

# Evaluation of the Role of Learning Methods in Developing Graduate Competencies in Bachelor of Information Technology Education Alumni

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## ABSTRACT

This study aims to evaluate the role of learning methods in developing the competencies of graduates of the Information Technology Education Study Program at Surabaya State University based on the alumni's perspective. The study used a descriptive quantitative approach with a tracer study method to identify the relationship between the learning process, graduate competencies, and alumni's work readiness. Data were obtained by distributing questionnaires to alumni who have worked in both educational and non-educational fields. Analysis was conducted descriptively to describe the level of graduate competency and the effectiveness of the learning methods applied during the study period. The results showed that most alumni were successfully absorbed in the workforce with competencies relevant to industry needs. Competencies that received the highest scores included ethics, the ability to use information technology, communication, teamwork, integrity, loyalty, and the ability to work independently. These findings indicate that the learning process has been able to support the development of professional and interpersonal competencies needed in the workplace. However, English competency remains the aspect with the lowest score compared to other competencies and therefore requires strengthening through the integration of bilingual learning, the use of international references, and English-based academic activities. The study also found that the most dominant learning methods used were discussions, lectures, demonstrations, and practicums. The high use of discussion methods reflects the implementation of a student-centered learning approach that encourages active student participation. Meanwhile, experiential learning methods such as research projects, internships, and fieldwork remain relatively underutilized. Therefore, study programs need to strengthen experiential learning through increased internship programs, industry collaborations, project-based learning, and student involvement in research to better prepare graduates for the challenges of the workplace and the global digital transformation.

**Keywords:** Tracer Study, Competence, Learning Methods

## INTRODUCTION

Higher education plays a crucial role in preparing human resources capable of competing in the digital era and the Industrial Revolution 4.0. The changing needs of today's workforce require graduates not only to possess academic and hard skills, but also to possess soft skills such as communication, teamwork, leadership, adaptability, critical thinking, and problem-solving (Succi & Canovi, 2020; Dadelo & Vinogradova-Zinkevic, 2026). These competencies are crucial in preparing graduates to face the increasingly competitive and complex dynamics of the workforce (Rachelle, 2026).

In higher education, the success of a study program is measured not only by the number of graduates produced, but also by the relevance of graduate competencies to the needs of the workforce. Therefore, universities are required to design effective learning processes to develop student competencies. The application of learning methods in the educational process is a crucial factor influencing graduate quality (Clements & Cord, 2013).

Learning is no longer solely oriented towards knowledge transfer through conventional lectures, but is increasingly shifting towards student-centered and experiential learning approaches that emphasize direct experience in the learning process (Villarroel et al., 2020; Scheuring & Thompson, 2025; Arief, 2012).

The application of experiential learning methods such as internships, practicums, research projects, fieldwork, and collaborative discussions is considered capable of comprehensively improving student competencies in preparing them for the world of work. Through contextual learning experiences, students can develop both hard skills and interpersonal skills needed in the workplace. Experiential learning significantly contributes to the development of professional skills, adaptability, and work readiness of higher education graduates (Chukwuedo & Ementa, 2022; Lantu et al., 2021; Safitri et al., 2023).

Evaluating learning effectiveness is a crucial component of developing the quality of higher education. One such evaluation instrument is the alumni tracer study. Tracer studies enable universities to obtain information on the condition of alumni after graduation, the relevance of competencies to the workplace, and the effectiveness of the learning processes implemented during their studies (Haryanta & Dihadjo, 2026; Renny et al., 2013; Husni et al., 2022). Tracer study results can also be used as a basis for curriculum evaluation, learning strategy development, and improving the quality of higher education services (Johansyah et al., 2025; Pratiwi & Rahmawati, 2020).

Several tracer studies generally focus on alumni profiles, employment rates, job waiting periods, and the relevance of the field of work to the study program. Research on the relationship between learning methods and graduate competency development is still relatively limited, particularly in the field of information technology education. Research shows that experiential learning positively influences the development of students' professional competencies, adaptability, and collaborative readiness through internships, multidisciplinary projects, and practice-based training (Yang et al., 2026).

Furthermore, studies of experiential learning environments contribute to the development of generic learning outcomes such as communication, teamwork, critical thinking, and self-regulation skills. This research confirms that practice-based learning activities have a strong relationship with the development of professional competencies in higher education (Duchatelet et al., 2024). Other research on graduate competency development also shows that experiential learning education can improve graduate attributes and students' professional readiness compared to lecture-based learning (Schreck et al., 2020).

