

# WEB-Based Tracer Study in Vocational High School

Toni Kurrokhmat\*, Dedi Rohendi

Faculty of Technology and Vocational Education  
Universitas Pendidikan Indonesia  
Bandung, Indonesia

\*tonikurrokhmat@upi.edu, dedir@upi.edu

**Abstract**—Tracer study is a necessity in the world of education, especially in Vocational High Schools. Through tracer studies, schools can find out the number of graduates who are absorbed in the world of work, and become a means of evaluation for school leaders in making policies. This study uses the Systematic Literature Review method with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) strategy. The articles taken were published in 2015-2021 by taking databases from Google Scholar, DOAJ, and Research Gate. The keywords used include Tracer Study, WEB-Based, and Vocational High School. The search results found that there were 110 articles on Google Scholar, 67 on Research Gate and DOAJ. Screened, there are 36 articles that fit the topic. From the 36 articles, they were re-screened and 5 articles were selected that met the criteria for analysis. The results of the study show that a WEB-based tracer study is an effective way for schools to track graduates who have been accepted into the world of work and is a must for schools in order to map school policies so that graduates have competencies as expected by the world of work.

**Keywords**—tracer study, web-based, vocational high school

## I. INTRODUCTION

Today the development of technology in the business and industrial world is growing. Many renewable technologies have been used by industry in both the production and manufacturing processes. This development certainly requires human resources or workers who can adapt and operate these technologies. This is a challenge for Vocational High Schools, because Vocational High Schools are educational institutions that function to prepare graduates to be able to work in the world of work [1,2]. It is necessary to improve the competence of graduates. The increase in graduates can be done by establishing good relations between the school and the industry, because a good relationship will also have a good impact on the sustainability of the school in the future [3]. With the relationship and communication, Vocational High Schools can obtain information related to competencies that must be possessed by Vocational High School graduates that are in accordance with industry needs.

The relationship process between the school and industry can be bridged through the role of alumni. Alumni are one of the components that have an effect on improving the quality of schools by providing various constructive inputs as evaluation

materials for schools and being able to develop networks and the image of vocational schools in industry [4]. Therefore, it is necessary to have a forum or media that can support and accommodate the acquisition of information from alumni, one of which is by holding a tracer study [5]. Tracer study is a way that can be done by educational institutions to obtain information about the advantages and disadvantages that may occur during the learning process at school in order to be an evaluation material for improving learning in the future [6]. Tracer study also allows alumni to provide quantitative data related to activities they are currently engaged in after graduating from school [7].

Along with the development of the times, the use of technology, especially in information systems, is growing. This development also occurred in the tracer study information system. The tracer study information system which was originally operated conventionally using paper and ballpoint, has now been developed using a digital system. One example is a WEB-based tracer study. WEB-based tracer study is considered to have a high level of efficiency compared to conventional tracer study systems, both in the data collection process and in data processing. However, in practice there are not a few Vocational High Schools that have not or do not use the WEB-based tracer study system in their schools.

It is so important to use a WEB-based tracer study information system in Vocational High Schools and there is no research that explains the effectiveness of a WEB-based tracer study information system, the authors formulate the problem formulation as follows:

- How effective is the use of WEB-based tracer studies in Vocational High Schools?
- What are the tracer study data used for in Vocational High Schools?

## II. METHODS

This study uses the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method with a flow chart used to conduct a literature review. There are four stages in implementing this method, including: identification, screening, eligibility, and include [8].

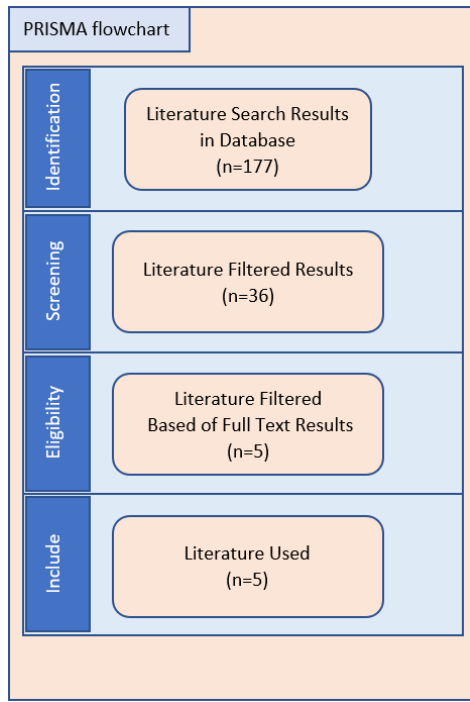


Fig. 1. PRISMA flowchart literature review.

