

## DECISION SUPPORT SYSTEM FOR EVALUATION OF JAVA LEARNING IN ELEMENTARY SCHOOL (SD) USING CUMMULATIVE VOTING METHOD

<sup>1</sup>Fajrul Islam, <sup>2</sup>Rani Purbaningtyas, <sup>3</sup>Syariful Alim, <sup>4</sup>Rifki Fahrial Zaenal

<sup>1</sup>Student Informatics Engineering, Faculty of Engineering, Bhayangkara University, Surabaya

<sup>2,3,4</sup>Lecture Informatics Engineering, Faculty of Engineering, Bhayangkara University, Surabaya

Jl. A Yani 114, Surabaya. Tel, 031-8285602

e-mail: Malespakenama07@gmail.com, raniubhara@gmail.com , alim@ubhara.ac.id, rifki@ubhara.ac.id

### ABSTRACT

*Javanese is a language used by Javanese ethnic groups in Central Java and East Java, learning Javanese should be done by Javanese people to carry on the language of ancestral heritage so that Javanese language will not disappear in the future. To support effective and flexible learning tools, learning evaluations are needed so that teachers know the extent of students' understanding of Javanese language, the purpose of this research is to make it easier for students to learn Javanese in the learning process and in order to make teachers evaluate. From these problems led to the idea to create a web-based application in which it can carry out an accurate assessment process using the Cumulative Votting method with a Likert Scale. The programming language uses PHP and the database uses MySQL. From the test results using a Likert Scale manual values tested at 3 places found the results, namely, Gresikan Village Elementary School students get an interval value of 67.5% with a "Good" Scale, Rautlatul Jannah Islamic Elementary School students get an interval value of 61.5% with a "Good" Scale, SDIT Nurul Fikri Students get an interval value of 61.5% with a "Good" Scale.*

**Keywords:** *DSS, Java Language, Web Applications, Cummulative Voting*

### 1. INTRODUCTION

Javanese is a language used by Javanese ethnic groups, learning Javanese should be done by the Javanese people to continue the language of ancestral heritage. Because the average Indonesian people currently use the Internet in everyday life, therefore making Web-based applications today is very important, one solution that utilizes the application of web-based learning technology in decision making is to use a Decision Support System (SPK). Thanks to the SPK, decision making on a problem can be done faster and more precisely. This Decision Support System is added to the Commulative Voting method by using a Likert Scale. Based on the background of the problems outlined above, the main problems faced are how to design and implement a Decision Support System for Javanese learning evaluation using the Commulative Voting Method.

### 2. METHODOLOGY

This research was divided into 5 stages, namely Systems Design Needs Analysis, Implementation, Integration and Testing, *Operation and Maintenance*.

#### 1. Needs Analysis

The needs analysis phase is done by analyzing the needs of users, namely elementary school students, to obtain learning material data by using the internet to find materials that can be used as a reference.

#### 2. System Design

The design of the system design uses Data Flow Diagrams and system Flowcharts.

#### 3. Implementation

This application was created using software tools such as the PHP programming language and database to store question data.

#### 4. Integration and Testing

The system testing process is black-bock. The type of testing used is *performance testing* and *error handling*. If the program can function properly and correctly then the program is declared feasible

### 3. SYSTEM DESIGN

Learning evaluation support system that will be made namely using 2 workmanship methods. First the points in the questions are entered using the Cumulative Voting method, then the results of the Understanding Scale will be processed with a Likert Scale to get the attitude scale from *user*. The following figure 3.1 is the Flowchart image used for the program to be created.