In the context of professional competency development, it has been identified that experiential learning is closely linked to the development of soft skills competencies in engineering and technology education (Woodcock et al., 2021). However, most research still focuses on the influence of experiential learning on general work readiness, competency development in specific fields, and learning evaluation without using an alumni tracer study approach (Fajaryati et al., 2015).

The Undergraduate Program in Information Technology Education at Surabaya State University, as a program focused on developing educational and technological competencies, also faces challenges in producing competent and adaptable graduates. Alumni graduating from 2021 to 2024 have diverse career profiles, including working in both educational and non-educational fields. This situation highlights the importance of evaluating the role of learning methods in supporting the development of graduate competencies relevant to current workplace needs.

Based on these conditions, this study aims to evaluate the role of learning methods in developing graduate competencies among alumni of the Undergraduate Program in Information Technology Education at Surabaya State University, graduating from 2021 to 2024. This research is expected to provide an overview of the effectiveness of the learning methods implemented by the study program in developing alumni competencies, both in terms of hard skills and soft skills. This can serve as a basis for developing curricula and learning strategies that are more relevant to the needs of the workplace and the development of higher education in the digital era.

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## Theoretical Framework

### Alumni Tracing Study

A tracer study is a higher education evaluation instrument used to track the condition of alumni after graduation, particularly regarding their transition to the workforce, competency relevance, and the relationship between the learning process and industry needs. Tracer studies are conducted by collecting information on alumni over a specific period after graduation to obtain an overview of graduate profiles, job suitability, and competencies required in the workforce (Syaefudin & Astuti, 2025).

Tracer studies aim to obtain feedback from alumni as a basis for evaluating the quality of higher education in curriculum development (Sadikin et al., 2023). Furthermore, tracer studies also play a role in supporting educational quality improvement, strengthening relationships between higher education institutions and industry, and developing graduate competency development strategies. Information obtained from alumni can be used to evaluate the alignment of learning outcomes with job market needs. Universities can utilize tracer study results to improve learning methods, strengthen graduate competencies, and increase the relevance of the curriculum to industrial developments and digital transformation (Shrivastava et al., 2022; Dzomeku et al., 2024).

### Graduate Competencies

Graduate competencies are the abilities students possess after completing their education, encompassing knowledge, skills, attitudes, and professional abilities relevant to the needs of the workplace. In higher education, graduate competencies are a crucial indicator in assessing the quality of the learning process and the success of educational institutions in producing work-ready human resources. Graduate competencies encompass not only academic mastery but also adaptability, communication, collaboration, and problem-solving skills in a professional environment (Abelha et al., 2020).

In general, graduate competencies are divided into two main categories: hard skills and soft skills. Hard skills are technical abilities related to mastery of a specific field, such as the use of information technology, software, programming, data analysis, and other professional competencies. Meanwhile, soft skills are non-technical abilities that support individual success in the workplace, such as communication, teamwork, leadership, integrity, loyalty, critical thinking, problem-solving, and adaptability. In the workplace, a balance between hard and soft skills is a crucial factor in increasing graduate employability (Suleman, 2016). The development of the workplace in the digital era also emphasizes the importance of mastering 21st-century skills. 21st-century competencies include critical thinking, communication, collaboration, creativity, digital literacy, problem-solving, and the ability to adapt to technological developments (Rahmadani et al., 2025). These competencies are essential for facing technology-based industrial transformation and global competition.

Furthermore, the concept of employability competencies is also a crucial element in developing graduate competencies. Employability competencies are a set of skills that support graduates' work readiness, enabling them to adapt to the professional environment and industry needs (García-Álvarez et al., 2022). These competencies include technical skills, communication, teamwork, time management, leadership, problem-solving, and lifelong learning. In information technology education, graduate competencies focus not only on pedagogical skills as prospective educators but also encompass digital technology and professional competencies relevant to developments in the information technology industry.

### Learning Methods in Higher Education

Learning methods are strategies used by educators to deliver material to effectively achieve learning objectives. In higher education, learning methods play a crucial role in helping students develop knowledge, skills, and competencies relevant to the workplace (Hutton, 2020; Gómez-Tejedor et al., 2020). Learning methods not only serve as a means of delivering material but also support the development of students' critical thinking, communication, teamwork, and problem-solving skills. Therefore, universities have begun

implementing more active and collaborative learning to increase student engagement in the learning process (Kocak et al., 2021).

One widely used approach is active learning, which positions students as active participants through discussions, presentations, and problem-solving (Patiño et al., 2023). Furthermore, collaborative learning is also implemented through group work and joint projects to develop students' communication, collaboration, and leadership skills (González-Cacho & Abbas, 2022).

