

Enhancing Alumni Data Management through a Website-Based Tracer Study Application: A Case Study of Vocational High School

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ABSTRACT

This research aims to evaluate the effectiveness of website-based tracer studies in collecting data on educational institutions and their alumni. The research methodology employed is A quasi-experimental design, specifically a Pretest-Posttest Control Group Design, was employed to establish cause-and-effect relationship. The result indicates that 20% of teachers met the minimum completeness criteria using the web-based application, while 80% did not. The experimental group showed improvement form pre-test to post test, meeting the minimal criteria for completeness. Challenges included difficulties in contacting alumni, which impacted data collection. The study concludes that while the web-based tracer study application is effective, challenges in alumni engagement need to be addressed for better data collection.

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1. INTRODUCTION

Vocational education in Indonesia, particularly in Vocational High Schools (SMK), has a crucial function in equipping students with the necessary skills and knowledge to enter the workforce directly. A primary obstacle encountered by SMK is the capacity to monitor their alumni and assess the degree to which the adopted curriculum aligns with industry requirements. Presently, several SMKs continue to depend on manual techniques or less cohesive systems to monitor alumni, which sometimes fail to offer precise and all-encompassing information.

Tracer studies, as mandated by Presidential Regulation Number 68 of 2022, play a crucial role in the revitalization of vocational education in Indonesia. These studies monitor graduates' outcomes to enhance the quality of vocational training (Casmudi, Sugianto, Tasha Maulida, & Angga, 2022). In 2021, the Director General of Vocational Education is actively seeking vocational education graduates, as announced by the Director of Vocational Schools, Wardani Sugiyanto. In 2022, a tracer study will be conducted, involving a total of 528,747 graduates (32.59%) from 7,625 vocational schools. The tracer research in 2023 will focus on vocational school graduates from the 2021 academic year. By 2022, vocational education units and the workforce will collaborate as partners in enhancing the quality of

education at vocational schools. This collaboration is particularly important for the workforce, since they will be hiring graduates from these vocational schools (Cahyo Nugroho & Nugroho, 2018).

This study emphasizes the disparity between the demand for a proficient alumni monitoring system and the inadequate infrastructure and resources present in several vocational schools. While website-based tracer study tools have gained popularity in higher education institutions, their implementation at the vocational school level remains restricted. Furthermore, prior research tends to concentrate on the development of applications without establishing a connection to education policy or examining its influence on educational practices in the field. This study is unusual since it not only involves the development of a website-based tracer study application, but also evaluates its implementation within the vocational education policy in Indonesia.

As part of the Centre of Excellence Vocational School program, SMK Negeri 57 Jakarta emphasizes the importance of tracer studies to improve graduate employability. (P, Novika, Padli, Septivani, & Kurniawan, 2022). However, locating alumni data presents significant challenges. Despite efforts to engage alumni through WhatsApp groups, social media, and email, these methods have proven insufficient in effectively tracking graduates. Determining the aforementioned issue thus requires the development of a tracer study-oriented system, specifically the Web-Based Tracer Study Application, which can facilitate the search for and administration of alumni data (Rohaeni & Wijiharta, 2020). The objective of this application is to streamline the process of monitoring the whereabouts of both employed and unemployed alumni (Rofaida & Gautama, 2019). This study aims to develop and implement a Web-Based Tracer Study Application to streamline the management of alumni data and enhance communication regarding job vacancies. Does the implementation of the Web-Based Tracer Study Application facilities the management of alumni data and the provision of job opening information at Negeri 57 Jakarta?''.

This research holds great significance within the realm of education policy as it provides support for government policies that prioritize the crucial connection and alignment between education and the industrial sector. By possessing precise data on graduates, educational institutions can enhance their responsiveness in adapting the curriculum to align with the demands of the job market. Furthermore, the web-based tracer research application might serve as a potent instrument for policymakers to assess the efficacy of vocational education programs in a more objective and data-driven manner. By implementing this application, we anticipate achieving the target of 80% alumni engagement in the tracer study at SMK Negeri 57 Jakarta, leading to improved academic performance and stronger collaboration with industry partners.

The findings of this study are anticipated to make a substantial impact on enhancing the efficacy of monitoring vocational high school graduates. An efficient web-based tracer research application enables schools to gather precise data on the professional paths of their alumni, allowing for the evaluation and enhancement of current educational programs. Furthermore, this study is anticipated to foster enhanced cooperation between the realms of academia and industry. The data collected from the tracer research can be utilized to facilitate collaboration with the industry in order to build more pertinent curricula and provide training that is specifically customized to the demands of the workforce.

