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Data Visualization Excellence: Google Data Studio Workshop At Sekolah Indonesia Kuala Lumpur

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Abstrak

The development of information technology and the entry of the industrial revolution 4.0 era has led to the inseparability of human activities related to the use of technology. In today's rapidly growing information age, data is one of the most valuable assets. The ability to collect, analyze, and interpret data is becoming a very important skill not only in the world of work but also in education. Education is the foundation for preparing future generations for increasingly complex global challenges, and a good understanding of data can provide a significant competitive advantage. In schools, the ability to analyze and interpret data is becoming an invaluable skill for students. Along with the development of technology, data visualization has become an effective method to convey information in a more comprehensible manner. In this context, Google Data Studio offers a powerful and easy-to-use tool for creating interactive dashboards that help in analyzing and presenting data. Indonesian Migrant Workers (TKI) are Indonesian citizens who live and work abroad. TKI provide a large contribution of foreign exchange to the country of Indonesia. However, there are problems in the field of education for children whose parents work as TKI in Malaysia, especially education that is relevant to success in terms of opening their own jobs abroad. This is considered important because to get jobs in government agencies or companies in Malaysia, the children of TKI working in Malaysia must compete with job seekers who are Malaysian citizens. One alternative that can be taken to overcome competition in getting jobs is to create your own jobs. Opening your own jobs is not an easy thing. Knowledge and insight about this are needed which are given early on to the children of TKI in school. By teaching Google Data Studio in the form of data visualization to students, they not only learn how to read and interpret graphs and diagrams, but also how to present their own data in a more interesting and informative way. This ability will be very useful in the future, both in academic and professional environments. By providing insight into Google Data Studio to students in schools, these students have the provisions to be able to read data and have the opportunity to work and get decent jobs. As a Community Service activity with an international scope, this activity takes partners in Malaysia, namely the Indonesian School-Kuala Lumpur - SIKL which is located in Sentul, Kuala Lumpur, Federal Territory of Kuala Lumpur. The Community Service Team of

Muhammadiyah University of Semarang is very receptive to criticism and suggestions so that the implementation of Community Service in the future can be even better.

Kata kunci: *Data Visualization; Students; Siki; Community Service.*

Abstract

The development of information technology and the entry of the industrial revolution 4.0 era has led to the inseparability of human activities related to the use of technology. In today's rapidly growing information age, data is one of the most valuable assets. The ability to collect, analyze, and interpret data is becoming a very important skill not only in the world of work but also in education. Education is the foundation for preparing future generations for increasingly complex global challenges, and a good understanding of data can provide a significant competitive advantage. In schools, the ability to analyze and interpret data is becoming an invaluable skill for students. Along with the development of technology, data visualization has become an effective method to convey information in a more comprehensible manner. In this context, Google Data Studio offers a powerful and easy-to-use tool for creating interactive dashboards that help in analyzing and presenting data. Indonesian Migrant Workers (TKI) are Indonesian citizens who live and work abroad. TKI provide a large contribution of foreign exchange to the country of Indonesia. However, there are problems in the field of education for children whose parents work as TKI in Malaysia, especially education that is relevant to success in terms of opening their own jobs abroad. This is considered important because to get jobs in government agencies or companies in Malaysia, the children of TKI working in Malaysia must compete with job seekers who are Malaysian citizens. One alternative that can be taken to overcome competition in getting jobs is to create your own jobs. Opening your own jobs is not an easy thing. Knowledge and insight about this are needed which are given early on to the children of TKI in school. By teaching Google Data Studio in the form of data visualization to students, they not only learn how to read and interpret graphs and diagrams, but also how to present their own data in a more interesting and informative way. This ability will be very useful in the future, both in academic and professional environments. By providing insight into Google Data Studio to students in schools, these students have the provisions to be able to read data and have the opportunity to work and get decent jobs. As a Community Service activity with an international scope, this activity takes partners in Malaysia, namely the Indonesian School-Kuala Lumpur - SIKL which is located in Sentul, Kuala Lumpur, Federal Territory of Kuala Lumpur. The Community Service Team of Muhammadiyah University of Semarang is very receptive to criticism and suggestions so that the implementation of Community Service in the future can be even better.

