu from preview identification result, because it is limited by psychologist ethic code.

V. CONCLUSIONS AND SUGGESTIONS

A. Conclusions

Conclusions from this research about mentally retarded children are:

1. Knowledge base about identification of mentally retarded children can give identification result more quickly use expert system with *PHP* and *MySQL*, than use manual test.
2. This tool can track answers according to IQ test result with *CPM (Coloured Progressive Methode)* and daily characteristics option of mentally retarded children, so can get valid result.
3. Data in this tool can be update without change *source code* program, so it is dynamically.
4. This tool can help psychologist and SLB teacher to classify mentally retarded children according to their classification from IQ test result and dominant characteristics especially in the beginning of their school.
5. This tool provides facilities to parents or people who close to mentally retarded children to know their ability and give recommendation about suitable handling to them.
6. Mentally retarded children can study to use computer technology, especially in answer the IQ test.
7. Features that are provided in this tool are : CSN and mentally retarded children information, helping tool profile, and SLB-C and mentally retarded homecare references. Meanwhile, features that can make interaction with user are identification and consultation

menus. The end of feature is menu that can manage access right to users.

8. Identification result use web base helping tool and manual test by psychologist have different result, they are about intelligence level note, guidance and the way to make decision, data source that influence sentences in identification result, recommendation giving, 50% of IQ score different from about 86% of *testee* list who follow the both of identification types.

B. Suggestions

1. This tool should make mentally retarded children are free from help another people, so page display must be better in order to be easy to operate it, such as bigger figures, its color more clear, animatif, and interested.
2. Need to find more characteristics of mentally retarded children again in order to more approach valid result of identification, such as identification result of psychologist as expert.
3. This research can be improved by add store facility of identification and searching menu to find preview identification quickly.
4. This software need to be evaluated about its reliability and validity.
5. Database from this tool can be improved by various of test material that have current standard.

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