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# Design Dashboard Monitoring Teacher Performance Assessment at Cinta Kasih Tzu Chi High School

Sri Dewi Sugiyanti<sup>1</sup>, Riya Widayanti<sup>2</sup>, M Bahrul Ulum<sup>3</sup>, Gerry Firmansyah<sup>4</sup>,  
Anik Hanifa Azizah<sup>5</sup>

Information Systems, Faculty of Computer Science, Esa Unggul University<sup>1,2,5</sup>

Informatics Engineering, Faculty of Computer Science, Esa Unggul University<sup>3</sup>

Master of Computer Science, Faculty of Computer Science, Esa Unggul University<sup>4</sup>

Jl. Arjuna Utara No.9, Duri Kepa, Kec. Kb. Jeruk, Kota Jakarta Barat, Daerah Khusus Ibukota  
Jakarta 11510<sup>1,2,3,4,5</sup>

Indonesia

e-mail: [sridewi0699@gmail.com](mailto:sridewi0699@gmail.com)<sup>1</sup>, [riya.widayanti@esaunggul.ac.id](mailto:riya.widayanti@esaunggul.ac.id)<sup>2</sup>,  
[m.bahrul\\_ulum@esaunggul.ac.id](mailto:m.bahrul_ulum@esaunggul.ac.id)<sup>3</sup>, [gerry@esaunggul.ac.id](mailto:gerry@esaunggul.ac.id)<sup>4</sup>, [anik.hanifa@esaunggul.ac.id](mailto:anik.hanifa@esaunggul.ac.id)<sup>5</sup>

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## Abstract

*Teachers are one of the main components in the world of education where they have a role in improving the quality of education. Where the quality of this education can be seen from the quality of teachers, but the quality of teachers is not only determined by the way of teaching and learning in the classroom, therefore it is necessary to conduct an assessment of teacher performance to measure the duties and responsibilities and obligations of each teacher. So to make it easier to analyze data and see the quality of teachers, a dashboard is designed to monitor teacher performance assessments that have been set by Cinta Kasih Tzu Chi High School based on document studies and interviews with school principals. Dashboard is one solution to present data in the form of visualization which is considered to provide clarity of information to be conveyed. This dashboard design uses a user centric method to describe the end-user design process that influences how a design is formed by utilizing Google Data Studio which will present information based on key performance indicators in graphic form to make it more interactive and easy to understand.*

*Keywords: Dashboard, Key Performance Indicators, User Centric, Google Data Studio*

## 1. Introduction

Cinta Kasih Tzu Chi High School is one of the national private schools that has the authority to organize teaching and learning activities where interactions occur to form a school social unit[1]. In teaching and learning activities can not be separated from the role of a teacher. Teachers are one of the main components of education that play a role in improving the quality of education[2]. Of the many subsystems that contribute to the quality of educational processes and outputs, in terms of educational outcomes, the education staff or teacher subsystem has played the most essential role. Because to build a quality education, the most important thing is not to build a good school building or its facilities and infrastructure but how to improve the quality teaching and learning process. The quality of a teacher is not only determined based on how to teach in the classroom, but in the teaching process there are provisions or standard operating procedures that must be carried out by every teacher. Therefore, in an effort to



improve the quality of teachers, it is very necessary to continuously assess teacher performance where at the Cinta Kasih Tzu Chi Middle School the teacher performance assessment is carried out directly by the Principal[3]. The purpose of this research is to design a dashboard that can assist principals in monitoring teacher performance assessments. The dashboard design is carried out by presenting information based on Key Performance Indicators (KPI) determined by conducting document studies and interviews with the Principal. The dashboard prototype design method uses a user centric method that describes the design process where end-users influence how a design is formed. The dashboard design utilizes Google Data Studio tools. Google Data Studio is a new data visualization program designed as an easy-to-use tool to represent complex data sets in an attractive and clear way. Researchers focus on users because basically the dashboard design function is to make it easier for users to monitor and analyze the data they have[4].

