Research Article

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The Employability Skills Needed To Face the Demands of Work in the Future: Systematic Literature Reviews

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Abstract: The qualified human resources with high competitiveness and employability skills are needed to face the era of technological disruption, but employers find a lack of expertise among job seekers. Insufficient skills are related to the issue of education quality. This study aims to identify the employers' employability skills needed in the career field and the way to integrate it into the instructional process. The research was conducted through Systematic Literature Review (SLR) and mapping approach that consisted of three stages: planning, conducting, and reporting. The literature reviews in this research were derived from Science direct, Springer and IEEE as the main references. The results from the analysis in the literature review showed that employability skills are needed in relation to the work demands in the future according to the employers covering communication, team working, problem solving, and technological skills. The implementation of employability skills in the instructional process is to integrate them into the classroom for all subjects.

Keywords: employability skills, disruption era, technology, Systematic Literature Review

1 Introduction

Employability skills are indispensable in the current era of technological disruption and globalization. Employers complain about the insufficiency of skills among the workers [1]. Approximately 75 million young people in developing countries are unemployed, and in most countries, youth unemployment rates are 2 to 4 times higher than adults. Further, education providers must support them

with knowledge and skills either soft or hard skills relevant to the world of work to make them productive and able to be employed by the industry. Beside technical skills, employers are looking for workers who have some abilities in communication, collaboration, problem solving, and critical thinking ability. More than 50% of stakeholders could not find the right competencies in job seekers in accordance with the vacancies they provided so that more than 80% of jobseekers failed to get a job [2].

The disruption and globalization era inevitably presents a formidable challenge for the community related to the opening of countries around the world in this case regarding products, services, and labor migration between countries. They also have brought many widespread changes in the world of business, banking, transportation, social society, and even education. The ability to deal with those changes in the era is deemed critical then.

Disruption initiates a new business model more innovatively. The conventional ways, in turn, are abandoned and moved to technology and digitalization. It has caused various problems, including high unemployment.

The high level of unemployment is often associated with the failure of the education system in generating graduates supported with employability skills and high competitiveness. Lack of expertise among job seekers is the cause of increasing unemployment [3]. If the skills' gap of the job seeker is related to the world of education, then this problem is related to the issue of education quality.

Based on the problems, it is necessary for the institutions of education to prepare their students who not only have technical skills but also employability skills. The biggest challenge in education today is to generate graduates who have academic skills, ability in mastering technical skills, and balanced employability skills [4]. Employability skills are knowledge, skills, and competencies that workers need to have in improving their ability to get and keep a job, progress at work, face change, get other jobs if the worker wants to quit from a job or dismissed and enter more easily into the labor market at different periods of their life cycle. People will be more easily employed if they have extensive education and training, high skills, ability

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to work in teams, the ability of information and communication technology (ICT), ability to solve problems, and communication skills. This combination of skills enables them to adapt to the changes in the world of work [5].

People need to develop their potential to have employability skills. This is supported by the Australian Government stating that employability skills are important not only to get a job but also to develop their potential for company success [6]. In addition, people should have the following skills to survive in the job market, including the ability to communicate, problem solving, working in teams, long life learning, and being adaptable to change [5]. This statement is in accordance with the Indonesian Middle Term Program Plan (RPJM) from 2020-2024 stating that to improve the qualified and competitive human resources, it is needed to gain qualified instructional as well by integrating soft skills [7].

Based on the problems and the importance of students as prospective workers having employability skills and becoming graduates who are ready to work and to be accepted by the workforce, it is deemed necessary to identify the employability skills needed by employers as an effort to face the disruption era.

Considering the importance of employability skills, this research collected data from previous studies that discussed employability skills to deal with the era. In addition, this literature study contributes to show the work skills needed by employers so it can assist education providers in preparing their students to enter the workforce. The data were collected from 2014 to 2019 and they were identified using the Systematic Literature Review (SLR) and mapping method. By the SLR and mapping Method, a systematic review and journal identification can be carried out in each process following the steps or protocols set. The SLR and mapping method can avoid subjective identification. Furthermore, different with other literature reviews process, systematic review and mapping methods are employability skills needed by the workforce and reduce bias. It is expected that the identification result will be the literature in terms of of the SLR and mapping method use in journal identification.