2. METHODS

This study design is identified as a Quasi-Experimental study using a Pretest-Posttest Control Group Design. However, the explanation is somewhat repetitive and could be streamlined. This study uses a Quasi Experimental design to determine the causal relationship between the implementation of the Website-Based Tracer Study Application and data collection effectiveness. The Pretest-Posttest Control Group Design was employed. The study involved two cohorts: the experimental group, which received the intervention (Website-Based Tracer Study Application), and the control group, which did not receive any treatment. (Thamrin, Saidun Hutahun, Aditia, & Putri, 2022). The treated group was referred to as the experimental group, while the group that did not get any treatment was referred to as

the control group (Cigdem & Yildirim, 2014). As per Creswell's theory (2018), people in the experimental group were given treatment, while the control group did not receive any treatment (Creswell & DavAid Creswell, 2018). The strategy presented is the pretest-posttest control group design:

R	O ¹	X	O ²
R	O ³	-	O ⁴

Information:

- O¹ : Pretest (initial measurement) before giving group counseling treatment
 X : treatment using group counseling
 O² : Posttest (final measurement) after treatment using group counseling
 O³ : Control group (pretest)
 O⁴ : Control group (posttest)

A sample size 40 teachers is a good start, but the study would benefit from a justification of this number. Data were collected through structured interviews and assessments administered 40 teachers. These instruments were designed to evaluate the effectiveness of the Website-Based Tracer Study Application. Data were analyzed using the Pretest-Posttest Control Group Design framework. Statistical analysis was conducted using SPSS version 26 to compare pretest and posttest scores within and between the experimental and control group.

3. FINDINGS AND DISCUSSION

3.1. Research Findings

This study evaluates the implementation of a web-based tracer study application in SMK Negeri 57 through pre-test and post-test on teachers involved in the implementation of this application. The purpose of the study is to measure the effectiveness of the use and implementation of the application in collecting complete and accurate alumni data.

3.1.1. Pre-Test Results of Minimum Completion Criteria (KKM) Understanding and Skills in Using Website-Based Tracer Study Applications for Teachers of SMK Negeri 57 Jakarta

This study examines the teachers' level of understanding and skills in using the website-based Tracer Study application in Vocational High Schools (SMK) before training (pre-test). The purpose of this pre-test is to determine the extent of teachers' initial readiness and ability in completing alumni data using the application. Data were collected from 40 teachers who participated in training on the use of the Tracer Study application. A pre-test was conducted before the training to determine the level of teachers' initial understanding of the website-based tracer study application.

Table 1. Distribution, frequency, and percentage of completion of control class pre-test results

Score	Frequency	Percentage	Category
0-74	32	80%	Not Completed
75 - 100	8	20%	Complete
Total	40	100	

Source: Research data processing, 2023

Based on the pre-test results, the following are the findings obtained:

- a) Not Completing Data: As many as 32 teachers, or 80% of the total teachers who took the pre-test, did not complete the data required in the Tracer Study application. This shows that the

majority of teachers have difficulty or do not fully understand how to use the application to fill in data completely.

- b) Completing Data Completely: As many as 8 teachers, or 20% of the total teachers, managed to complete the data completely in the Tracer Study application. Teachers meet the Minimum Completion Criteria (KKM) that have been set, indicating that they have adequate understanding and skills in using the application.

3.1.2. Post-Test Results of Minimum Completion Criteria (KKM) Understanding and Skills in Using Website-Based Tracer Study Applications for Teachers of SMK Negeri 57 Jakarta

After being given intensive training on the use of the website-based Tracer Study application, a post-test was conducted to evaluate the improvement in teachers' understanding and skills in completing alumni data. This post-test aims to measure the effectiveness of the training and see changes in the level of teacher completion.

Table 2. Distribution, frequency, and percentage of control class post-test results

Score	Frequency	Percentage	Category
0-74	18	45 %	Not Completed
75 - 100	22	55 %	Complete
Total	40	100	

Source: Research data processing, 2023

Based on the post-test results, the following are the findings obtained:

- a) Incomplete Teachers: As many as 18 teachers, or 45% of the total teachers who took the post-test, were still classified as incomplete in completing the data required in the Tracer Study application. Even though they had been given training, almost half of the teachers still had not reached the Minimum Completion Criteria (KKM) set.
- b) Complete Teachers: As many as 22 teachers, or 55% of the total teachers who took the post-test, were classified as complete in completing the data completely. These teachers managed to meet the KKM, showing a significant increase compared to the pre-test results.