Keywords: *Data Visualization; Students; Siki; Community Service.*

INTRODUCTION

The development of information technology and the entry of the industrial revolution 4.0 era has led to the inseparability of human activities related to the use of technology [1]. In today's rapidly growing information age, data is one of the most valuable assets. The ability to collect, analyze, and interpret data is becoming a very important skill not only in the world of work but also in education. Education is the foundation for preparing future generations for increasingly complex global challenges, and a good understanding of data can provide a significant competitive advantage. In schools, the ability to analyze and interpret data is becoming an invaluable skill for students. Along with the development of technology, data visualization has become an effective method to convey information in a more comprehensible manner. In this context, Google Data Studio offers a powerful and

easy-to-use tool for creating interactive dashboards that help in analyzing and presenting data.

Data visualization is a technique that utilizes graphical representations to clarify relationships and patterns in data. This technique allows users to see trends, anomalies, and correlations that may be hidden in the raw data. In education, data visualization can be used for a variety of purposes, ranging from student learning outcomes analysis, teacher performance evaluation, to school program planning.

By teaching data visualization to students, they not only learn how to read and interpret graphs and charts, but also how to present their own data in a more interesting and informative way. This ability will be very useful in the future, both in academic and professional settings.

Sekolah Indonesia Kuala Lumpur (SIKL) faces significant challenges in integrating technology and data into their curriculum. As an educational institution that serves the educational needs of Indonesian children in Malaysia, SIKL needs to ensure that its students receive an education that is in line with global technological developments. However, limitations in resources and training for teachers lead to less than optimal utilization of technology and data in the learning process. This impacts students' ability to understand and apply data effectively.

In this information age, students are not only required to master academic material, but also critical, creative and analytical thinking skills. Data literacy is an important part of these skills. However, many students and teachers still struggle to understand data and how to analyze it effectively. This is where data visualization training with Google Data Studio plays an important role in helping students understand data concepts better.

Data literacy is no longer an optional skill but a critical necessity in many areas of life. In the context of education, data understanding provides several key benefits, the first is to improve decision-making, with well-structured and analyzed data, students can make better decisions. Second is to drive innovation in learning, data can provide insight into what works and what doesn't in learning. And the third is preparation for the world of work for students. Beyond school, skills in managing and analyzing data are becoming increasingly important in many careers, including in technology, science, business and more. With a good understanding of data, Sekolah Indonesia Kuala Lumpur will be equipped with the technology they need to succeed in this increasingly digitized world.

We plan to approach using dashboards for data visualization as a potential solution. Data visualization dashboard is a very effective tool for presenting data visually in a form that is easy to understand and actionable. Dashboards can be web applications or software that summarize information from various data sources and display the information in the form of easy-to-understand graphs, tables, and other metrics. Some of the benefits of a data visualization Dashboard are to make it easier to understand data and make quick and precise decisions.

One of the visualization dashboard applications that are widely used today is Google Data Studio. Google Data Studio is a powerful and flexible data visualization tool that allows users to create interactive reports and dashboards from various data sources. This tool offers various features that facilitate the visualization process, such as drag-and-drop, various types of graphs and diagrams, as well as the ability to share and collaborate on report creation. By using Google Data Studio, you can easily visualize your data without having programming skills. Services are available on a cloud basis, can be accessed wherever you are, are free of charge and can share reports with anyone you want [2]. Google data studio is a data visualization application that is easy to use in an attractive and clear way to re [3].

We planned a theoretical framework for the training to be carried out, which is first to provide a basic explanation of data, data types, and various forms of visualization that can be used for each type of data. The service that will be carried out will be made in the concept of workshop/training. Evaluation of this training will be done directly during the training, by looking at the visualization dashboard on each student's computer. A question and answer session is conducted during the training if there are students who do not understand. If there are visualization results that are not correct, the developer will provide appropriate direction. Data visualization dashboard training with Google Data Studio at Sekolah Indonesia Kuala Lumpur is based on the need for skills and abilities in the field of information technology.