A. Identification

At the identification stage, the author searches for literature in the database that is in accordance with the topic being researched, namely the WEB-based tracer study in Vocational High Schools. Literature searches were carried out on indexed journals, including: Google Scholar, Research Gate, and DOAJ with the criteria for articles published from 2015 to 2021. The keywords used included Tracer Study, WEB-Based, and Vocational High School. The results obtained from the search are as follows:

TABLE I. NUMBER OF LITERATURE

Database	Website Address	Amount
Google Scholar	<a href="https://scholar.google.com/">https://scholar.google.com/</a>	110
Research Gate	<a href="https://www.researchgate.net/">https://www.researchgate.net/</a>	66
DOAJ	<a href="https://doaj.org/">https://doaj.org/</a>	1
<b>Amount</b>		<b>177</b>

B. Screening

In the screening stage, the previously collected articles were screened based on several criteria. Articles were screened for duplication, inclusion, and filtering in the abstract. Duplication filtering is intended to select articles contained in three databases by using title parameters and DOI (Digital Object Identifier). Inclusion and abstract screening are done by sorting out articles that include the use of WEB-based tracer studies that are applied in Vocational High Schools. Based on duplication, inclusion, and abstract screening, 36 articles were obtained.

C. Eligibility

At the eligibility stage, the screening results are downloaded and full text filtered. Literature that is considered appropriate and suitable for use in this study is an article that is not an article with a literature review research method, overview, or an article that discusses a topic similar to that of the researcher. The results show that there are 5 relevant articles for analysis.

D. Include

At the include stage, the amount of literature relevant to the research question is determined after a full text selection has been carried out. Then the number of relevant articles to be analyzed is 5 articles.

III. RESULTS AND DISCUSSION

A. Results

The following are the results of the articles analyzed:

TABLE II. ANALYZED ARTICLES

No	Source	Research Purpose	Methods	Result
1	Sucipto, S., Dewi, E. K., Resti, N. C., & Santi, I. H. (2020). Improving The Performance of Alumni Achievement Assessment by Integrating Website-Based Tracer Study Information Systems and Telegram API. <i>Teknik</i> , 41(1), 72–77. <a href="https://doi.org/10.14710/teknik.v41i1.25307">https://doi.org/10.14710/teknik.v41i1.25307</a>	This research aims to improve the performance of assessing the alumni achievement of Vocational Schools in Kediri by integrating the website-based tracer study information system with social media Telegram API.	The research used the Linear Sequential Model method.	The usability test gives a result of 4.83 out of 5, this shows that integration can improve the performance and advantages of web-based tracer studies.
2	Putra, A. B. N. R., Mu'arifin, Subandi, M. S., Susanto, H., Hakim, G. R. U., & Basuki, I. A. (2021). The Technology of Tracking System Integrated Big Data based on Tracer Study to Improve Social Networking of Graduates in The Era of Society 5.0. <i>International Conference on Education and Technology (ICET)</i> , 128–132. <a href="https://doi.org/10.1109/ICET53279.2021.9575090">https://doi.org/10.1109/ICET53279.2021.9575090</a>	This research aims to develop a tracking system technology, testing the attractiveness level of tracking system technology; and testing the effectiveness of tracking system technology integrated with big data based on tracer studies.	The method used in this research is R&D (Research and Development).	The results of this research indicate that the technology tracking system integrated with big data based on the tracer study developed has a high level with an average score of 95 out of 100.

Table II. Cont.

No	Source	Research Purpose	Methods	Result
3	I, P. (2021). IBC Tracer: Web-Based Application for Online Tracing the Spread of Covid-19 in Indonesia Using BFS Algorithm. <i>International Journal of Artificial Intelligence</i> . <a href="https://doi.org/10.29099/IJAIR.V6I1.246">https://doi.org/10.29099/IJAIR.V6I1.246</a>	This study was designed and implemented using a web-based Artificial Intelligence (Breadth-First Search) algorithm called Indonesia BFS Covid-19 (IBC)	This research uses Design Science Research Methodology (DSRM) and tested using BlackBox Testing	The test results can be said that it can simulate the tracing process and is effectively used to help implement the impact of the spread of Covid-19.
4	Iskandar, H., & Siswantini. (2021). "Pensil Juara" a Web Based Tracer Study of SMK Negeri 2 Bandung for Ensuring Alumni Quality and Public Trust. <i>Cometra Education</i> , 1(1). <a href="https://cometrajournal.com/index.php/education/article/view/17">https://cometrajournal.com/index.php/education/article/view/17</a>	This study aims to collect real data about the employment rate of graduates from vocational high schools.	The method usage in the study is applied research.	This application is user friendly with eight features that provide the information needed by the user.
5	Rahman, F., Syahmaidi, E., & Rahmadani, A. F. (2019). Designing a Web-Based Graduate Tracer Study Information System Using CodeIgniter 3.9 at SMK 1 Sintuk Toboh Gadang. <i>Journal of the Faculty of Teaching and Education</i> , 6(1). <a href="https://ejurnal.bunghatta.ac.id/index.php/JFKIP/article/view/14579">https://ejurnal.bunghatta.ac.id/index.php/JFKIP/article/view/14579</a>	This research aims to produce a web-based tracer study information system that is suitable for use in SMK.	The design of this system uses the waterfall method	The result of the design is a web-based Graduate Tracer Study information system that is effective and can replace the role of using conventional tracer study information systems.