Comparative Analysis of Pre-Test and Post-Test

- a) Improvement of Skills: In the pre-test, only 8 teachers (20%) were classified as complete, while in the post-test, the number increased to 22 teachers (55%). This shows a 35% increase in the number of teachers who were able to complete the data completely after training.
- b) Decrease in the Number of Incomplete Teachers: The number of incomplete teachers decreased from 32 (80%) in the pre-test to 18 (45%) in the post-test. This 35% decrease shows the effectiveness of the training in improving teacher understanding and skills.

3.1.3. Paired Samples Statistics

Paired Samples T-Test is a useful tool for analyzing paired data and determining the effectiveness of an intervention or the difference between two conditions. It allows researchers to make decisions based on data measured on the same subjects in two different situations.

Table 3. Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
1 Pre-test	44.1500	20	8.05426	1.80099
Pair 1 Post-test	45.9000	20	7.31185	1.63498

Source: Research data processing, 2023

a) Pre-test Control Group

- The mean pre-test score for the control group was 44.15.
- This reflects the initial knowledge or ability of the control group regarding the aspects measured by the test.

b) Post-test Control Group

- The mean post-test score for the control group was 45.9.
- This indicates a change in knowledge or ability after using the website-based tracer study application

3.1.4. Experimental Class Pre-Test Results

The results of the pre-test of the experimental class in table 4, show that the majority of teachers (70%) have not met the completion requirements. This result identifies the need for more intensive and focused training and intervention to improve teacher skills. The small group of teachers (30%) who have met the requirements can play a role in helping their colleagues to achieve the expected standards. The next step involves implementing targeted training programs and evaluating their effectiveness.

Table 4. Distribution, frequency, and percentage of completion of experimental class pretest results

Score	Frequency	Percentage	Category
0-74	28	70 %	Not Completed
75 - 100	12	30 %	Complete
Total	40	100	

Source: Research data processing, 2023

3.1.5. Experimental Class Post-Test Results

The post-test results in Table 5 show that 31 teachers, or 78% of the total teachers have completed the post-test data. This shows a significant increase in teacher involvement and compliance in completing the evaluation requirements after the intervention or training. This percentage illustrates that the majority of teachers have shown an increase in responsibility and discipline in the learning process. With 78% of teachers completing the data, the evaluation of the program's effectiveness becomes more accurate and representative. More complete data allows for a more in-depth analysis of the impact of the training program on improving teacher skills. In contrast, 9 teachers or 22% of the total teachers have not yet completed the post-test data. This indicates that there are a small number of teachers who may still face difficulties or obstacles in completing the data, or may be less motivated. Follow-up is needed to identify the reasons for the incomplete data in these 9 teachers and provide additional support if needed. Although the majority of teachers have completed the data, efforts still need to be made to achieve 100% compliance in filling in the evaluation data. A more effective communication strategy or additional support may be needed to ensure that all teachers complete the evaluation data in the future.

Table 5. Distribution, frequency, and percentage of completion of experimental class posttest results

Score	Frequency	Percentage	Category
0-74	9	22 %	Not Completed
75 - 100	31	78 %	Complete
Total	40	100	

Source: Research data processing, 2023

3.2. System Implementation

This study employed a Website-Based Tracer Study Application to effectively handle alumni data and track the progress of alumni. The tracer research application will be utilized at SMK Negeri 57 South Jakarta. The tracer research involved a preliminary stage when the alumni's registration on the application was verified. Below is an exhibition of the alumni data roster, as depicted in Figure 1.

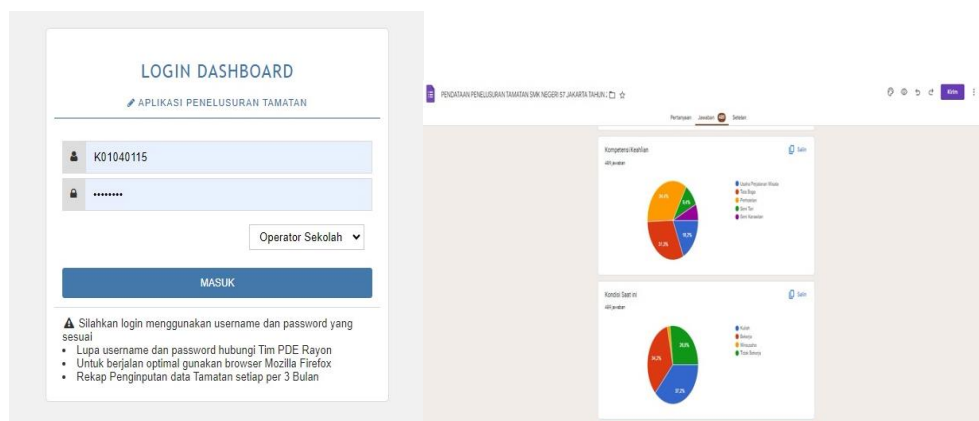


Figure 1. Tracer Study Web Login Page and Alumni Data Collection Results Diagram via Google Form