Indonesian Migrant Workers (TKI) are Indonesian citizens who live and work abroad. TKI provide a large contribution of foreign exchange to the country of Indonesia. However, there are problems in the field of education for children whose parents work as TKI in Malaysia, especially education that is relevant to success in terms of opening their own jobs abroad. This is considered important because to get jobs in government agencies or companies in Malaysia, the children of TKI working in Malaysia must compete with job seekers who are Malaysian citizens. One alternative that can be taken to overcome competition in getting jobs is to create your own jobs. Opening your own jobs is not an easy thing. Knowledge and insight about this are needed which are given early on to the children of TKI in school. By teaching Google Data Studio in the form of data visualization to students, they not only learn how to read and interpret graphs and diagrams, but also how to present their own data in a more interesting and informative way. This ability will be very useful in the future, both in academic and professional environments. By providing insight into Google Data Studio to students in schools, these students have the provisions to be able to read data and have the opportunity to work and get decent jobs. As a Community Service activity with an international scope, this activity takes partners in Malaysia, namely the Indonesian School-Kuala Lumpur - SIKL which is located in Sentul, Kuala Lumpur, Federal Territory of Kuala Lumpur.

This school is under the auspices of the Indonesian Embassy in Kuala Lumpur to pursue achievements and quality of education. The quality of education in question includes educational and teaching staff, facilities, output, and other supporting components that support the implementation of learning activities both inside and outside the school environment. The establishment of SKIL aims to develop Indonesian human resources based on Pancasila and the 1945 Constitution. The accreditation status of the National Accreditation Board (BAN) of this school is A for all levels of education (Kindergarten, Elementary School, Junior High School, and High School). At this time, SIKL has not provided learning materials related to the Google Data Studio concept. An introduction to the Google Data Studio concept is given to students of Sekolah Indonesia-Kuala Lumpur - SIKL.

Based on the description presented, we conduct training activities conducted at Sekolah Indonesia Kuala Lumpur with the aim of improving the data understanding of Sekolah Indonesia Kuala Lumpur students as well as introducing them to the use of technology to process and visualize data, with the hope that this training can be useful in providing knowledge and benefits to students at Sekolah Indonesia Kuala Lumpur. To achieve these goals, the program will involve collaboration with various parties, including academics, data and technology practitioners, as well as support from Google Data Studio. The training will focus on practical and applicable methods, so that teachers can directly implement them in the teaching and learning process. Thus, this program not only provides a short-term solution to the problems faced by SIKL, but also creates a strong foundation for the development of data-driven education in the future. To overcome the

problems faced by partners, the service team made solutions that will be given to overcome these problems, namely: 1) Problems: Limited Ability to Analyze Student Data Solution: Intensive training using Google Data Studio to teach data visualization and analysis techniques, so that students can interpret and utilize data effectively. 2) Problems: Lack of Access and Knowledge of Data Visualization Tools Solution: Facilitate training that not only introduces students to Google Data Studio but also provides the necessary access to practice it. 3) Problems: Lack of Experience in Creating Effective Data Dashboards Solution: Provide a hands-on workshop where students can work directly on creating data dashboards using Google Data Studio.

METHOD

The following are the steps of the international Community Partnership Program (PKM) implementation method with the solutions that have been outlined:

1. Intensive Training Using Google Data Studio

Step 1: Preparation of Materials and Resources

- a. Needs Identification: Conduct a needs analysis to determine relevant materials based on the skills that need to be developed at Sekolah Indonesia Kuala Lumpur (SIKL).
- b. Development of Training Materials: Develop training materials that cover data visualization techniques, basic principles of Google Data Studio, and data analysis. These materials should be tailored to the participants' level of understanding and curriculum needs.
- c. Provision of Tools and Infrastructure: Provide the necessary hardware and software, including access to Google Data Studio, laptops, and a stable internet connection.

Step 2: Training Implementation

- a. Introductory Session: Start with an introductory session that explains the importance of data visualization and the benefits of using Google Data Studio in an educational context.
- b. Technical Training: Conducted an intensive training covering the features of Google Data Studio, such as report generation, dashboard design, and data integration. The training was conducted in a practical manner with hands-on exercises.
- c. Evaluation and Feedback: Conduct a debriefing and evaluation session to ensure participants understand the material and can apply it in their teaching context.

