

# Design and Implementation of RPP Generator With Text Mining Method

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**Abstract**— RPP (Rencana Pelaksanaan Pembelajaran) is a lesson plan created by the teacher before the teacher enters the classroom. Now, RPP is created based on education and culture ministerial regulation Number 103 and 104 in 2014. Many teachers is difficulties to create RPP, because RPP is different than latest version (now RPP must contain minimum six element). To solve that problem, now teachers can use RPP Generator to created a RPP. The aim of this software is simplify teacher to create RPP where based on education and culture ministerial regulation. This software is develop with 3 spes, (1)Planning, (2)Code Implementation and (3)Testing. In second steps, RPP Generator is use text mining method to analyze the word. Text mining is contains 6 steps, (1)Tokenizing, (2)Filtering, (3)Stemming, (4)Tagging and (5)Analyzing. The stemming process on that step is adapt of Nazief Adriani's stemming algorithm. The result of that steps is the software will give an advice to user how to choose an indicator's word, learning activity model and question's word. Software is already implemented on Indonesian Vocational Education School Teacher of Informatic Technology, like as Network Engineer, Software Engineer and Multimedia Engineer.

**Keywords**—RPP GENERATOR; Text Mining; Nazef Adriani's Stemming

## I. INTRODUCTION

RPP (Rencana Pelaksanaan Pembelajaran) is a lesson plan created by the teacher before the teacher enters the classroom. Now, RPP is created based on education and culture ministerial regulation Number 103 and 104 in 2014. In Kurikulum 2013, RPP is included by scientific approach where contains 6 activity like as Observing, Questioning, Associating, Experiencing and Networking[1]. The aim of that approach, student not only know about theory but know about implementation of that theory.

Changes of Indonesian Curriculum from KTSP (Kurikulum Tingkat Satuan Pendidikan) to Kurikulum 2013, make many teachers is rather confused with implementation of that curriculum concept. One of implementation concept is how to create a RPP like Kurikulum 2013 needed where

included scientific approach activity. One of problem to create RPP is in Indonesian Vocational Education School Teacher of Informatic Technology (IT) like as Network Engineer, Software Engineer and Multimedia Engineer. Teacher is rather confused how to included scientific approach in IT learning when do learning activity. Before include scientific activity, teacher must do analyze process in basic competency (KD), with the result of KD analyze teacher can know how the learning is do.

To solve the problem of teacher to analyze the KD, developer is create a application where have name RPP GENERATOR. The application is can analyze the KD use text mining method, an the result of analyze KD can use for create Indicator word (IPK), learning model and IPK can show question word.

## II. THEORY

### A. RPP (Rencana Pelaksanaan Pembelajaran)

RPP (*Rencana Pelaksanaan Pembelajaran*) is lesson planning face-to-face for one or several meetings that includes pedagogical principles in writing to be realized in the learning activities so that learners acquire effective learning experience in developing attitudes, knowledge, and skills in accordance with the learning objectives have been set[2]. Based education and culture ministerial regulation Number 103 in 2014, there are at least 6 parts that must be contained in the RPP[3], namely:

1. Identity of the school / madrasah, subject or theme, grade / semester, and time allocation.
2. Core Competence (KI), basic competence (KD), and indicators of achievement of competencies (IPK)
3. Learning materials.
4. The learning activities that include preliminary activities, core activities, and closing activities.
5. Assessment, learning remedial and enrichment.
6. The media, tools, materials, and learning resources

B. Text Mining

Text Mining is mining data in the form of text where the source data is usually obtained from the document, and the goal is to find words that can represent the contents of the document so it can analyze the connectivity between document[4]. text mining has 5 steps, show in figure 1 below:

Core step in the text mining is stemming step, in this step will seek the root word to be analyzed at a later step. On an application made, the process used is Bobby Nazief and Andriani stemming process (1996), wherein stemming algorithms were developed based on the morphology of Indonesian rule that classifies particle becomes prefix and suffix[5]. Figure 2 is show morphological rules words in Indonesian based on the Nazief Adriani's algorithm:

$$Prefiks\ 1 + Prefiks\ 2 + Kata\ dasar + Sufiks\ 3 + Sufiks\ 2 + Sufiks\ 1$$

Fig. 1. Morphological rules words in Indonesian based on the Nazief Adriani's algorithm