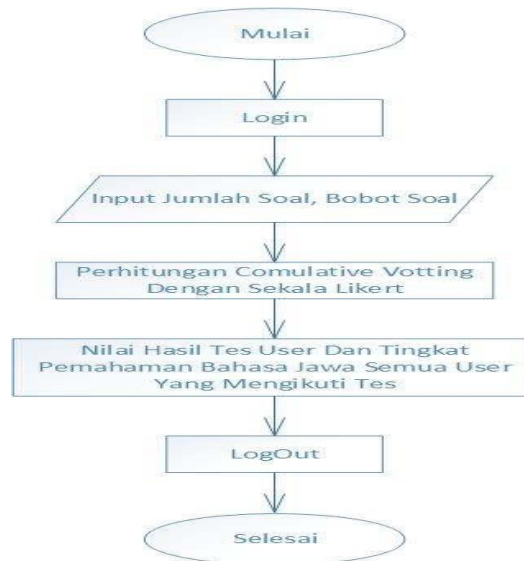


Figure 3.1 System Flowchart

### 4. SYSTEM IMPLEMENTATION

Cumulative Voting (CV) is one of the oldest and easiest methods to use to prioritize requirements. Customers or groups of customers are provided with 100 units (points, money or other imaginary units) to distribute among requirements. The more points given to a particular requirement, the higher the priority of the requirement. Ranking steps with Cumulative Voting method:

- a) Including all specifications in every need question
- b) Divides all points between the specification of the problem
- c) Sum up point results based on total answers. So in essence Cumulative Voting (CV) is one method

The oldest and easiest to use to prioritize requirements. Customers or groups of customers are provided with 100 units (points, money or other imaginary units) to distribute among requirements. The more points given to a particular requirement, the higher the priority of the requirement. It's easy to distribute 100 points when you have several requirements. But, as more and more requirements, CV begins to lose its authenticity. For example there is a case study of a company having 50 requirements, and then the customer cannot give more than 2 points for each requirement (if he wants to give explicit points for all requirements). In terms of this, it's hard to estimate the relative importance between requirements. To overcome this problem, is to increase the number of points to be distributed from 100 points to 1000 points (or even more depending on the number of requirements).

Another problem with CVs is that if you have more than one group of requirements, there might be a possibility that stakeholders think and put more points on the requirements they want to implement. To overcome this situation, you can put a limit on the distribution of points for each requirement, for example the customer cannot distribute more than 25% points with a certain requirement.

### 5. TESTING AND RESULT

Requirements for example customer not can distributing According to the article "Understanding the Likert Scale and Examples of How to Calculate the Questionnaire" from Diedit.com, the Likert Scale is a scale used to measure perceptions, attitudes or opinions of a person or group regarding an event or social phenomenon, based on operational definitions set by researchers. This scale is a psychometric scale that is usually applied in questionnaires

and is most often used for research in the form of surveys, including in descriptive survey research. The initiator and creator of the Likert scale is a Likert Rensis from America The scale itself is one of the meanings, just to make it easier, are tiered measures. Scale assessment, for example, is a scale for evaluating something that has tiered choices, for example 1, 2, 3, 4, 5. Likert scale is also a tool to measure (collect data by "measuring-weighing") the "items" (items of questions) contains (contains) tiered choices. Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena. With a Likert Scale, the variables to be measured are translated into indicator variables. Then the indicator is used as a starting point for compiling instrument items which can be questions or statements. The answer to each instrument item using a Likert Scale has gradations from very positive to very negative. The union that publishes a report explaining its use. Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena. With a Likert Scale, the variables to be measured are translated into indicator variables. Meanwhile, to find out the analysis through percentages, that is to use the following formula:  $p = \frac{f}{N} \times 100\%$  Remarks P = Percentage F = Frequency N = Number of Ideal Scores 100 = Fixed Numbers

**6. RESULTS AND DISCUSSION**

Testing was performed on elementary school children Gresikan village, queuing. Data for exam registration input is explained in the following table 1

**Table 6.1 Data table User**

No.	Nama	Kelas	Jenis Kelamin
1.	Muhammad Dewa Bagus Dermawan	3	Laki-laki
2.	Raka Bagus	3	Laki-laki
3.	Nadhif Robahizudin	3	Laki-laki
4.	Maulana Havidz	3	Laki-laki
5.	Naufal Ramadhani farizki	3	Laki-laki
6.	Jafier Adika	3	Laki-laki
7.	Achmad	3	Laki-laki
8.	Muhammad Raharjo Muhammad uqba nafi al fiqri	3	Laki-laki
9.	Muzakki Santang wahyudi	3	Laki-laki
10.	Mutiara Nurhidayah	3	Perempuan

The complete test plan can be seen in the following table 6.2:

**Table 6.2 Scale Criteria Table**

No.	Score	Scale
1	81-100%	Very good
2	61-80%	Good
3	41-60%	Good Enough
4	21-40%	Less Good
5	0-20%	Bad

The application will accumulate all user values and enter the interval values into a predetermined attitude scale. To get the interval value from the accumulated value of all users using the following formula:

Remarks 
$$p = \frac{f}{N} \times 100\%$$

P = Percentage, F = Frequency

N = Number of Ideal Scores, 100 = Fixed Number

Table 6.3 Value of User

No.	Nama	Nilai
1.	Muhhamad Dewa Bagus Dermawan	80
2.	Raka Bagus	55
3.	Nadhif Robahizudin	75
4.	Maulana Havidz	85
5.	Naufal Ramadhani Farizki	100
6.	Jafier Adika	70
7.	Achmad Muhammad Raharjo	45
8.	Muhammad Uqba Nafi Al Fiqri	20
9.	Muzakki Santang Wahyudi	60
10.	Mutiara Nurhidaya	85

After the values of all the users above appear, all values will be added to get the value of f and determine the value of n.

Table 6.4 Table of values f and n

No.	Nilai f	Nilai n
1.	615	1000

Note: F = Frequency N = Total Ideal Score

The number 1,000 from the value of n is obtained from the calculation of the ideal score, which is 100 (if the user answers all questions correctly) then multiplied by the number of all users, 10 people, then the result is obtained. Percentages like the following: Determine the Percent Index Formula:

$$P = f / n * 100$$

$$P = 675/1000 * 100$$

$$P = 67.5\%$$

The above results are the interval values obtained by 10 user who take the test, then the interval value is entered into a predetermined scale at the beginning as shown in Figure 6.5 below. The "Good" level of understanding Description of Likert Scale Intervals

Table 6.5 Value table User

No.	Score	Scale
1	81-100%	Very good
2	61-80%	Good
3	41-60%	Good Enough
4	21-40%	Less Good
5	0-20%	Bad

From the above table it can be seen that the percentage value obtained from the 10 users who have taken the test at the same time is 67.5%, in the Good Scale category.

## 7. CONCLUSION

After testing the evaluation decision support system

language learning Answer with the method Commulative Voting and implementing the system, the conclusions of this study are: From the results of the Likert Scale tested on the premises and users who different from the 3 tests obtained 2 results with the same interval value that is 61.5% and 1 result gets an interval of 67.5%, and the scale of understanding of the 3 tests are

in the "Good" category.

**a. From the results of manual testing and the system gets results**

the same, because the manual and system assessment process refers to the existing answer key.

**b. From the test results using error handling that is anticipating human error**, the program can overcome mistakes done *user* with bring up *error notification*.

## REFERENCES

- [1] Pujiyanto, Utomo and Eko Prasetyo. 2011. Clustering and Weighting to Improve the Cumulative Voting Method. **National Conference on Systems and Information 2011, Bali**.
- [2] Isa Budi Kahono, Dimas Sasongko. (2012). Media Making Interactive Javanese Language Learning About Javanese Script Material For Grade III Students in Sragen Tiga Elementary School. (Case study: Sragen Tiga Public Elementary School), **Speed Journal**, Vol. 4, No.2. Suhar janti. (2014). Analysis of Validity and Reliability with Likert Scale on the Development of SI / IT in Decision Making in the Implementation of Strategic Planing in the Garment Industry.Proceedings. 2014 National Seminar on Science & Technology Applications (SNAST).
- [3] Heri Retnawati. Comparison of the Accuracy of Using a Likert Scale And Multiple Choice for Measuring Self-Regulated Learning. **J urnal UNY**, Vol, 45, No.2. Asa Oryza Al Aziz Hakim, Bambang Eka Purnama, (2012).
- [4] Design and Implementation of Javanese Script Learning System for Multimedia-Based Elementary Schools in SDN Bumirejo 02. (Case study: SDN Bumirejo 02). **Speed Journal**, Vol. 4, No.2.
- [5].Weksi Budi Aji. (2013). Measurement Scale and Number of Responses Likert Scale. **Journal of Agriculture and Fisheries**, Vol.2, No.2