2. Access and Practice Facilitation

Step 1: Access Provision

- a. Account Setup: Assist SIKL in the setup of Google Data Studio accounts for all students involved, ensuring that they have the necessary access to use the platform.
- b. Resource Distribution: Provide additional materials, tutorials and guides that students can access at any time to support them in using Google Data Studio independently.

Step 2: Supervision and Support

- a. Mentoring: Provide mentoring or guidance sessions for students who need further assistance in understanding and using data visualization tools.
- b. Technical Support: Offers technical support and troubleshooting to address issues that may arise while students are practicing using Google Data Studio.

3. Practical Workshop on Dashboard Creation

Step 1: Workshop Planning

- a. Workshop Goal Setting: Set specific objectives for the workshop, such as the creation of a data dashboard that demonstrates students' ability to analyze and visualize data.
- b. Activity Design: Design practical activities that allow students to apply the skills learned in the workshop. These activities should include creating dashboards based on real or simulated data.

Step 2: Workshop Implementation

- a. Assignment: Divide students into small groups or individuals to work on the dashboard creation project. Each group or individual will be assigned different tasks according to their skill level.
- b. Mentoring and Feedback: Provide mentors who can provide guidance and feedback during the workshop to help students overcome challenges and improve their work.
- c. Assessment and Presentation: Organize sessions where students can present the dashboards they have created. Evaluation is based on criteria such as clarity of visualization, data accuracy, and design creativity.

Step 3: Follow-up and Improvement

- a. Program Evaluation: Conduct an evaluation of the entire training program and workshop to assess its effectiveness and obtain feedback from participants.

Follow-up Planning: Develop a follow-up plan to ensure that the skills acquired are maintained and enhanced. This may include further training, access to additional resources, or additional projects.

In order for the implementation of the International PKM program to be carried out, the partners actively participated in the survey of places and conditions. Partners and agencies involved in the PKM location include the following:

- a. The Indonesian School Kuala Lumpur provides a place for socialization and training activities.
- b. The Indonesian School Kuala Lumpur facilitates facilities and infrastructure that will be used in socialization and training.
- c. Sekolah Indonesia Kuala Lumpur participated in the socialization and training activities

RESULT AND DISCUSSION

Initial Coordination Meeting Of The Pkm Team



Figure 1. Initial Coordination Meeting of the PKM Team

At this stage, coordination was carried out by a team consisting of 3 Data Science undergraduate lecturers and 2 Data Science undergraduate students on May 8, 2024 in the GKB 2 meeting room, Faculty of Agricultural Science and Technology, Muhammadiyah University of Semarang. From the results of this coordination, an idea was obtained to carry out International Community Service by conducting Google Data Studio Training at SB Sentul Kuala Lumpur Malaysia.

Coordination Of Pkm Implementation Plan With Partners



Figure 2. Coordination of PKM Implementation Plan with Partners

From the results of the discussion activities with the Principal of SIKL Sentul Kuala Lumpur, from students who have the need for human resources in increasing knowledge, especially in the field of information technology, it is very much needed to increase insight and job opportunities in Malaysia. Therefore, the Community Service team carried out coordination activities on May 20, 2024 to facilitate the process of Training in creating data visualization dashboards with Google Data Studio at Sekolah Indonesia Kuala Lumpur.

Google Data Studio Training Socialization

The socialization activity was held on June 3, 2024 at the Sentul Kuala Lumpur Guidance Studio, discussing understanding and utilizing Google Data Studio. At the socialization event, the Google Data Studio Training provided an overview of the importance of an orderly population administration system. The socialization event was attended by the community service team, the principal of SB Sentul Kuala Lumpur, teachers, KKN students, and SB Sentul students.