C. UML (Unified Manipulation Language)

Most people refer to the Unified Modeling Language as UML. The UML is an international industry standard graphical notation for describing software analysis and designs. When a standardized notation is used, there is little room for misinterpretation and ambiguity. Therefore, standardization provides for efficient communication (a.k.a. "a picture is worth a thousand words") and leads to fewer errors caused by misunderstanding[6].

The U in UML stands for unified because the UML is a unification and standardization of earlier modeling notations of Booch, Rumbaugh, Jacobson, Mellor, Shlaer, Coad, and Wirf-Brock, among others. The UML most closely reflects the combined work of Rumbaugh, Jacobson, and Booch – sometimes called the three amigos. The UML has been accepted as a standard by the Object Management Group 1 (OMG). The OMG is a non-profit organization with about 700 members that sets standards for distributed objectoriented Computing[6].

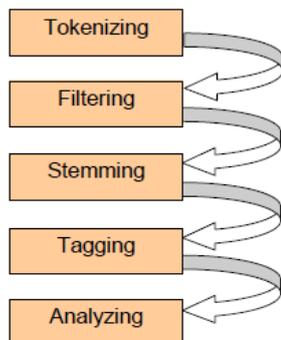


Fig. 2. Text Mining Algorithm[4]

III. METHODOLOGY

There are 3 step to develop RPP GENERATOR, Planning, Code Implementation and Testing.

A. Planning

In this phase, developer is create design of a Use Case Diagram, Class Diagram, Database Design.