2 Research Methods

2.1 Method Review

This research was conducted using the Systematic Literature Review (SLR) and mapping approach – a process of identifying, categorizing, analyzing, evaluating and in-

terpreting all research relevant about employability skills in order to figure out in an auditable, accurate, and fair way [8]. It can also be stated as a process of identifying, assessing, and interpreting all available research evidence with the aim of providing answers to certain research questions [9]. According to Kitchenham [9] and Neiva, David, Braga, and Campos [8], this review comprises three main stages: planning, conducting, and reporting the study.

2.2 Review and Mapping Planning

The first stage consisted of identifying needs and developing a review protocol. In Phase 1, the purposes of identifying needs were to find out the definition of employability skills according to the researchers, to identify the types of employability skills needed by employers, and to figure out the way to implement employability skills in learning according to the researcher's suggestions. Phase 2, meanwhile, was to develop a review protocol by making a research question. The research questions are divided into mapping questions and SLR questions. The Mapping questions are useful for brainstorming in the very beginning steps of a literature study and directing the scope to be studied. The questions used in systematic mapping are as follows:

- MQ 1: Which article discusses the most comprehensive about the employability skills needed by employers?
- MQ 2: Which article discusses the most complete process of learning employability skills in school?
- MQ 3: What research method is the most widely used researcher to assess a person's level of employability?

Then, the SLR research question are as follows:

- a) RQ1: What is the definition of employability skills according to the researchers?
- b) RQ2: What are the types of employability skills required by employers?
- c) RQ3: What are the types of employability skills needed by employers in the industry revolution 4.0 and the future?
- d) RQ4: How should the education system implement employability skills in school?

2.3 Review and Mapping Conducting

The second stage of SLR is conducting, which consists of five steps: research identification, selection of primary

studies, study quality assessment, data extraction & monitoring, data synthesis.

2.3.1 Research Identification

In this step, a search and selection of relevant previous research were carried out. The search was done through a trusted digital library. The digital library used in this SLR included IEEE eXplore (ieeexplore.ieee.org), ScienceDirect (sciencedirect.com), and Springer (link.springer.com).

The search was carried out as follows:

- Identifying the search terms from research questions
- Identifying search terms in years, titles, abstracts, and relevant keywords. Articles used were between 2014 - 2019.
- Identifying synonyms, alternative spellings, and antonyms of the search terms [10]

2.3.2 Selection of Primary Studies

The study selection criteria were intended to identify primary studies providing the direct evidence about research questions. To reduce the possibility of bias, the selection criteria must be decided during the protocol definition in stage 1 and the inclusion and exclusion criteria must be based on the research question [9].

The following inclusion criteria were presented below:

- IC1: the articles discusses employability skills AND
- IC2: the articles discusses the employability skills needed by employers AND
- IC3: the articles discusses the employability skills needed in the future OR in the era of technological disruption OR in the industrial revolution AND
- IC4: the articles discusses the implementation of employability skills learning in schools.

While the exclusion criteria were established:

- EC1: the papers do not discusses employability skills OR
- EC2: the papers do not discusses the employability skills needed by employers OR
- EC3: the papers do not discusses the employability skills needed in the future OR in the era of technological disruption OR in the industrial revolution OR
- EC4: the papers do not discusses the implementation of employability skills learning in schools.

Futhermore, steps in the identification of research and selection of primary studies are shown in the flow chart in Figure 1.

Figure 1: Flowchart of Identification and Select Studies

Meanwhile, in order to gain the answer from mapping questions, it was set an approach to note-taking in terms of brief table by title, goal, method, result, strength and weaknesses of article.

2.3.3 Study Quality Assessment

Study quality assessment aimed to provide more detailed inclusion/exclusion criteria, investigate whether quality differences provided explanations for differences in study results, used as a measure of the importance of individual studies when results were being synthesized, guide the interpretation of findings and determine the strength of conclusions, and give recommendations for next research. In addition, quality checklist are made to assess individual studies and support the article selection process [8].