(a)

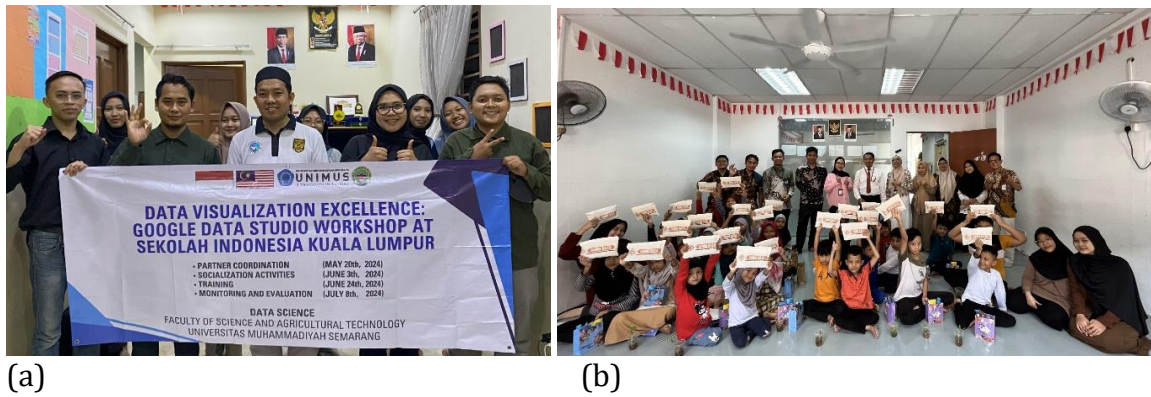
(b)

Figure 3. Google Data Studio Training Socialization, a) Greetings from the Head of the UNIMUS Data Science S1 PkM Team ; b) Submission of Partner Willingness Letter

This activity focuses on the Google Data Studio Training flow to make it easier for SB Sentul Kuala Lumpur managers and students to understand data concepts better, improve decision making, encourage innovation in learning and prepare to face competition in the world of work..

Training On Creating Dashboards With Google Data Studio

The information system implementation activity was carried out on June 24, 2024 at the Sentul Kuala Lumpur Guidance Studio. This implementation activity conveyed the steps that must be taken starting from collecting data from data sources, cleaning data, storing data (Data Warehouse, Cloud, Google Spreadsheet, Opening Google Data Studio, Creating a Dashboard, Selecting a Data Source, Creating Data Visualization, Arranging Interactions (Dashboard Layout), and the last step is to share the finished Dashboard.



(a) (b)
 Figure 4. Training Activities Creating Dashboards with Google Data Studio, a) Group Photo with the Principal of SIKL Sentul Kuala Lumpur; b) Training with children of SIKL Sentul Kuala Lumpur

Monitoring and Evaluation

The monitoring activity was carried out on July 8, 2024. This activity aims to provide assistance in creating a dashboard with Google Data Studio. This monitoring and evaluation activity was attended directly by the Vice Chancellor 4 Representatives of LPPM Universitas Muhammadiyah Semarang, the service team, the Principal of SB Sentul Kuala Lumpur, Students, and Students of Universitas Muhammadiyah Semarang. The monitoring and evaluation activity also provided space for Partners (SB Sentul Kuala Lumpur Managers) to convey several things related to the use and importance of knowledge in creating a dashboard with Google Data Studio.



Figure 5. Monitoring and Evaluation

CONCLUSION

This Community Service Activity aims to provide training on the concept of creating a Dashboard with Google Data Studio to students of Sekolah Indonesia-Kuala Lumpur – SIKL as an early provision effort to better understand the concept of data, improve decision-making, encourage innovation in learning and preparation to face competition in the world of work. This activity was carried out by the PKM Team of the S1 Data Science Study Program consisting of lecturers and students. Google Data Studio training is to make it easier for managers and students of SB Sentul Kuala Lumpur to better understand the concept of data, improve decision-making, encourage innovation in learning and preparation to face competition in the world of work. Further activities that are possible to be carried out are also discussed in the implementation of this activity.

SUGGESTION

As a form of sustainability of this program, cooperation with stakeholders in the SB Sentul Kuala Lumpur environment is needed. In addition, there needs to be mentoring with the PKM Universitas Muhammadiyah Semarang team in managing student data in order to improve the potentials that must be improved in order to improve SIKL students.

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