### **Student-Centered Learning**

Student-centered learning is a learning approach that places students at the center of the learning process. In this approach, students not only act as recipients of information but also actively seek, understand, and develop knowledge through various learning activities. Student-centered learning aims to increase student engagement, learning independence, and critical thinking and problem-solving skills. Student-centered learning is characterized by an active, collaborative, interactive learning process that is oriented toward the student's learning experience (Hoidn, 2020; Scager et al., 2016; Nastiti & Normalina, 2022).

In this approach, lecturers act as facilitators, supporting students in the learning process, while students are encouraged to actively discuss, collaborate, express opinions, and solve problems independently and in groups (Masek, 2019). The implementation of student-centered learning has a positive impact on the development of student competencies, both hard and soft skills. Furthermore, student-centered learning helps students become more independent and adaptive in the face of technological developments and changes in the professional environment (Hadiyanto, 2024).

### **Experiential Learning**

Experiential learning is a learning approach that emphasizes the learning process through direct experience. In this approach, students acquire knowledge and skills through practice, reflection, and active involvement in real-world situations. Experiential learning aims to connect theory with practice so that students are able to understand the application of knowledge in life and the workplace (Zetou et al., 2014). The concept of experiential learning, developed by David Kolb through Experiential Learning Theory, states that the learning process occurs through four stages: real-world experience, reflection on experience, concept formation, and application of concepts in new situations (Kolb, 1984). This cycle demonstrates that experience is a crucial part of the formation of student knowledge and competency.

## **METHODOLOGY**

This study uses a quantitative, descriptive-evaluative approach to evaluate the role of learning methods in developing graduate competencies among alumni of the Bachelor of Information Technology Education study program at Surabaya State University. The quantitative approach was used because the study utilizes numerical data in the form of percentages from alumni tracer studies to describe the state of graduate competency, the application of learning methods, and their relevance to the workplace. Descriptive-evaluative research aims to describe phenomena while evaluating the effectiveness of the learning process based on alumni perceptions (Haryanta & Dihadjo, 2026) (Eimer & Bohndick, 2023).

The research design used an evaluative survey. This design was chosen because the study was conducted through questionnaires distributed to alumni to obtain information about their learning experiences during their studies and their level of competency after graduation. The evaluative survey approach was used in the study to evaluate learning implementation, competency development, and graduates' work readiness (Castro-Lopez et al., 2022).

The research was conducted in the Undergraduate Program in Information Technology Education at Surabaya State University, with the study population consisting of all alumni who graduated between 2021 and 2024. Alumni from 2021 to 2024 were selected because alumni within this period were considered to still have

relevant learning experiences and most had entered the workforce or further studies, enabling them to evaluate the competencies acquired during their studies. Alumni tracer studies are an important instrument in evaluating the quality of higher education because they provide information on the relevance of graduate competencies to workplace needs and the effectiveness of the learning process during their studies.

The research sample consisted of alumni of the Undergraduate Program in Information Technology Education at Surabaya State University who completed the tracer study questionnaire. The sampling technique used was purposive sampling, as respondents were selected based on specific criteria, namely alumni of the Undergraduate Program in Information Technology Education at Surabaya State University, who graduated between 2021 and 2024. This technique is commonly used in alumni tracer studies because it allows the researcher to obtain respondents who align with the research objectives (Subhaktiyasa, 2024).

Data collection was conducted through online questionnaires using Google Forms. The research instrument was developed based on the concepts of graduate competencies, employability skills, and experiential learning. Learning method variables included lectures, demonstrations, participation in research projects, internships, practicums, fieldwork, and discussions. Meanwhile, graduate competency variables included ethics, expertise based on field of study, English language skills, use of information technology, communication, teamwork, critical thinking, problem-solving skills, adaptability, leadership, integrity, loyalty, and project management. The instrument used a Likert scale of 1-5 to determine alumni perceptions of learning methods and graduate competencies.

Data analysis techniques used descriptive percentage analysis and evaluative analysis. Descriptive analysis was used to describe the distribution of alumni based on graduation year, alumni status, alumni field of employment, graduate competency level, and level of application of learning methods. The results of the analysis are presented in tables, percentages, and interpretations of assessment categories. The percentage categories used in this study can be seen in Table 1.

Table 1. Qualification Results Percentage (Hadiprayitno et al., 2020)

Percentage	Categori
86% - 100%	Very high
76% - 86%	High
60% - 75%	Netral
55% - 59%	Low
>54%	Very Low

Next, an evaluative analysis was conducted to assess the most dominant learning methods, the highest and lowest graduate competencies, the relevance of competencies to the workplace, and the relationship between learning methods and alumni competency development. The evaluative approach in the tracer study was deemed effective in providing an empirical overview of graduate quality and higher education curriculum development.