Dashboard is an important tool to monitor the day-to-day state of an organization and as a single interface tool used to make decisions and have access to locking performance indicators (KPIs), the dashboard is like an executive local network, where all activities are displayed. Dashboard is a solution in presenting and visualizing data and an information system interface model that is analogous to the dashboard of a car that is easy to learn. Dashboards can communicate important information quickly. A good design for presentation and visualization of data will provide clarity on important information conveyed to users. With a good design, the dashboard created will be able to assist in identifying trends, patterns and anomalies in the data so that in the end it can help in making effective and efficient decisions[5].

UCD (User Centered Design) is a new paradigm in the development of web-based systems. User-centered design (UCD) is a term used to describe a design philosophy. The concept of UCD is that the user is at the center of the system development process, and the objectives/ properties, context and environment of the system are all based on the user experience. UCD is an interactive process in which the design and evaluation steps are taken from project initiation to implementation. UCD follows a set of methods and techniques well for the analysis and evaluation of hardware interfaces, software interfaces and web interfaces[6].

Key performance indicators (KPI) are an integral part of the Performance Management System implemented in an organization or company. By implementing a Performance Management System, the organization seeks to ensure that the direction of organizational development is in line with the organization's vision, mission and strategic plans. In addition, the organization must determine the right KPIs so that the achievement of organizational performance can be measured in accordance with the organizational goals contained in the organization's strategic plan[7].

Performance is a translation of performance which means the result of work or work performance. And in a simple sense, performance is the result of the work of the organization, which is carried out by employees as well as possible in accordance with the instructions (manual), the direction given by the leader (manager), the competence and ability of employees to develop their reasoning at work.

Prototype is a basic version of software that is used to demonstrate concepts, try design options, find problems in the design and apply solutions to these problems.

Google Data Studio is a new data visualization program designed as an easy-to-use tool to represent complex data sets in an attractive and clear way. In August 2016, Google made this program free to the public. Data Studio is still in beta; Third-party features and integrations reviewed here are subject to change, but are effective as of August 2017.

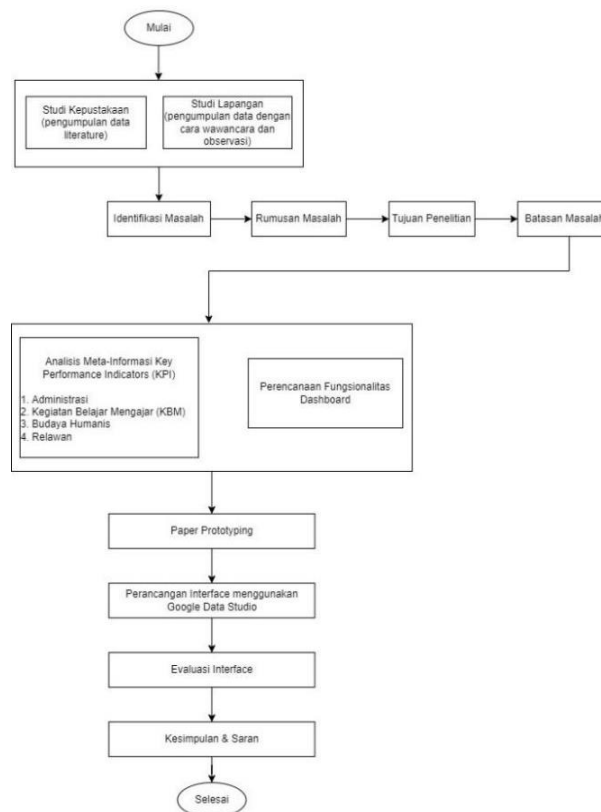
Data Studio's goal is to help users "create dynamic and visually appealing reports and dashboards" by channeling external data sources into an easy-to-navigate platform, facilitating the creation and sharing of data-driven reports. Data Studio has an impressive performance in producing attractive and understandable data visualizations.