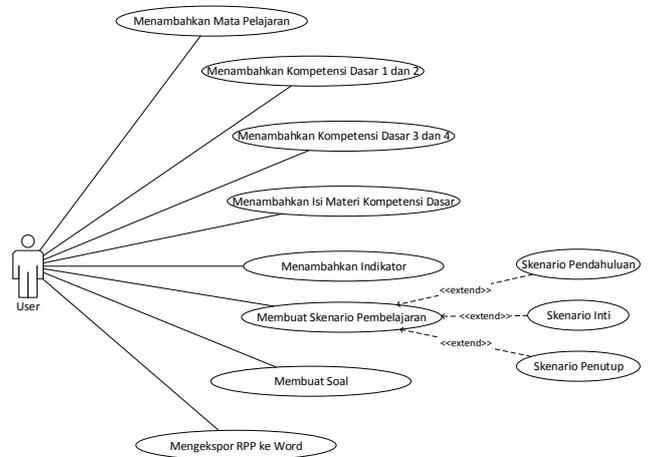


Fig. 3. Use Case Diagram of RPP GENERATOR

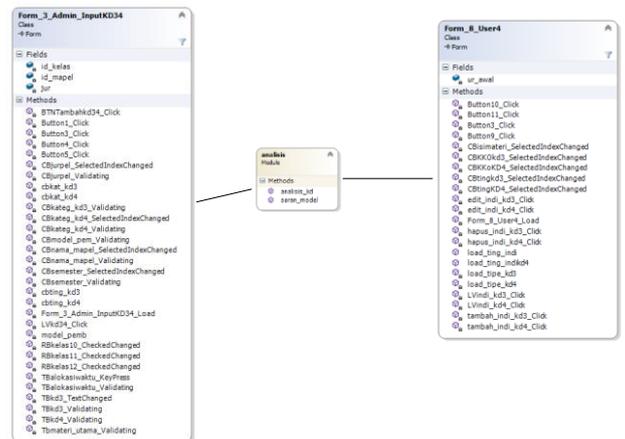


Fig. 4. Part of Class Diagram to KD analyze of RPP GENERATOR

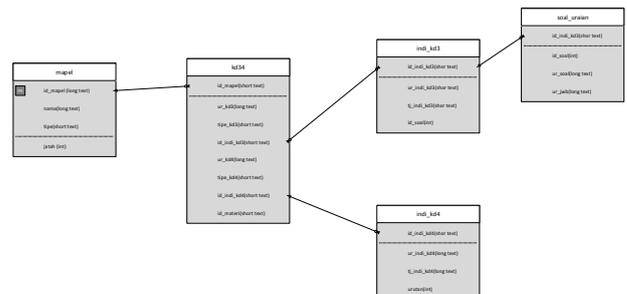


Fig. 5. Part of Database Design of RPP GENERATOR

B. Code Implementation

In this part, developer is create of the code base the design where already designed from first step with Object Oriented Programming concept. The aim of this concept is to easily maintenance the application. In this step also included text mining algorithm and Nazief Adriani’s stemming process. Stemming process is just use prefix “Me” and suffix “-kan” only, because to analyze KD can use that prefix and suffix. After that algorithm is implemented, RPP GENERATOR will be analyze KD. Text mining are show in table 1 below

C. Testing

In this part, developer is do the running test of application where is created from latest step. Not only that, the software is uploaded on Website of Department of Electrical Engineering (<http://www.elektro.um.ac.id>) and Department of Information Technology PPPPTK BOE-VEDC Malang (<http://www.rppgenerator.depti-vedc.com/>) and have been downloaded by Vocational Education teacher in Indonesia.

IV. RESULT

Base on methodology where are used by developer, the application is can analyze the KD. From result of analyze KD, application can give an advice of indicator word (IPK), learning model and question word. Figure 6 is show how RPP GENERATOR work.

Base on figure 6 , application is can give an advice of indicator word, learning model, question word. Not only that, application is can accomodate scientific approach on learning activity and use low memory (less than 50MB). Screenshot of that feature is show in figure 7 until figure 13