## RESEARCH RESULTS AND DISCUSSION

Based on the results of a tracer study of alumni of the Information Technology Education Bachelor's program at Surabaya State University who graduated from 2021 to 2024, a total of 166 respondents were obtained, with details of the alumni distribution in Table 2. The distribution of alumni respondents from several generations shows that the study is able to describe the condition of alumni more representatively based on different graduation periods.

Table 2. Distribution of Alumni by Graduation Year

Year	Total
2021	53
2022	19
2023	28
2024	66

**Alumni Profile**

The relevance of graduates to the world of work can be seen in Table 3 through the alumni's fields of work, which include the education and non-education sectors.

Table 3. Alumni Work Details

Year	Eduaction	NonEducation
2021	15	28
2022	4	11
2023	8	9
2024	18	36

Based on this data, alumni work not only in education but also in many non-educational sectors. These findings indicate that information technology graduates possess relevant competencies not only in education but also in industry, digital technology, administration, business, and various other professional fields. The information technology competencies possessed by alumni enable them to adapt to the needs of an increasingly digital workplace. Furthermore, the curriculum and learning process produce not only prospective educators but also graduates with professional skills applicable to a variety of occupations.

The dominance of non-educational jobs indicates that information technology graduates have broad career opportunities in the teaching profession. This may be influenced by the development of the digital industry and the increasing need for workers with information technology competencies, such as web development, UI/UX design, system administrators, digital marketing, data management, and other technology fields. This situation demonstrates that information technology graduates are flexible and able to adapt to the dynamic needs of modern industry.

**Alumni Competency Level**

Based on the results of a tracer study of alumni of the Information Technology Education undergraduate program at Surabaya State University, graduating from 2021 to 2024, data were obtained on the alumni's competency levels, including both hard and soft skills. The alumni competency results are shown in Table 4.

Table 4. Alumni Competency Level

Competence	2021	2022	2023	2024
Ethics	84%	93%	95%	95%

Expertise based on discipline	77%	82%	86%	82%
English	71%	74%	73%	76%
Use of Information Technology	85%	88%	93%	90%
Communication	78%	87%	91%	90%
Teamwork	82%	88%	91%	90%
Self-development	81%	88%	88%	88%
General knowledge	77%	85%	85%	83%
Critical thinking	81%	85%	83%	81%
Working under pressure	80%	88%	83%	82%
Time management	82%	85%	84%	86%
Working independently	84%	89%	85%	86%
Problem-solving skills	81%	86%	84%	86%
Tolerance	85%	89%	87%	86%
Adaptability	82%	88%	86%	85%
Loyalty	84%	89%	88%	87%
Integrity	81%	89%	87%	88%
Leadership	79%	86%	87%	88%
Initiative	81%	89%	88%	86%
Project/program management	81%	86%	84%	83%

The research results show that the competency level of alumni of the Information Technology Education Study Program at Surabaya State University ranges from high to very high. The highest scores are in ethics, information technology use, communication, teamwork, integrity, loyalty, and the ability to work independently. These high competencies indicate that alumni possess strong professional skills, digital skills, and interpersonal abilities to face the world of work. This is influenced by the implementation of learning methods such as discussions, practicums, group work, collaborative projects, internships, and experiential learning, which support the simultaneous development of hard and soft skills.

Meanwhile, English language competency was the lowest-scoring competency compared to other competencies, with a percentage ranging from 71% to 76%. Furthermore, the competency based on the field of study for graduates in 2021 also showed a relatively lower score, at 77%. This indicates that English language skills and strengthening of technical competencies still need to be improved through the development of practice-based learning, projects, and increased use of English in academic activities. Overall, alumni competencies are highly relevant to the needs of the world of work. The high level of competency in the use of information technology, communication, teamwork, adaptability, problem solving, integrity, and leadership shows that alumni have good work readiness in a professional environment.

### Level of Implementation of Learning Methods

Based on the results of a tracer study of alumni of the Information Technology Education undergraduate program at Surabaya State University, graduating between 2021 and 2024, data were obtained regarding the level of implementation of learning methods during their studies, including lectures, demonstrations, research projects, internships, practicums, fieldwork, and discussions. The implementation of learning methods can be seen in Table 5.

Table 5. Implementation of Learning Methods

Year	Lecturer	Demonstrations	Projects Research	Internships	Practice	Fieldwork	Discussions
2021	68%	68%	68%	67%	68%	68%	69%
2022	60%	64%	64%	63%	61%	61%	66%
2023	62%	56%	54%	56%	56%	59%	57%
2024	60%	60%	59%	59%	59%	58%	60%

The research results show that the most dominant learning method is discussion, with the highest percentage at 69% among 2021 graduates. The high adoption of discussion methods indicates that the learning process has shifted toward a student-centered approach, placing students at the center of learning through interactive, collaborative, and participatory activities. Furthermore, lectures, demonstrations, practicums, and research projects also demonstrated good implementation, ensuring that the learning process focuses not only on theory but also involves hands-on practice and learning experiences.