One of the tool's most impressive features is allowing viewers to interact with findings in real time by allowing them to customize the date range of the displayed data; filter reports to specific variables such as gender, income, or country; and perform other functions that increase the relevance of the visualization to the viewer. Another advantage of Data Studio is its sharing and collaboration features. Creators can share their reports publicly or privately and set permissions to allow collaborators to view and edit their work at will. Note that Data Studio

reports are independent of the underlying data, so when the report owner grants access to edit or view to a third party, the individual will not be able to view or modify the original data without being granted separate access[8].

## 2. Research Method

In this study, there are several stages that will be carried out to design a dashboard for monitoring teacher performance assessment at Cinta Kasih Tzu Chi High School which is shown in Figure 2.1 below[9].



Picture 1. Framework of thinking

### 2.1 Dashboard Design Identification

In this study, we will look for a solution to help the Principal of Cinta Kasih Tzu Chi High School to make it easier to monitor teacher performance assessments. The focus of this research is to design a dashboard for assessing teacher performance at Cinta Kasih Tzu Chi High School using a user-centric method and designing a dashboard that utilizes Google Data Studio tools. The design used to help monitor teacher performance assessments uses a user-centric method that is modeled using a prototype where the dashboard design utilizes the use of Google Data Studio. After the design is carried out, the next step is to evaluate the existing deficiencies. The evaluation will end if the model is really deemed sufficient to represent the needs of the user[10].

### 2.2 Meta-Information Analysis of Key Performance Indicators

At this stage, we analyze meta-information based on key performance indicators to assess teacher performance which will then be presented in the form of dashboard information where the information will determine the content and function of the graph according to the criteria on the key performance indicators[11].

Table 1. Analisis Meta-Informasi Key Performance Indicators

NO	KPI Criteria	Criteria	Data source	Period	Formula
1	Measuring the results of the administrative assessment of the availability of annual, semester, kkm, rpp programs.	Administration	Administration assessment data	Semester	Showing the score on the administrative assessment
2	Measuring the results of the assessment of teaching and learning activities during the process.	Teaching and learning activities	Teaching and learning activity assessment data	Semester	Showing the score on the assessment of the teaching and learning process
3	Measuring the results of the assessment of individual virtues and exemplary.	Humanist Culture	Humanist culture assessment data	Semester	Showing value gain on humanist cultural assessment
4	Measuring the results of the assessment of the activity and participation in each volunteer activity held.	Volunteer	Volunteer participation assessment data	Semester	Showing the score on the assessment of the activity of volunteer activities

### 2.3 Dashboard Functionality Planning using Google Data Studio

At this stage, the information content is determined and the information presented on the dashboard is determined. Where the information content is carried out by reviewing the results of the previous meta-information analysis which is then carried out to identify the specific level of information and presentation media for each key performance indicator consisting of main information and additional information[12].

Table.2 Dashboard Functionality Planning using Google Data Studio

MAIN INFORMATION				
Information Needs	Criteria	Presentation Media	Dimension	Function
The dashboard can display administrative appraisal data and the dashboard can display percentage values based on the increase and decrease of the administrative appraisal being met	Administration	Bar Chart	Teacher name	Displaying administrative assessment results with the percentage increase and decrease presented in the form of a bar chart