In SLR research, the data found were evaluated based on the following quality assessment criteria (QA) questions:

- QA1: Are journal and proceeding articles published in 2014-2019?
- QA2: Do journal and proceeding articles provide a clear definition of employability skills?

- c) QA3: Do journal and proceeding articles state clearly about the employability skills required by employers?
- d) QA4: Do journal and proceeding articles state clearly about the employability skills needed in the industry revolution 4.0 and in the future?
- e) QA5: Do journal and proceeding articles discuss how employability skills should be applied in schools?

From each article, the value of the answers below would be given for each question above.

- a) Y (Yes): for journal and proceedings articles published in 2014 - 2019
- b) Y (Yes): for journal and proceedings articles providing a clear definition of employability skills
- c) Y (Yes): for journal and proceedings articles clearly stating the employability skills needed by employers
- d) Y (Yes): for journal and proceedings articles clearly stating the employability skills needed in the industry revolution 4.0 and the future
- e) Y (Yes): for journal and proceedings articles discussing the implementation of employability skills learning in schools
- f) N (No): for journal and proceedings articles not writing the criteria in the question above.

2.3.4 Data Extraction & Monitoring

Selected primary studies were extracted to collect data that contributed to answering mapping (MQ) and SLR research questions (RQ). For each of the 15 primary studies selected, the data extraction form was completed (step 2 of the fourth step). Data extraction forms were designed to collect data from primary studies that were required to answer research questions. Properties, meanwhile, were identified through research questions. Four properties were then used to answer the research questions as shown in Table 1. Here, data extraction was done iteratively.

Table 1: Map of data extraction into research questions

Component	RQ
Definition of employability skills	RQ1
The type of employability skills needed by employers	RQ2
The type of employability skills needed by the world of work in the industry revolution 4.0 and the future.	RQ3
How the employability skills should be implemented in schools	RQ4

2.3.5 Data Synthesis

The purpose of data synthesis was to gather evidence from some selected studies to answer research questions. The data extracted in this review included quantitative and qualitative data. Various strategies were also used to synthesize the extracted data related to research questions. It was important to identify whether the results of the research were consistent (e.g. homogeneous) or inconsistent (e.g. heterogeneous) to each other.

3 Review and Mapping Report

3.1 Significant Journal Publication

In this systematic literature review, 66 articles, both journals, and proceedings were found after going through the planning and conducting process. The articles obtained were from the IEEE, Springer, and ScienceDirect publishers. The search results were then be reselected through inclusion and exclusion criteria.

3.2 Results of Inclusion and Exclusion Criteria Selection

The results of the search process have been selected based on inclusion and exclusion criteria. Of 66 significant articles, there were only 15 articles left and then data scanning was performed. Figure 2 shows the grouping Journals and Proceedings of search results.

Figure 2: Journals and Proceedings of Search Results

The results indicate, only eight journals and seven proceedings fulfill the inclusion and exclusion criteria.

3.3 Quality Assessment Result

Table 2 below shows the results of the Quality Assessment.

Table 2: Quality Assessment

No	Publisher	Author	Y	N
1	IEEE	Pengnate [11]	QA2, QA3	QA4, QA5
2	IEEE	Fadhilah, Noraini, Noreliza, & Chua [12]	QA2, QA3	QA4, QA5
3	IEEE	Karnad, Ameya; Yadappanavar, Sharat; Hiremath [13]	QA3, QA5	QA2, QA4
4	IEEE	Wagaskar, Tripathy, Chauhan, Malaji, & Yadav [14]	QA2, QA3	QA4, QA5
5	Springer	Jayaram & Engmann [15]	QA2, QA3, QA5	QA4
6	Springer	Akyeampong [16]	QA2, QA3, QA5	QA4
7	Springer	Ehizuelen [17]	QA3, QA4, QA5	QA2
8	Springer	Osmani et al. [18]	QA2, QA3	QA4, QA5
9	Springer	Menon, Argyropoulou, & Stylianou [19]	QA2, QA3	QA4, QA5
10	Springer	Blanco, Schirmbeck, & Costa [20]	QA3, QA4, QA5	QA2
11	Springer	Graczyk-kucharska, Szafranski, & Golinski [21]	QA3, QA4	QA2, QA5
12	Springer	Wrobel-lachowska & Wisniewski [22]	QA3, QA4	QA2, QA5
13	Science direct	Sermasuk, Triwichitkhun, & Wongwanich [23]	QA2, QA3	QA4, QA5
14	Science direct	P. Singh, Thambusamy, & Ramly [24]	QA2, QA3	QA4, QA5
15	Science direct	Safta [25]	QA3	QA2, QA4, QA5