Meanwhile, research projects, internships, and fieldwork showed relatively lower percentages, particularly among 2023 and 2024 graduates, with research projects receiving the lowest score at 54%. This situation indicates that the implementation of experiential learning still needs to be improved. Overall, the research results indicate that learning in the Bachelor of Information Technology Education study program has shifted toward active and collaborative learning, but strengthening experiential learning is still needed to ensure graduate competencies are more relevant to industry and workplace needs.

### Evaluation and Implications

A tracer study of alumni of the Information Technology Education Undergraduate Program at Surabaya State University, graduating from 2021 to 2024, shows that the learning process implemented during their studies has positively contributed to the development of graduate competencies and their job readiness. This is evident in the high employment rate of alumni, the predominance of employed alumni, and the high level of competency attainment across various hard and soft skills. The study shows that the majority of alumni are employed in the workforce, both in the educational and non-educational sectors. The high number of alumni working in the non-educational sector demonstrates that information technology education graduates possess flexible competencies that can adapt to developments in the digital industry and the needs of the workforce. This demonstrates that the competencies acquired during their studies are not only relevant to the teaching profession but also support careers in the technology sector.

From a competency perspective, the study found that competencies in ethics, information technology use, communication, and teamwork received the highest scores. This demonstrates that the learning process has been able to support the development of professional and interpersonal competencies needed in the workplace. High competency in information technology also demonstrates that graduates are prepared to face the development of digital transformation and the needs of technology-based industries. However, on the other hand, English language competency remains the lowest-scoring aspect compared to other competencies. This

situation highlights the need to strengthen English language skills through increased use of international references, bilingual learning, language certification, and the integration of English-based academic activities into the learning process.

Furthermore, research on learning methods indicates that discussions, lectures, demonstrations, and practicums are the most dominant methods used during the learning process. The high adoption of discussion methods indicates that learning has shifted toward a student-centered approach that encourages students to actively discuss, collaborate, and develop communication and teamwork skills. Meanwhile, experiential learning methods such as research projects, internships, and fieldwork still show relatively low acceptance. Yet, these methods play a crucial role in building real-world work experience, problem-solving skills, workplace adaptability, and professional readiness in students.

Study programs need to strengthen the implementation of experience-based learning through

1. Enhanced internship programs
2. Collaboration with industry
3. Developing project-based learning
4. Student involvement in research
5. Strengthening fieldwork based on workplace needs

Overall, this research shows that the Information Technology Education program at Surabaya State University has been able to produce graduates with competencies relevant to the needs of the workforce. However, strengthening experiential learning and improving global competencies, such as English, is still needed to ensure graduates are more competitive in the era of digital transformation and global job competition.

## CONCLUSION

The learning process implemented during the study period has been able to support the development of graduate competencies and their readiness to face the world of work. This is demonstrated by the high employment rate of alumni, both in the educational and non-educational fields, demonstrating that graduates possess flexible competencies relevant to industry needs. The highest-achieving alumni competencies include ethics, use of information technology, communication, teamwork, integrity, loyalty, and the ability to work independently. This indicates that graduates possess strong professional skills, digital skills, and interpersonal abilities to support work activities in a professional environment. However, English language competency remains an aspect that needs improvement, having the lowest percentage compared to other competencies.

Furthermore, the implementation of learning methods shows that discussions, lectures, demonstrations, and practicums are the most dominant methods used in the learning process. The high adoption of discussion methods indicates that the learning process has shifted towards a student-centered learning approach that encourages students to be active, collaborative, and participatory. Meanwhile, experiential learning methods such as research projects, internships, and fieldwork still show a relatively low level of implementation and need to be strengthened to improve students' work readiness, problem-solving skills, and professional experience.