<p>The dashboard can display the percentage of teaching and learning activity assessment data and the dashboard can display the percentage value based on the increase and decrease of the teaching and learning process assessment</p>	<p>Teaching and Learning Activities (KBM)</p>	<p>Bar Chart</p>	<p>Teacher name</p>	<p>Displays the results of the assessment of teaching and learning activities with the percentage increase and decrease presented in the form of a bar chart</p>
<p>The dashboard can display the percentage of humanist culture assessment data and the dashboard can display the percentage value based on the increase and decrease of the humanist cultural activities it does</p>	<p>Humanist Culture</p>	<p>Bar Chart</p>	<p>Teacher name</p>	<p>Displays the results of the assessment of humanist cultural activities with the percentage of increase and decrease which is presented in the form of a bar chart</p>
<p>The dashboard can display the percentage of volunteer assessment data and the dashboard can display the percentage value based on the increase and decrease of participation in volunteer activities</p>	<p>Volunteer</p>	<p>Bar Chart</p>	<p>Teacher name</p>	<p>Displays the results of the assessment of volunteer activities with the percentage of increase and decrease which is presented in the form of a bar chart</p>
<p>Dashboard can display the percentage of data from the total assessment of each key performance indicators</p>	<p>Total Value</p>	<p>Bar Chart</p>	<p>Teacher name</p>	<p>Displays the results of the total assessment of each key performance indicator with the percentage increase and decrease presented in the form of a bar chart</p>

The dashboard can display information related to the teacher's name and predicate on the results of the previous assessment and the predicate of the current assessment result	Teacher Name table, past predicate and current predicate	Table	Teacher's name, past predicate and present predicate	Displays information related to the list of teacher names and achievements in the predicate from the previous assessment results and the predicate from the current assessment result
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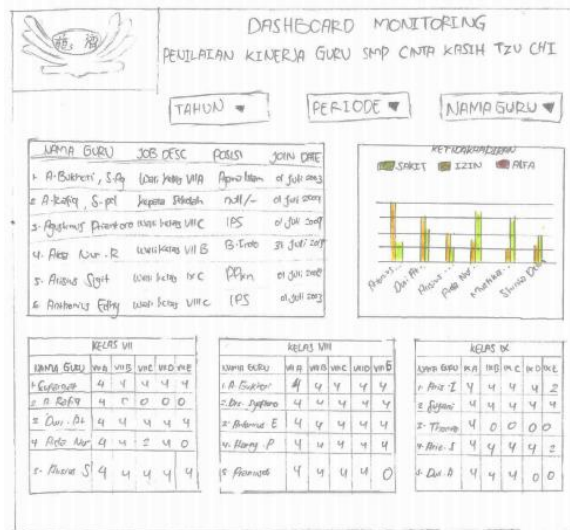
ADDITIONAL INFORMATION				
Information Needs	Criteria	Presentation Media	Dimension	Function
The dashboard can display information related to the list of teacher names, job descriptions, fields of study and joint dates.	Table of Teacher Name, Job Desc, Field of Study and Joint Date	Table	Teacher Name, Job Desc, Field of Study and Joint Date	Displays general information related to the list of teachers' names, job descriptions, fields of teaching and joint dates.
The dashboard can display the percentage of teacher absenteeism information data.	Absence	Bar Chart	Teacher Name and Period	Displays information related to teacher absenteeism with the percentage increase and decrease in the form of a bar chart.
Dashboard can display information related to the number of teaching in each class	Class Table	Table	Teacher name	Displays information related to the number of teachers teaching in each predetermined class
Filter	-	Drop-down	Year, period, teacher's name	Serves as a tool to control data by filtering data according to what you want to display

### 3. Results and Discussion

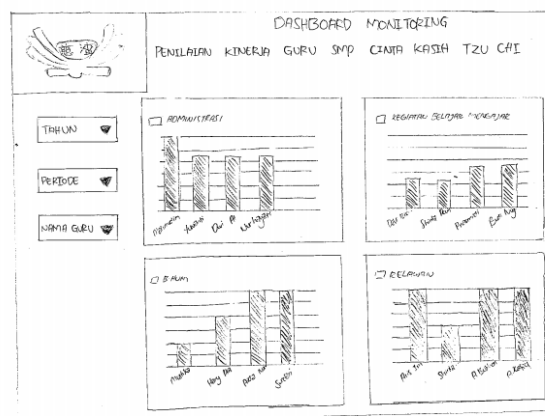
At this stage, it discusses dashboard design which consists of three stages, namely 1) Design paper prototyping design, 2) Interface design using Google Data Studio and 3) Interface evaluation.