The results obtained after reviewing related articles include the WEB-based tracer study which is an effective information system used to obtain and process data obtained from alumni. The data from the WEB-based tracer study is used by the school as evaluation material in order to make policies in order to improve the quality of schools so that graduates of Vocational High Schools can have competencies as expected by the world of work.

## B. Discussion

Discussion related to the effectiveness of the WEB-Based Tracer Study and the utilization of the alumni data that has been obtained.

1) *WEB-based tracer study is effective for obtaining data on Vocational High School graduates:* WEB-based tracer study is a user-friendly information system with features that support and are tailored to the needs [9]. The display on the WEB-based tracer study can be programmed in such a way that the menu buttons, layout, and colors are used. In general, a WEB-based tracer study contains several accessible menus, including the login page, main page, data input page, and output page [10].

WEB-based tracer studies are more effective than conventional tracer studies that use paper and ballpoint media in their use [11]. Alumni data collection using conventional methods has low effectiveness, based on data obtained only 29 out of 130 (22.31%) graduates took part in filling out the questionnaire given [12]. The ineffectiveness of conventional methods can be caused by the long distance and limited time that alumni have to go to school to fill out the tracer study questionnaire. This is the fundamental difference possessed by a WEB-based tracer study, this system can be accessed anywhere and anytime as long as the user has a device and is connected to an internet connection. This system can be an

alternative solution to the problems faced by alumni related to distance and time that hinder the process of filling out the tracer study questionnaire at school. This advantage is also very useful considering that we are currently in the Covid-19 pandemic period which has resulted in this system being widely used to break the impact of the spread of Covid-19 [11].

WEB-based tracer studies can be integrated with various other systems, both with big data and applications such as telegram with the aim of increasing operational effectiveness and performance. The results show that the WEB-based tracer study system integrated with big data has a high level of compatibility with an average score of 95, the average percentage of processed product attractiveness in the design aspect is 88%, the display aspect is 96%, the content aspect is 90%. , the workflow aspect is 92%, the level of feasibility of the product developed is the interface aspect is 90%, the target aspect is 86%, the usability aspect is 86%, and the user convenience aspect is 88% [13]. This system can also be integrated with the BOT telegram system to facilitate the process of registering a login account to access the WEB with the MariaDB database performance test showing the highest average query performance is 6501 microseconds [14,15].

Although the WEB-based tracer study has many advantages, many Vocational High Schools have not implemented it in schools. This can be caused by the reluctance of the school to adopt and use Information and Communication Technology (ICT) in schools. Data shows 6.3% of principals do not want to adopt and use computers [16]. Reasons for impeding the implementation of ICT in schools include lack of current resources, level of technical support, and poor time management [17].

2) *The data from the tracer study is used as an effort to ensure school quality:* Tracer study collects data and information related to activities, suggestions, and constructive

input from alumni. The data collected is then used to determine policies by the school in order to improve the quality of graduates so that they have competencies in accordance with what is expected by the world of work. This improvement can be done through improving the content of education and training, learning conditions, and debriefing to face the transition from the world of education to the world of work [18,19].

The development of a web-based tracer study makes it easier for schools to determine policies because the data obtained are in the form of reports in the form of tables and graphs that will make it easier to determine policies. The development of a tracer study information system can also create a better selection process in improving the curriculum in schools [20]. This improvement process is supported by structure and network theory which can provide a better analysis in structuring organizational information systems [21].

#### IV. CONCLUSION

The use of WEB-based tracer studies is effectively used to obtain information about the activities that are being occupied by Vocational High School graduates and the tracer data can be used as evaluation material for schools to improve the quality of graduates so that graduates can compete in the world of work.