## DAFTAR PUSTAKA

1. Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., & Ferreira-oliveira, A. T. (2020). Graduate Employability and Competence Development in Higher Education — A Systematic Literature Review Using PRISMA. *Sustainability*, 12(15), 5900. <https://doi.org/https://doi.org/10.3390/su12155900>
2. Arief, R. (2012). USAHA PENINGKATAN KOMPETENSI SOFTSKILL MELALUI STUDENT CENTERED-LEARNING BAGI MAHASISWA YANG MENGIKUTI MATA KULIAH ANALISA

- PERANCANGAN SISTEM. *Jurnal Pendidikan Teknologi Dan Kejuruan*, 21(1), 11–22. <https://doi.org/https://doi.org/10.21831/jptk.v21i1.3336>
3. Castro-Lopez, A., Monteiro, S., Bernardo, A. B., & Almeida, L. S. (2022). Exploration of employability perceptions with blended multi-criteria decision-making methods. *Education + Training*, 64(2), 259–275. <https://doi.org/https://doi.org/10.1108/ET-07-2021-0296>
  4. Chukwuedo, Samson Onyeluka, & Ementa, Christiana Ngozi. (2022). Students' work placement learning and employability nexus: Reflections from experiential learning and social cognitive career theories. *Industry and Higher Education*, 36(6), 742–755. <https://doi.org/10.1177/09504222221099198>
  5. Clements, M. D., & Cord, B. A. (2013). Assessment guiding learning: developing graduate qualities in an experiential learning programme. *Assessment & Evaluation in Higher Education*, 38(1), 114–124. <https://doi.org/10.1080/02602938.2011.609314>
  6. Dadelo, S., & Vinogradova-zinkevic, I. (2026). Developing Academic Soft Skills in Higher Education : The Role of Communication, Critical Thinking, and Creativity. *Journal of Advanced Academics*. <https://doi.org/10.1177/1932202X261438960>
  7. Duchatelet, D., Cornelissen, F., & Volman, M. (2024). Features of Experiential Learning Environments in Relation to Generic Learning Outcomes in Higher Education : A Scoping Review. *Journal of Experiential Education*, 47(3), 400–423. <https://doi.org/10.1177/10538259231211537>
  8. Dzomeku, V. M., Kusi Amponsah, A., Boateng, E. A., Antwi, J., Adoliwine Amooba, P., Deo Gracious, P., Armah, J., & Bam, V. (2024). Tracer study to assess the employability of graduates and quality of a nursing program: A descriptive cross-sectional survey. *International Journal of Africa Nursing Sciences*, 20, 100673. <https://doi.org/https://doi.org/10.1016/j.ijans.2024.100673>
  9. Eimer, A., & Bohndick, C. (2023). Social Sciences & Humanities Open Employability models for higher education: A systematic literature review and analysis. *Social Sciences & Humanities Open*, 8(1), 100588. <https://doi.org/10.1016/j.ssaho.2023.100588>
  10. Fajaryati, N., Pambudi, S., Priyanto, P., Sukardiyono, T., Utami, A. D. W., & Destiana, B. (2015). STUDI PENELUSURAN (TRACER STUDY) TERHADAP ALUMNI PROGRAM STUDI PENDIDIKAN TEKNIK INFORMATIKA JURUSAN PENDIDIKAN TEKNIK ELEKTRONIKA FAKULTAS TEKNIK UNIVERSITAS NEGERI YOGYAKARTA. *Elinvo (Electronics, Informatics, and Vocational Education)*, 1(1). <https://doi.org/https://doi.org/10.21831/elinvo.v1i1.10878>
  11. García-Álvarez, J., Vázquez-Rodríguez, A., Quiroga-Carrillo, A., & Caamaño, D. P. (2022). Transversal Competencies for Employability in University Graduates: A Systematic Review from the Employers' Perspective. *Educ. Sci*, 12(3), 204. <https://doi.org/https://doi.org/10.3390/educsci12030204>
  12. Gómez-Tejedor, J. A., Vidaurre, A., Tort-Ausina, I., Molina-Mateo, J., Serrano, M.-A., Meseguer-Dueñas, J. M., Martínez Sala, R. M., Quiles, S., & Riera, J. (2020). Effectiveness of flip teaching on engineering students' performance in the physics lab. *Computers & Education*, 144, 103708. <https://doi.org/https://doi.org/10.1016/j.compedu.2019.103708>
  13. González-Cacho, T., & Abbas, A. (2022). Impact of Interactivity and Active Collaborative Learning on Students' Critical Thinking in Higher Education. *IEEE Revista Iberoamericana de Tecnologías Del Aprendizaje*, 17(3), 254–261. <https://doi.org/10.1109/RITA.2022.3191286>
  14. Hadiprayitno, G., Jufri, A. W., & Nufus, S. S. (2020). Mapping of Students' Scientific Literacy Skills at Mataram. *Science Education Journal (SEJ)*, 4(2), 99–110. <https://doi.org/10.21070/sej.v4i2.969>
  15. Hadiyanto, H. (2024). Application of Student-Centered Learning in Improving Teaching English as a Foreign Language Students' 21st-Century Skills Performance. *Educ. Sci*, 14(9), 938. <https://doi.org/https://doi.org/10.3390/educsci14090938>
  16. Haryanta, D., & Dihadjo, D. (2026). Tracer Study Sebagai Instrumen Evaluasi Kualitas Layanan Institusi Pendidikan Tinggi. *Mudir : Jurnal Manajemen Pendidikan*, 8(1). <https://doi.org/https://doi.org/10.55352/mudir.v8i1.1723>
  17. Hoidn, S. (2020). Beyond the student-centered higher education classroom: The student-centered ecosystems framework. *ETH Learning and Teaching Journal*, 2(2), 191–195. <https://doi.org/https://doi.org/10.16906/lt-eth.v2i2.130>
  18. Husni, M., Idrus, M., & Hasyim, H. (2022). Tracer Study Alumni : Upaya Pengembangan Program Studi Pendidikan Akuntansi Universitas Negeri Makassar. *INSIGHT : Indonesian Journal of Social Studies and Humanities*, 2(1), 99–109. <https://doi.org/https://doi.org/10.26858/.v2i1.31423>
  19. Hutton, A. (2020). The Efficacy of the Flipped Classroom Technique in Undergraduate Math