#### 3.1 Paper Prototyping Design

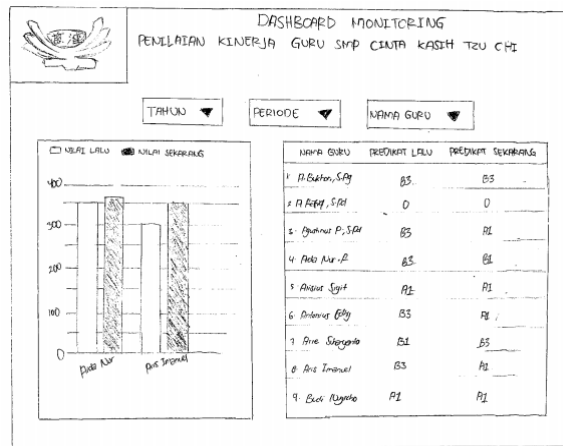
At this stage, the paper prototyping design is carried out first before designing using Google Data Studio for the dashboard to be designed. The paper prototyping design is based on information content analysis[13]. After that, a paper prototyping design from the dashboard is carried out which includes the arrangement of the order of information content, information elements in a frame, the number of frames on each screen and the number of screens on the dashboard[14]. The following is a display of the results of the paper prototyping:



Picture 2. General Information Page



Picture 3. Key Performance Indicators Page



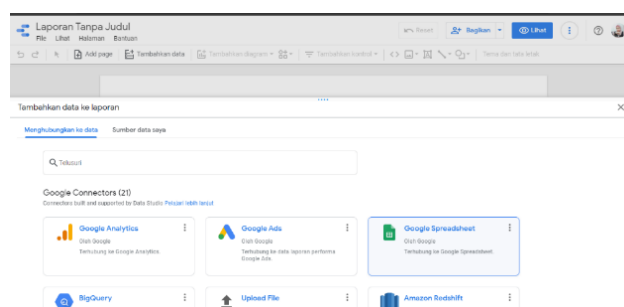
Picture 4. Final Result Page

### 3.2 Interface Design using Google Data Studio

At this stage, the dashboard interface design is started using the user-centred design method. The user-centred design approach emphasizes interface development through prototype design with a focus on user needs and tastes. The design is carried out using Google Data Studio tools which provides the advantages of being free, flexible and able to access extensive data sources[15]. In presenting data using Google Data Studio tools, it is necessary to take the following steps:

Before designing the dashboard, it is necessary to prepare the data sources in detail and clearly in order to facilitate the processing and reading of data by Google Data Studio. Where the data source that has been prepared will have to be moved or converted into a google spreadsheet which will act as a connector with Google Data Studio[16].

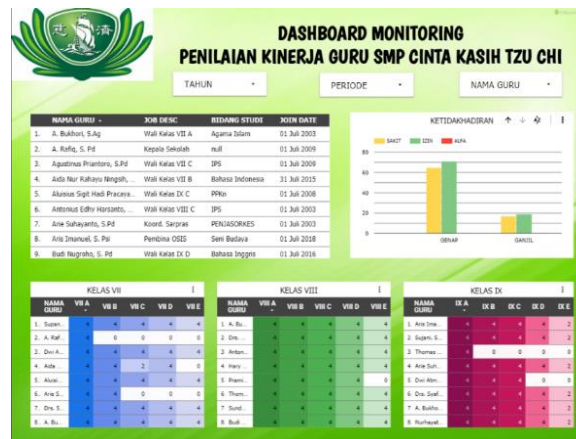
After preparing the data source, then in order to present information or reports it is necessary to make a connection between the data source and Google Data Studio[17]. Data sources that have been previously prepared must be adjusted in advance with several options, such as using Google Sheets, Google Analytics, Google Ads and so on which will later function as a source of data to be analyzed[18].