Based on the results of the quality assessment from the primary study above, all articles, both journals and proceedings published in 2014 – 2019, were used in this SLR research and answer QA1. Eight articles providing a clear definition of employability skills (QA2), all articles state clearly about the employability skills required by employers (QA3), only four articles state clearly about the employability skills needed in the industry revolution 4.0 and in the future (QA4), then five articles discuss how employability skills should be applied in schools (QA5). The data

were chosen for having sufficient problems, approaches, and information about the issues raised in the study.

Meanwhile, to answer the mapping question (MQ1), an approach to note-taking is carried out. From the results of the analysis of the 15 articles above, there are 5 dominant articles discussing the employability skills needed by employers. But the most comprehensive and clear in describe employers' needs for employability skills that job seekers must have is Pengnate's research [11]. Another advantage, Pengnate used forty (40) employers from four (4) industry sectors as respondents. The data obtained is obviously gained from the stakeholders, as job seekers recruiters.

The identical approach is carried out to answer MQ2. There are 4 dominant articles discussing learning process of employability skills. On the other hand, the most completed research article in depth exposed of learning process and employability skills transfer towards students was done by Jayaram and Engmann [15]. This study explores about the innovative and effective instructional model along with its on target successfulness principles that must be delivered to improve employability skills needed by employers.

Regard to MQ3, the research method applied from those 15 articles includes development, quantitative by questionnaire, qualitative in interview, and literature study research. From all the researches as mentioned above, literature study is most commonly used as research method.

4 Review and Mapping Discussion

4.1 Systematic Mapping Discussion

Through a note-taking approach, it has been done a systematic mapping to gain an answer from the research mapping (MQ) and the research questions (RQ). Regarding this, a research done by Pengnate is the most comprehensive and clear in discussing employability skills needed by employers. He points out research on employers' perception on employability skills needed on the career field through questionnaire. The employability skills needed by the employers are personal qualities; core skills; and subject knowledge. The researcher also states the suggestions towards the educational institution about things to do in assisting the students with working skill. On the other hand, this research has not exposed clearly and in details in how to assist them with working skill through instructional process at school. He only gave general description in terms of improving instructional process on

working based, training to meet the career field needs, and personal quality improvement (11).

Whereas, the article published by Jayaram & Engman was the most completed of all discussed employability skills. It explained the innovative and effective instructional models involving its principles to improve employability skills needed by employers. This article shows on how to establish an innovative model to transfer the skills to the students and its supporting needed to create an effective model. It also includes the use of innovative information, communication, and technology (ICT), stakeholders-multi partnership, innovative budgeting mechanism, and ascertain the readiness of teachers and trainers. Moreover, the supporting environment for a policy is very important to make sure that the model is financially supported efficiently, applied effectively, and continuously in long term (15). In contrary, the explanation in this article only gives a general description while the detailed implementation technically has not exposed clearly yet.

During answering the mapping question, the other interesting facts were revealed. One of them there are articles that discuss the development of a weighted score clustering model that can identify the level of students employability skills. After being identified, the education provider determines the specific skills training that needs to be held to improve their employability skills. The development of this model is carried out considering the importance of employability skills when graduates enter the workforce. However, the model was developed only to identify problem solving and thinking skills, while other employability skills components have not been developed [13].

Beside model development, it was found system that was able to assess students' aptitude, soft skills, and subject knowledge. This will prepare them better in the competitive workplaces and have work readiness. But the system developer does not clearly state what indicators are used to evaluate students' aptitude and soft skills. Actually these indicators are very important to know and can help other researchers who want to develop a similar system as an effort to increase employability skills. In addition, the way that needs to be done to correct these deficiencies is not suggested more deeply by researchers [14].