Figure 2. Tracer Study Web Homepage

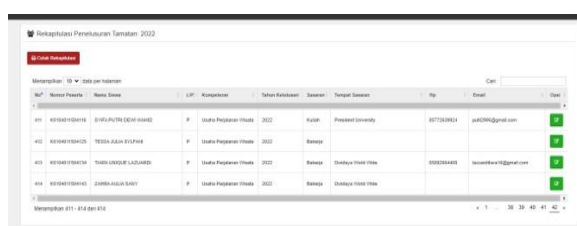


Figure 3. Final Recapitulation Display

This website simplifies the process for schools to administer the transmission of alumni data to the Ministry of Education and Culture and the education office. Instead of manually sending the data, schools can now conveniently fill in the required information on the website, eliminating the need for additional transmission to the education office. In addition, SMK Negeri 57 Jakarta also incorporates a teaching program facilitated by guest instructors. This website facilitates the tracking of alumni by institutions, enabling effective communication and engagement with alumni for participation in guest teaching programs aligned with their respective fields and professions, utilizing graduate tracking data. Annually, the school consistently inputs and updates alumni data through the tracer study website.

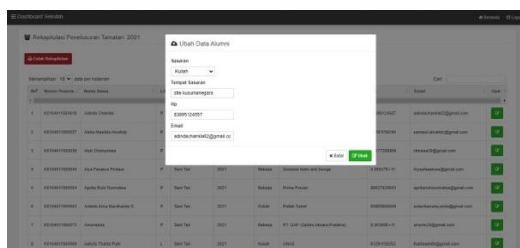


Figure 4. Menu Change Alumni Data

3.3. Discussion

In the context of education policy, a website-based tracer study application program was implemented to increase teacher involvement in completing evaluation data. This policy is intended to achieve the goals of enhancing the relevance and quality of vocational education in the workforce and ensuring its continued relevance in 2022 (Santoso, Mahmudi, & Basuki, 2019). This policy aims to ensure data accuracy in the learning and evaluation process, which is an important step in improving the quality of education in schools. This tracer study is used to monitor teacher development in carrying out administrative tasks and measure the effectiveness of the training that has been provided.

In the pre-test stage, data showed that 32 teachers or 80% of the total teachers did not complete the data, while only 8 teachers or 20% met the Minimum Completion Criteria (KKM). This indicates significant challenges in encouraging teacher compliance with the data reporting policy. Factors that may influence this include a lack of understanding of the importance of data, technical difficulties in accessing and filling out the application, and high workloads that reduce time to complete administrative tasks.

Interventions through training and socialization on the importance of completing evaluation data were carried out to increase teacher engagement. After the intervention, the post-test results showed a significant increase with 31 teachers or 78% of the total teachers, completing the data, while only 9 teachers or 22% did not complete the data. This indicates that outreach efforts through training and awareness raising have a positive impact on teacher engagement.

The increase in the number of teachers completing data from 20% in the pre-test to 78% in the post-test indicates significant benefits of the website-based tracer study application program. The main benefits include improved evaluation data quality, which allows for more complete and accurate data analysis and better planning for improving the learning process. Effectiveness of Training: The training provided has proven effective in improving teacher understanding and involvement in the administration and evaluation process. Awareness and Discipline: The program has succeeded in improving teacher awareness and discipline in carrying out administrative tasks that are essential for the success of the education process.

Despite significant improvements, 22% of teachers still did not complete the data in the post-test. Areas for improvement include technical support, which provides additional technical support to teachers who face difficulties in accessing and completing the application. Motivation and Rewards: Develop a reward system to increase teacher motivation in completing the data. Personalized Approach: Provide a more personalized approach to understand and address specific barriers faced by teachers.

The implementation of the website-based tracer study application policy at SMN Negeri 57 Jakarta aims to increase transparency and accuracy in the teacher evaluation process. This policy is in line with the government's efforts to improve the quality of education through the use of digital technology. Pre-test data showed that the majority of teachers did not complete the evaluation data, indicating challenges in implementing this policy. Some of the main challenges include a lack of understanding of the importance of evaluation data, technical limitations, and high workloads. Through intensive training and socialization, teachers were invited to better understand the importance of completing

evaluation data. The post-test results showed that this effort succeeded in significantly increasing teacher engagement.