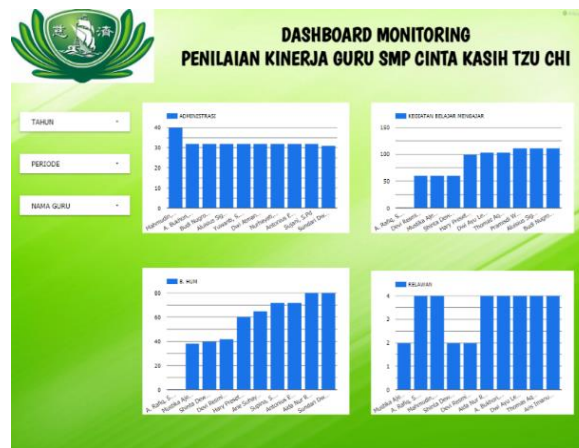
Picture 5. Choice of Data Source to connect as Connection on Google Data Studio

After the required data source is connected to Google Data Studio, then we can then start to design the required dashboard on a blank worksheet or use the template provided by Google Data Studio[19]. For Google Data Studio itself, it has provided several chart options such as Bar Chart, Pie Chart, Line Chart, Table, Geo Map and so on[20]. In addition, Google Data Studio also provides several features that can be used to process data and also style charts[21]. In designing the teacher performance assessment dashboard, there are 3 work pages for monitoring teacher performance at Cinta Kasih Tzu Chi Middle School, namely:

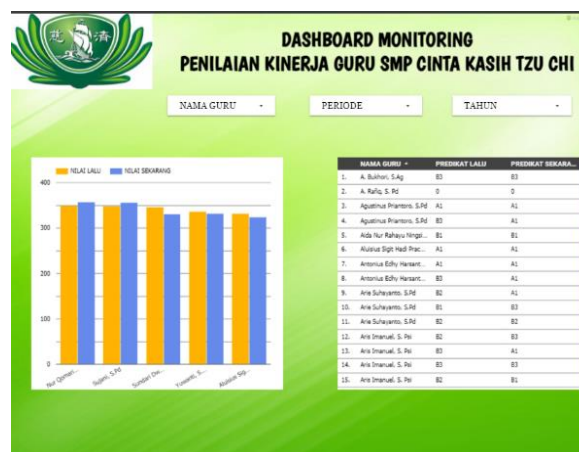




Picture 6. General Information Page



Picture 7. Key Performance Indicators Page



Picture 8. Final Result Page

### 3.3 Interface Evaluation

At this stage an evaluation has been carried out on the results of the dashboard design made using meta evaluation. The meta evaluation is carried out by the evaluator himself (original evaluator) [8]. Where the results of the evaluation are reviewed directly by the Principal using the Zoom meeting application[22]. During the evaluation process all

comments and inputs are recorded to help capture important points so they are not missed. From the evaluation results that have been carried out, it shows that the prototype is quite good and the principal already understands how to use the dashboard and the dashboard is quite helpful and the design made is quite good. The information displayed on the chart is quite easy to read[23].

#### 4. Conclusion

Based on the results of the research and design of the dashboard monitoring teacher performance assessment at Cinta Kasih Tzu Chi Middle School, it can be concluded that in designing the teacher performance assessment monitoring dashboard, it displays data using graphs that make the data appear more attractive, easy to understand, flexible and interactive[24]. Where the dashboard design also utilizes Google Data Studio tools which are used as tools to monitor the results of teacher performance assessments at Cinta Kasih Tzu Chi Middle School in each period. And the classification of data presentation on the performance appraisal monitoring dashboard is based on Key Performance Indicators which include Administration, Teaching and Learning Activities, Humanist Culture and Volunteers[25].

#### 5. Conclusion

In addition to the conclusions, there are inputs that researchers can convey, namely they can further develop creativity in designing a dashboard design which later the dashboard can be used as a reference as a consideration to be developed into a web-based system where the assessment data can be directly inputted and then processed immediately and when the data has been After processing or validation, the data cannot be changed[26].

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