Other articles tend to reveal what employability skills are needed by employers [12, 16–19, 21–25], the gaps between the desire to transform students' life skills through learning process and educational curriculum with the needs of workplace [16, 19, 24, 25] and how should the education system implement employability skills to face the demands of employment and the industrial revolution 4.0 [17, 20]. These studies are interesting because they illustrate the needs of the world of work today and the fu-

ture and what education providers need to do to overcome these problems. However, most researchers only give some simple pure expressions and general comments.

4.2 RQ1: What is the definition of employability skills according to the researchers?

Employability skills are the personal attributes enabling the people to get a job and support an individual's career life more easily. They are a set of skills to perform a particular job including technical skills, higher order thinking skills, personal skills, people skills/social skills, generic skills, and self-perceived employability skills. The lack of employability skills may cause unemployment and hinder people's career development. To be successful in their work, people need to have employability skills or a mix of them in addition to have technical skills. It is very important for individuals to have those skills. Technological development might influence the employability skills required. Therefore, people are required to renew their skills in accordance with the demands of the workplace, otherwise, it will be difficult for them to get involved in the desired work/industry [11, 14, 26, 27]. Then, the OECD stated that employability refers to an ability to find a job and adapt to labor market demands [28]. Employability skills are non-technical skills needed to enter the workforce, to stay afloat and develop a career in the workplace, or for career development in a new workplace [29]. In summary, employability skills are the set of skills employees should have to perform a particular job and to adapt to any changes in the workplace.

4.3 RQ2: What types of employability skills do employers need?

Researchers stated that employers demand their employees to develop all the skills and knowledge to produce a better result and improve performance [30]. From the literature study, one of the results of the research stated that employers need employees who have three key types of skills: cognitive, non-cognitive, and technical. Although basic cognitive and technical skills are important in the workplace, non-cognitive skills such as communication, punctuality, problem solving, and flexibility are most important [15]. Additionally, employers need those able to adaptable in a dynamic work environment [27].

In short, according to the review of literature, as shown in Figure 3, most employers seek candidates who

have skill in communication, technology, problem solving, and team working.

Figure 3: The Types of Employability Skills Needed by Employer

The study results have been supported by Brewer that employees must have continuous learning ability and adaptability; communication skills; independent problem solving ability; technological skills, creative thinking skills and ability to work in a team [5]. This statement is in line with the other researchers explaining that employers are looking for employees who have employability skills such as the ability to communicate effectively and work in teams [31]. Further, employers expect that these soft skills will sustain technical expertise possessed by job seekers, so they are able to solve problems encountered while working [14].

4.4 RQ3: What type of employability skills needed by the world of work in the industry revolution 4.0 and in the future?

In the era of technological disruption of the industrial revolution 4.0, it is not enough to have technical skills, but it is necessary to develop methodological and social skills [19]. Another opinion stated there are the top three skills that are highly needed in the future include cognitive abilities, complex problem solving skills, and system skills [31]. This is supported by the World Economic Forum, which states that new skills are needed to face the industrial revolution of 4.0 [32]. Further, BRICS (Brazil, Russia, India, China and South Africa) declared that the important skills to have for Industry 4.0 are knowledge about ICT, the ability to work with data, technical know-how, and personal skills [31]. While the BRICS personal skills' indicator is almost the same as the eight skills grouping of the Australian Government's employability skills framework. The eight skill groupings are communication, team work, problem

solving, initiative and enterprise, planning and organizing, self-management, technology, and learning skills [6].

In addition to hard skills and formal qualifications, employers also place importance on the practical skills or competencies of new prospective employees to successfully carry out various work tasks. A range of skills relevant to work widely used in the era of disruption and in the future includes three main groups: cognitive abilities, basic skills, and cross functional skills [32]. Then, the World Economic Forum stated that the top ten of skill demand by 2020 will be dominated by soft skills and technological skills [33]. This shows, although technology is developing rapidly, soft skills and technological skills are still very needed in the industry revolution 4.0. and in the future.