- Education : A Review of. ArXiv, 1–24. <https://doi.org/https://doi.org/10.48550/arXiv.2010.11393>
20. Johansyah, R., Julaiha, S., & Muadin, A. (2025). GRADUATE QUALITY MANAGEMENT STUDY: EXPLORING GRADUATE TRACER STUDIES IN HIGHER EDUCATION (OPPORTUNITIES AND CHALLENGES). *Jurnal Manajemen Pendidikan*, 10(2), 584–592. <https://doi.org/https://doi.org/10.34125/jmp.v10i2.552>
  21. Kocak, O., Coban, M., Aydin, A., & Cakmak, N. (2021). The mediating role of critical thinking and cooperativity in the 21st century skills of higher education students. *Thinking Skills and Creativity*, 42, 100967. <https://doi.org/https://doi.org/10.1016/j.tsc.2021.100967>
  22. Kolb, D. (1984). *Experiential Learning: Experience As The Source Of Learning And Development*. In Englewood Cliffs.
  23. Lantu, D. C., Suharto, Y., Fachira, I., Permatasari, A., & Anggadwita, G. (2021). Experiential learning model: improving entrepreneurial values through internship program at start-ups. *Higher Education, Skills and Work-Based Learning*, 12(1), 107–125. <https://doi.org/https://doi.org/10.1108/HESWBL-01-2021-0014>
  24. Masek, A. (2019). Mode and Dimension of Facilitation in Student-Centred Learning Approach: A Comparison of Teaching Experience. *International Journal of Active Learning*, 4(1), 24–32.
  25. Nastiti, R., & Normalina, N. (2022). Persepsi Mahasiswa Program Studi Manajemen terhadap Penerapan Student-Centered Learning dalam Upaya Pelaksanaan Pembelajaran Aktif. *JPEKA: Jurnal Pendidikan Ekonomi, Manajemen Dan Keuangan*, 6(2), 89–100. <https://doi.org/10.26740/jpeka.v6n2.p89-100>
  26. Patiño, A., Ramírez-Montoya, M. S., & Buenestado-Fernández, M. (2023). Active learning and education 4.0 for complex thinking training: analysis of two case studies in open education. *Smart Learning Environments*, 10(8). <https://doi.org/10.1186/s40561-023-00229-x>
  27. Pratiwi, R., & Rahmawati, A. (2020). Tracer Study Terhadap Respon Stakeholder untuk Evaluasi dan Pengembangan Kurikulum Program Studi. *At-Taqaddum*, 12(1), 55–75. <https://doi.org/https://doi.org/10.21580/at.v12i1.5281>
  28. Rachelle, M. (2026). Exploring Graduate Employability through Self- Determination and Constructivist Perspectives : A Tracer Study of Postgraduate Alumni. *Journal of Interdisciplinary Studies in Education*, 15(3), 211–242. <https://doi.org/https://doi.org/10.32674/yf6xbj53>
  29. Rahmadani, A. F., Suryani, K., Khairudin, Rahmalia, A., Arpansi, N. A., & Putri, S. D. (2025). HUBUNGAN KOMPETENSI ABAD 21 DENGAN KESIAPAN KERJA MAHASISWA FKIP. *Edukasi: Jurnal Pendidikan*, 23(2), 390–405. <https://doi.org/10.31571/edukasi.v21i1.9040>
  30. Renny, Chandra, R., Ruhama, S., & Sarjono, M. W. (2013). Exploring Tracer Study Service in Career Center Web Site of Indonesia Higher Education. (IJCSIS) *International Journal of Computer Science and Information Security*, 11(3), 36–39. <https://doi.org/https://doi.org/10.48550/arXiv.1304.5869>
  31. Sadikin, S., Sujana, D., & Ariyani, E. D. (2023). STUDI PENELUSURAN (TRACER STUDY) ALUMNI SEBAGAI SARANA PEMANTAUAN SERAPAN LULUSAN DI POLITEKNIK MANUFAKTUR BANDUNG. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, 7(1), 90–99. <https://doi.org/https://doi.org/10.31955/mea.v7i1.2850>
  32. Safitri, H. D. A., Supriyanto, A., & Sobri, A. Y. (2023). COLLEGE ' S INTERNSHIP PROGRAM AS A FORM OF EXPERIENTIAL LEARNING AND ITS EFFECT TOWARDS STUDENTS ' SKILL. *IJEEM - Indonesian Journal of Environmental Education and Management*, 7(1), 27–37. <https://doi.org/10.21009/ijeem.v7i1.26288>
  33. Scager, K., Boonstra, J., Peeters, T., Vulperhorst, J., & Wiegant, F. (2016). Collaborative Learning in Higher Education: Evoking Positive Interdependence. *CBE Life Sci Educ*, 15(4), 1–9. <https://doi.org/10.1187/cbe.16-07-0219>
  34. Scheuring, F., & Thompson, J. (2025). Enhancing graduate employability – exploring the influence of experiential simulation learning on life skill development. *Studies in Higher Education*, 50(2), 256–270. <https://doi.org/10.1080/03075079.2024.2334837>
  35. Schreck, C. M., Weilbach, J. T., & Reitsma, G. M. (2020). Improving graduate attributes by implementing an experiential learning teaching approach: A case study in recreation education. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 26, 100214. <https://doi.org/https://doi.org/10.1016/j.jhlste.2019.100214>
  36. Shrivastava, S., Bardoel, E. A., Djurkovic, N., Rajendran, D., & Plueckhahn, T. (2022). Co-creating