#### REFERENCES

- [1] M.M. van Houten, "Vocational education and the binary higher education system in the Netherlands: higher education symbiosis or vocational education dichotomy?," *J. Vocat. Educ. Train.*, vol. 70, no. 1, pp. 130–147, 2018.
- [2] M. Clarke, "Understanding and Managing Employability in Changing Career Contexts," *J. Eur. Ind. Train.*, vol. 32, no. 4, pp. 258–284, 2007.
- [3] M. Snoek, J. Bekebrede, F. Hanna, T. Creton and H. Edzes, "The contribution of graduation research to school development: graduation research as a boundary practice," *European journal of teacher education*, vol. 40, no. (3), pp. 361-378, 2017.
- [4] M.L. Berg, "'La Lenin is my passport': schooling, mobility and belonging in socialist Cuba and its diaspora," *Identities*, vol. 22, no. 3, pp. 303–317, 2015.
- [5] T. Leach, "Researching graduates' lived experiences of vocational learning," *Res. Post-Compulsory Educ.*, vol. 17, no. 2, pp. 261–275, 2012.
- [6] H. Schomburg, *Handbook for Graduate Tracer Studies*. Kassel: University of Kassel, Centre for Research on Higher Education and Work, 2003.
- [7] C. Millington, "The Use of Tracer Studies for Enhancing Relevance and Marketability in Online and Distance Education," pp. 1–5, 2003.
- [8] D. Moher, L. Shamseer, M. Clarke, D. Ghersi, A. Liberati, M. Petticrew, and L.A. Stewart, "Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement," *Systematic reviews*, vol. 4, no. (1), pp. 1-9, 2015.
- [9] H. Iskandar and S. Siswanti, "'Pensil Juara' a Web Based Tracer Study of SMK Negeri 2 Bandung for Ensuring Alumni Quality and Public Trust," *Cometra Educ.*, vol. 1, no. 1, 2021.
- [10] F. Rahman, E. Syahmaidi, and A.F. Rahmadani, "Designing a Web-Based Graduate Tracer Study Information System Using CodeIgniter 3.9 at SMK 1 Sintuk Toboh Gadang," *J. Fac. Teach. Educ.*, vol. 6, no. 1, 2019.
- [11] P.I, "IBC Tracer: Web-Based Application for Online Tracing the Spread of Covid-19 in Indonesia Using BFS Algorithm," *Int. J. Artif. Intell.*, 2021.
- [12] G.S. Navida, "Employability of the bachelor of secondday education graduates of pangasinan state university alaminos city campus," *J. Educ. Manag. Soc. Sci.*, vol. 2, no. 1, pp. 1–6, 2018.
- [13] A.B.N.R. Putra, M. Mu'arifin, M.S. Subandi, H. Susanto, G.R.U. Hakim, and I.A. Basuki, "The Technology of Tracking System Integrated Big Data based on Tracer Study to Improve Social Networking of Graduates in The Era of Society 5.0," *Int. Conf. Educ. Technol.*, pp. 128–132, 2021.
- [14] S. Sucipto, E.K. Dewi, N.C. Resti, and I.H. Santi, "Improving The Performance of Alumni Achievement Assessment by Integrating Website-Based Tracer Study Information Systems and Telegram API," *Teknik*, vol. 41, no. 1, pp. 72–77, 2020.
- [15] S. Sucipto, N.C. Resti, T. Andriyanto, J. Karaman, and R.S. Qamaria, "Transactional database design information system web-based tracer study integrated telegram bot," *J. Phys. Conf. Ser.*, vol. 1381, no. 1, 2019.
- [16] A. Totolo, "Adoption and use of computer technology among school principals in Botswana secondary schools," *Int. Inf. Libr. Rev.*, vol. 43, no. 2, pp. 70–78, 2011.
- [17] O. McGarr and G. Kearney, "The role of the teaching principal in promoting ICT use in small primary schools in Ireland," *Technol. Pedagog. Educ.*, vol. 18, no. 1, pp. 87–102, 2009.
- [18] H. Schomburg, "The professional success of higher education graduates," *Eur. J. Educ.*, vol. 42, no. 1, pp. 35–57, 2007.
- [19] H. Schomburg and U. Teichler, "Increasing potentials of alumni research for curriculum reforms: Some experiences from a German research institute," *New Dir. Institutional Res.*, vol. 2005, no. 126, pp. 31–48, 2005.
- [20] L. Chen, J.A. Pratt, and C.B. Cole, "Factors influencing students' major and career selection in systems development: An empirical study," *J. Comput. Inf. Syst.*, vol. 56, no. 4, pp. 313–320, 2016.
- [21] B. Chae and M.S. Poole, "The surface of emergence in systems development: Agency, institutions, and large-scale information systems," *Eur. J. Inf. Syst.*, vol. 14, no. 1, pp. 19–36, 2005.