4.5 RQ4: How should the education system implement employability skills in school?

According to the study of the literature review, it can be concluded that strengthening employability skills for students is no longer an option, but a necessity that needs to be done by the education system. If the employability skills of young people are the problem that needs to be solved, the school must support the development of competencies and skills for students who do not have or lack the skills needed in the workplace. Therefore, educational providers need to think about how to implement appropriate teaching employability skills for students. The education system needs to provide students with direct learning that reflects real-world problems and work opportunities in an interdisciplinary way [34]. This statement is supported by Anderson and Gantz that in facing the acceleration and development of the world of work, education providers in making learning objectives must consider a number of the core skills that employers/stakeholders expect to have when they graduate [35].

Based on the primary study, a researcher exposed that to have a readiness for fresh workers and give a relevant working skill by the career field or working are, it is needed an effective and innovative model to improve working skill required by employers. Instead of a model to transfer it in order to be adopted properly by them, it is also necessary a support to gain it in effective way. It focuses on the improvement of input, output, or process. Innovative ICT's and Teacher training resources which involve into the input are in line with the emphasis on non-cognitive skills and workplace learning as in output. Last, the process itself covers innovative financing and multi-stakeholder partnership. The researcher explained that it

is required to have teachers' readiness to deliver the content of knowledge effectively and being able to keep and apply it in long term. It is done to set them be ready getting into the working area. That is why, it is obviously crucial to make a joint partnership between the educational institution and the industry area to create an effective curriculum. Moreover, the researcher declared that the use of innovative ICT will expand its learning experience, having flexibility in time and space, and building their independent in learning. The ability to learn independently is what needed by the employers. The emphasis on learning at the working space and non- cognitive skill are absolutely essential as it plays very important role as their outcomes while getting into the working area. Some aspects will contribute more in this way to create an effective model consisting of a) skills gap analysis, b) curriculum articulation, c) assessment and accreditation, d) industry involvement and accreditation, e) communication and information sharing [15].

Another opinion states the implementation of employability skills in school can be done by combining the skills needed in the workplace in the learning process [14]. The education system needs to embed the employability model into the curriculum to bridge the gap between what skills industry needs and what skills the graduate [27]. The economist added that to be effective, employability skills must be integrated into every subject area so that the skill development becomes inseparable from knowledge sharing because soft skills cannot be taught in an isolation [36]. For example, in Indonesia, as stated in the RPJM 2020-2024 to improve quality and competitive human resources, one of the government's efforts is to improve the quality of teaching and learning by integrating employability skills in the learning process [7]. This is supported by Munadi research stating that employability skills in the form of communication are taught by discussions, questions and answers, and presentations. Teamwork which includes the division of tasks and respect among group members is learned through group work, while problem solving is learned through discussion of given tasks [29]. If an education system want to prepare the graduates to be tomorrow workforce, then they must develop lifelong learners [37]. In addition, in the learning process, educators need to consider how to improve and hone the skills needed by the world of work today and in the future.

Referring to the literature study, the most required employability skills component by the employers are problem solving skill, team working, communication and the usage of technology to be integrated in the instructional process. Those four models are truly significant in social learning model. This model supports the employability skills

where social and intellectual aspects can be learned together. One of the model in social learning in group investigation. It trains the skills of problem solving, cooperation, and communication. As an addition, it is assumed that this model is able to deliver knowledge academically by involving social aspects [38]. To go deeper on the skill in utilizing technology, it needs a blended learning. The combination of group investigation and blended learning can be taken as the way to improve students' employability skills. It is an activity and learning format that runs through direct meeting and online with some characteristics as follows; 1) student centered on active and creative learning, 2) the rising interaction between student- instructor, student- student, student's content, and the resources of student- external factor, 3) formative and summative evaluation mechanism to be integrated student and instructor [39]. It is also in accordance with instructional that focuses on the future. In brief, the mixture between group investigation model and blended learning is one of the ideal way to accelerate students' employability skills.