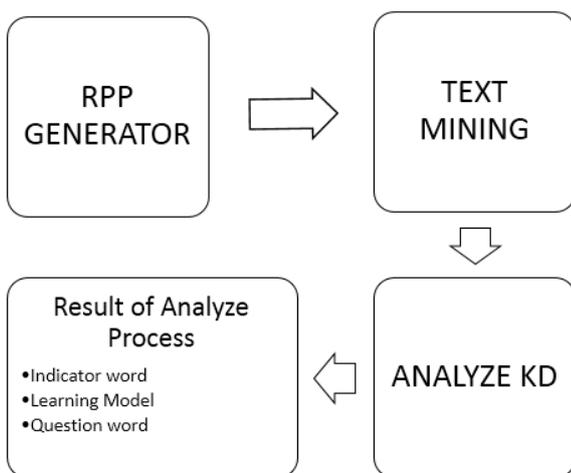


Fig. 6. How RPP GENERATOR Work

TABLE I. TEXT MINING PROCESS OF RPP GENERATOR

Step	Description
Tokenizing	<p>This step will split setences of KD to be a delimiter where store to array. Code to split a sentences to a delimiter is:  <code>Dim Kata() = TxtKata.Text.Split(",")</code></p> <p>In this application, this step isn't do, because in this application is use "contain" function to detect keyword in sentences. So, this step (Tokenizing) isn't do.</p>
Filtering	<p>This step is filter a word of taxonomist, cognitive is use Bloom, abstract skill is use Dyers and real skill is use Simpson taxonom. This step is use word list model, where that list will be loop in array. Code to load a indicator word from this step is:</p> <pre> Call koneksi() cmd = New OleDbCommand("select kko from " &amp; taksonom &amp; ", conn) rd = cmd.ExecuteReader arr_tingkatan.Clear() While rd.Read() arr_tingkatan.Add(rd(0)) End While                     </pre>
Stemming	<p>This is core of text mining algorithm. This step is use Nazief Adriani’s stemming process, but in this step just use prefix “Me” and suffix “-kan”, because in indonesian sentences of KD/IPK/etc are use active sentences. So, stemming process are use prefix “Me” and suffix “-kan”.</p>
Taggig	<p>This step is convert the word to present tense. This step isn't do, because word in this application is present.</p>
Analyzing	<p>This process will analyze the KD, so the application can show Indicator word. the Algorithn to analyze the KD is:</p> <ol style="list-style-type: none"> <li>1. Take String of KD</li> <li>2. Convert String of KD to lower case</li> <li>3. Loop operational word in array list</li> <li>4. Detect the keyword is have already binding to array list</li> <li>5. If keyword is found, search the grade of keyword. If not found, return choose manual of the grade.</li> </ol> <p>If that algorithn implemented to code, the code is</p> <pre> uraian = uraian.ToLower  For i = 0 To arr_tingkatan.Count - 1 If uraian.Contains(arr_tingkatan(i)) = True Then cmd = New OleDbCommand("select kat from " &amp; taksonom &amp; " where kko='" &amp; arr_tingkatan(i) &amp; "'", conn) rd = cmd.ExecuteReader rd.Read() tingkatan = rd(0) Else End If Next                     </pre> <p>After application can analyze the grade of KD, application is can show the indicator word use this code:</p> <pre> cb.Items.Clear() Call koneksi() cmd = New OleDbCommand("select kk from " &amp; taksonom &amp; " where kat='" &amp; ting &amp; "'", conn) rd = cmd.ExecuteReader While rd.Read() cb.Items.Add(rd(0)) End While                     </pre>



Fig. 7. Splash Screen of RPP GENERATOR



Fig. 8. Analyze of KD

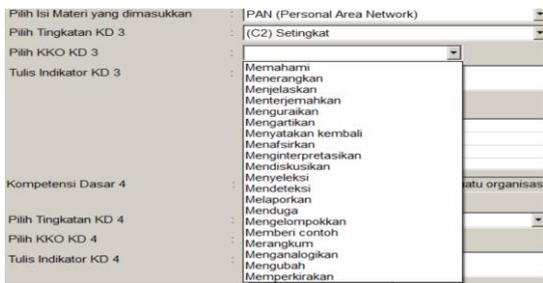


Fig. 9. Advice of Indicator Word

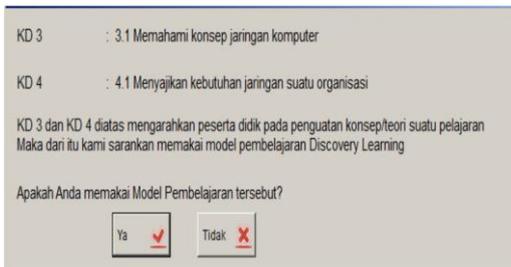


Fig. 10. Advice of Learning Model



Fig. 11. Scientific Approach in Application

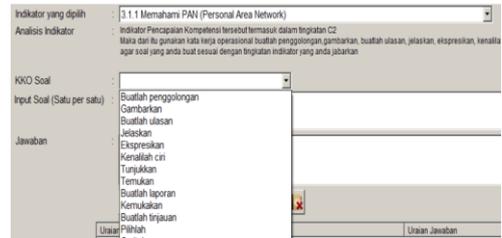


Fig. 12. Advice of Question Word

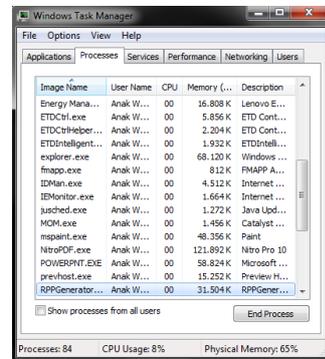


Fig. 13. Memory Usage of Application

V. CONCLUSION

This paper is show how RPP GENERATOR is develop by text mining method. Where that method is use for analyze the basic competency (KD) and the result of that analyze is to give an advice for indicator word, learning model and question model. To download the application, user can access the website of Departmen of Electrical Engineer Universitas Negeri Malang on <http://elektro.um.ac.id/> and and Department of Information Texchnology PPPPTK BOE-VEDC Malang on <http://www.rppgenerator.depti-vedc.com/>. Software have been downloaded by Vocational Education teacher in Indonesia.

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