The website-based tracer study application program provides significant benefits in improving the quality and accuracy of evaluation data. This supports better planning and decision-making in the education process. The fact that 22% of teachers still did not complete the data indicates that there are areas that need to be improved, including technical support, motivation, and a personalized approach to addressing the obstacles faced by teachers.

The statistics indicate that the majority of teachers are still unable of fully completing the data entry process. The job experience of teachers is a crucial aspect that impacts their capacity to adapt new technology, such as website-based tracer study tools. Experienced teachers at a higher level may have challenges when it comes to adjusting to emerging technologies. They can be accustomed to traditional manual procedures that have been employed for a long time and exhibit reluctance towards adopting new approaches. On the other hand, younger teachers who have less professional experience but are well-versed in digital technology are generally more adept at adjusting to web-based applications. Teachers who lack proficiency in digital skills often struggle to comprehend and navigate website-based tracer study applications. Despite the implementation of training, teachers lacking a solid understanding of digital abilities nevertheless encounter challenges in their utilization. These constraints may arise from insufficient and continuous training, restricted availability of technology in educational institutions, or a lack of enthusiasm to acquire knowledge in new technologies. Teachers' perceptions of the tracer study application implementation policy as an ancillary administrative obligation, unrelated to their primary obligations as instructors, result in diminished levels of engagement and dedication in job completion. Moreover, in the absence of explicit incentives or if teachers do not directly experience the advantages of the program, their motivation to adhere to it may be diminished.

The website-based tracer study program at SMK Negeri 57 plays a crucial role in attaining overarching objectives, including enhancing the educational quality and aligning vocational education with the demands of the labour market. By implementing a website-based tracer study, educational institutions can gather precise and organized data regarding their alumni. This includes information about the extent of alumni engagement in the labour market, the specific occupations they pursue, and the degree to which these employment align with their areas of competence. This data enables institutions to perform a thorough assessment of the caliber of education offered. For instance, if it is discovered that a significant number of alumni are employed in industries unrelated to their areas of expertise, the educational institution can assess and modify the curriculum or instructional approaches to more effectively align with the demands of the employment market. The data obtained from the tracer research can serve as valuable information for the school accreditation process. The caliber of graduates and the alignment of education with the demands of the workforce are crucial factors in accrediting evaluations. By utilizing data from the tracer study, educational institutions can substantiate the fact that their alumni have achieved notable success in the labor market, thereby enhancing the institution's standing and accreditation.

The tracer study results offer immediate feedback from the workplace regarding the required skills and the extent to which vocational school graduates fulfil those requirements. Schools can utilize this information to enhance and adapt their curriculum in order to align with prevailing industry trends, thereby guaranteeing that graduates possess the requisite skills demanded by the labour market. Tracer studies can facilitate the development of stronger connections between colleges and industry. Alumni performance data in a certain industry can serve as a foundation for enhancing collaboration, such as implementing internship programs, conducting collaborative training, or facilitating corporate sponsorship for educational institutions. Tracer study data enables schools to track shifts in labour market demands and make necessary adjustments to their vocational education programs. Tracer studies can also offer valuable information regarding the significance of soft skills, like as communication, teamwork, and problem-solving, which may receive less emphasis in the curriculum.

4. CONCLUSION

This study effectively determined the beneficial effects of using a website-based tracer study application at Vocational High Schools (SMK). The primary findings indicate that this application makes a substantial contribution to enhancing the administration of alumni data and reinforcing the alignment between vocational education and the demands of the job market. The results revealed a rise in the proportion of teachers who effectively completed the tracer study data following the intervention, indicating the success of the program in enhancing the accuracy and precision of data collecting. Nevertheless, there is variation in the digital proficiency of teachers, which directly impacts their capacity to effectively utilize the program. This leads to incongruous outcomes.

The tracer study results can help schools discover the supplementary skills that graduates require for success in the professional realm. Schools have the ability to implement supplementary training programs or certification processes in order to guarantee that students not only acquire a thorough understanding of theoretical concepts, but also develop the practical skills that are essential in the business. The tracer research data can be utilized by the government and policy makers to allocate expenditure towards more pertinent areas of education.

The study's limitations were confined to a single institution, hence the findings may not comprehensively reflect the circumstances prevalent in all vocational schools in Indonesia. The implementation of the tracer study application was conducted within a constrained timeframe, making it difficult to assess its long-term effects. By rectifying current constraints and broadening the scope of investigation, it is anticipated that additional study endeavours will yield more profound understandings and more efficient remedies to enhance the caliber of vocational education in Indonesia.

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