5 Conclusion

Employability is a skill that individuals should have to continue their career in life. To face global competition and future world work, individuals need to renew their employability skills. Based on the results of a study from 15 kinds of literature, employability skills must be owned by workers according to the employer including communication, team working, problem solving and technological skills. Then, the relevant skills towards working are widely used in the era of disruption and in the future including three main groups: cognitive abilities, basic skills, and cross functional skills. But most of the projected skills in the future will be dominated by soft skills and technological skills. Because of the significance of employability skills, the education system needs to apply employability skills in every learning process. As in Indonesia, to improve quality and competitive human resources, the government in accordance with the technocratic design of RPJM 2020-2024, seeks to improve the quality of learning through the integration of employability skills in each subject.

References

- [1] M. Mourshed, D. Farrell, and D. Barton, *Education to Employment: Designing a System that Works*. McKinsey Center for Government,

- 2012.
- [2] world B. Group, "Education Global Practice Skills for Jobs in the 21st Century," 2015.
 - [3] R. Franita, "Analisa pengangguran di Indonesia," *Nusant. (J. Ilmu Pengetah. Sos.)*, vol. 1, p. 6, 2016.
 - [4] T. M. Bennett, "Defining the Importance of Employability Skills in Technical Education," Auburn University, 2006.
 - [5] L. Brewer, *Enhancing youth employability: What? Why? and How? Guide to core work skills*, First. Switzerland: International Labour Organization, 2013.
 - [6] A. Government, *Employability Skills*, no. December. Canberra: Commonwealth of Australia, 2004.
 - [7] Bappenas, *Rencana pembangunan jangka menengah nasional 2020-2024*. Jakarta: Kementerian PPN, 2019.
 - [8] F. W. Neiva, J. M. N. David, R. Braga, and F. Campos, "Towards pragmatic interoperability to support collaboration: A systematic review and mapping of the literature," *Inf. Softw. Technol.*, vol. 72, pp. 137–150, 2016.
 - [9] B. Kitchenham, *Procedures for Performing Systematic Reviews*. UK: Keele University, 2004.
 - [10] R. S. Wahono, "A Systematic Literature Review of Software Defect Prediction: Research Trends , Datasets , Methods and Frameworks," vol. 1, no. 1, 2015.
 - [11] W. Pengnate, "Needs of Employability Skill Characteristics based on Employers' Perception," in *2018 5th International Conference on Business and Industrial Research (ICBIR)*, 2018, pp. 598–601.
 - [12] A. R. Fadhillah, M. N. Noraini, A. M. Noreliza, and K. H. Chua, "Analysis on the Employability Skills of UNITEN Graduates in Engineering Program," no. 1, pp. 1–5, 2018.
 - [13] P. G. S. Karnad, A. Meya; Yadappanavar, Sharat; Hiremath, "Evaluation and Validation of Problem Solving and Thinking Skills Based on Student Academic Performance," in *IEEE International Conference On Recent Trends in Electronics Information & Communication Technology*, 2017, pp. 642–646.
 - [14] K. Wagaskar, A. K. Tripathy, K. Chauhan, A. Malaji, and D. Yadav, "Employ . . . able A Tool to achieve 7E's of Employability," in *International Conference on Advances in Computing, Communications and Informatics (ICACCI)*, 2017, pp. 1756–1761.
 - [15] S. Jayaram and M. Engmann, "Developing skills for employability at the secondary level: Effective models for Asia," *Prospects*, vol. 44, no. 2, pp. 221–233, 2014.
 - [16] K. Akyeampong, "Reconceptualised life skills in secondary education in the African context: Lessons learnt from reforms," *Int. Rev. Educ.*, vol. 60, pp. 217–234, 2014.
 - [17] M. M. . Ehizuelen, "Education and Skills Development in China-Africa Cooperation," *Front. Educ. China*, vol. 13, no. 4, pp. 553–600, 2018.