- curricula with industry partners: A case study. *The International Journal of Management Education*, 20(2), 100646. <https://doi.org/https://doi.org/10.1016/j.ijme.2022.100646>
37. Subhaktiyasa, P. G. (2024). Menentukan Populasi dan Sampel: Pendekatan Metodologi Penelitian Kuantitatif dan Kualitatif. *Jurnal Ilmiah Profesi Pendidikan*, 9(4), 2721 – 2731. <https://doi.org/https://doi.org/10.29303/jipp.v9i4>
38. Succi, C., & Canovi, M. (2020). Soft skills to enhance graduate employability: comparing students and employers' perceptions. *Studies in Higher Education*, 45(9), 1834–1847. <https://doi.org/10.1080/03075079.2019.1585420>
39. Suleman, F. (2016). Employability Skills of Higher Education Graduates: Little Consensus on a Much-discussed Subject. *Procedia - Social and Behavioral Sciences*, 228, 169–174. <https://doi.org/https://doi.org/10.1016/j.sbspro.2016.07.025>
40. Syaefudin, M., & Astuti, D. (2025). TRACING FRENCH ALUMNI CAREERS: INSIGHTS FROM UNNES TRACER STUDY. *Proceedings of Fine Arts, Literature, Language, and Education*.
41. Villarroel, V., Benavente, M., Chuecas, M. J., & Bruna, D. (2020). Experiential learning in higher education. A student-centered teaching method that improves perceived learning. *Journal of University Teaching and Learning Practice*, 17(5). <https://doi.org/https://doi.org/10.53761/1.17.5.8>
42. Woodcock, C. S. E., Callewaert, J., & Millunchick, J. (2021). Synthesizing Definitions of Professional Competencies Linked to Experiential Learning in Engineering Education: A Literature Review. *Journal of Higher Education Theory and Practice*, 21(4). <https://doi.org/https://doi.org/10.33423/jhetp.v21i4.4214>
43. Yang, R., Yang, X., & Shabbir, M. S. (2026). Experiential learning in postgraduate education: Fostering professional skills and entrepreneurial mindsets. *International Journal of Educational Development*, 122, 103534. <https://doi.org/https://doi.org/10.1016/j.ijedudev.2026.103534>
44. Zetou, E., Papadakis, L., Vernadakis, N., Derri, V., Bebetos, E., & Filippou, F. (2014). The Effect of Variable and Stable Practice on Performance and Learning the Header Skill of Young Athletes in Soccer. *Procedia - Social and Behavioral Sciences*, 152, 824–829. <https://doi.org/https://doi.org/10.1016/j.sbspro.2014.09.328>