 - [18] M. Osmani *et al.*, "Identifying the trends and impact of graduate attributes on employability: a literature review," *Tert. Educ. Manag.*, vol. 3883, no. December, 2015.
 - [19] M. E. Menon, E. Argyropoulou, and A. Stylianou, "Managing the link between higher education and the labour market: perceptions of graduates in Greece and Cyprus," *Tert. Educ. Manag.*, vol. 3883, pp. 1–13, 2018.
 - [20] E. Blanco, F. Schirmbeck, and C. Costa, "Vocational Education for the Industrial Revolution," in *In: Auer M., Langmann R. (eds) Smart Industry & Smart Education. REV 2018*, 2019, pp. 649–658.
 - [21] M. Graczyk-kucharska, M. Szafranski, and M. Golinski, "Model of Competency Management in the Network of Production Enterprises in Industry 4.0 — Assumptions," pp. 195–204, 2018.
 - [22] M. Wrobel-lachowska and Z. Wisniewski, "The Role of the Lifelong Learning," *Adv. Intell. Syst. Comput.*, vol. 596, pp. 0–7, 2018.
 - [23] S. Sermsuk, D. Triwichitkhun, and S. Wongwanich, "Employment Conditions and Essential Employability Skills Required by Employers for Secondary School Graduate," *Procedia - Soc. Behav. Sci.*, vol. 116, pp. 1848–1854, 2014.
 - [24] P. Singh, R. X. Thambusamy, and M. A. Ramly, "Fit or Unfit? Perspectives of Employers and University Instructors of Graduates' Generic Skills," *Procedia - Soc. Behav. Sci.*, vol. 123, pp. 315–324, 2014.
 - [25] C. G. Safta, "Cross-Curricular Competencies - Access Path to Professional Development," in *Procedia - Social and Behavioral Sciences*, 2015, vol. 203, pp. 348–354.
 - [26] A. Singh and L. B. Singh, "E-Learning for Employability Skills: Students Perspective," *Procedia Comput. Sci.*, vol. 122, pp. 400–406, 2017.
 - [27] R. K. Misra and K. Khurana, "Employability Skills among Information Technology Professionals: A Literature Review," *Procedia Comput. Sci.*, vol. 122, pp. 63–70, 2017.
 - [28] OECD, *OECD Skills Outlook 2015: Youth, Skills, and Employability*. OECD Publishing, 2015.
 - [29] S. Munadi, Widarto, N. Yuniarti, M. A. Jerusalem, and Herman-syah, *Employability Skills Lulusan SMK dan Relevansinya Terhadap Kebutuhan Dunia Kerja*. Yogyakarta: UNY Press, 2018.
 - [30] E. Tsitskari, M. Goudas, E. Tsalouchou, and M. Michalopoulou, "Leisure , Sport Tourism Education Employers' expectations of the employability skills needed in the sport and recreation environment," *J. Hosp. Leis. Sport Tour. Educ.*, vol. 20, no. November 2016, pp. 1–9, 2017.
 - [31] M. S. Rasul, R. Amnah, A. Rauf, and A. N. Mansor, "Employability Skills Indicator as Perceived by Manufacturing Employers Employability Skills Indicator as Perceived by Manufacturing Employers," *Asian Soc. Sci.*, vol. 9 No. 8, no. April, pp. 42–46, 2013.
 - [32] W. E. Forum, *The Future of Jobs-Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, Switzerland: World Economic Forum, 2016.
 - [33] W. E. Forum, *The Future of Jobs Report*. Switzerland: World Economic Forum, 2018.
 - [34] T. E. I. Unit, *The Workforce of the Future An assessment of technology proficiency*. New York: The Economist Intelligence Unit Limited, 2015.
 - [35] C. Anderson and J. F. Gantz, *WHITE PAPER SKILLS REQUIREMENTS FOR TOMORROW'S BEST JOBS Helping Educators Provide Students with Skills and Tools They Need*. USA: IDC Analyze The Future, 2013.
 - [36] T. E. I. Unit, *Driving the skills agenda: Preparing students for the future*. New York: The Economist Intelligence Unit Limited, 2015.
 - [37] D2L, *The Future of Work and Learning About D2L*. Canada: D2L Corporation, 2018.
 - [38] B. Joyce, M. Weil, and E. Calhoun, *Models of Teaching (Model-model Pengajaran)*, Eight. Yogyakarta: Pustaka Pelajar, 2009.
 - [39] P. Khandve and S. M. E., "Blended Learning: The Future Of Education Industry," in *Indian Society for Technical Education*, 2016, no. January, pp. 96–101.