



The Sociotech Learning Model to Overcome the Low Students Employability Skills

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ABSTRACT

Employability skills is an essential aspect for job seekers because employers and the world of work need it; however, many job seekers have the low employability skills. This study aims to reveal the need of SocioTech learning models through blended learning to overcome low students employability skills. The descriptive research used to determine the level of employability skills among students, the analysis used the descriptive statistical analysis technique, and it used literature study to examine the SocioTech learning model. The results of the study showed the overall assessment of employability skills, revealing 31.58% of students to have average employability skills; 44.74% of students in the fair category; 23.68% of students classified as poor. Recommendation of SocioTech learning model through blended learning to improve employability skills consisted of six stages: 1) determining the topic of problems and groups through dialectics online and face to face (f2f); 2) planning investigations through collaboration and dialectics online and f2f; 3) conducting investigations through collaboration and dialectics online and f2f; 4) planning presentations through collaboration and dialectics online and f2f; 5) making presentations through collaboration, reflection, and dialectics online and face to face; and 6) evaluating group results online and f2f.

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1. INTRODUCTION

The importance of employability skills in the world of work deserves the attention of various parties, especially education providers who produce workers (Othman et al., 2017). From the pedagogical aspect, one way to increase the employability skills of students can be done by integrating employability learning in each teaching and learning process (Fajaryati et al., 2020; Misra & Khurana, 2017; Wagaskar et al., 2017). Based on literature review and field survey, the solution to overcome the lack of employability skills is to improve the learning model.

The reason of employability skills need special attention because they are important for prospective workers to face the world of work in the era of technological disruption (Fajaryati et al., 2020). This opinion is in line with Koloba's statement stating that the rapid changes in the world of work require students to have employability skills as a beneficial provision to become future prospective employees (Koloba, 2017). This then makes employability to be the main focus of employers and job seekers (Gill, 2018). In addition, employability skills and job readiness are two major issues for vocational education and training graduates in terms of the ability of graduates to excel in the world of work (Sudira et al., 2020). Although employability skills have received much attention in debates and various literatures, in fact there is still a gap between the success of achieving job-ready skills and the employability of graduates (Rowe & Zegwaard, 2017). There are still many negative comments regarding graduates who do not have employability skills as required by industry (Othman et al., 2017). One of the reasons for the low employability skills of graduates is the lack of learning about employability in the learning process. Employability skills are still underestimated by education providers rather than technical skills. The lack of these skills has actually been the concern to teachers, educational institutions, and industry; however, the implementation of how it is handled in the teaching process has still received little attention (Duignan et al., 2018). Therefore, it is necessary to have a balance in employability learning and technical skills. In addition, the learning process is not only to know, but also to apply the concepts learned and combine them with job skills (Sudira et al., 2018).

Based on the description above and the literature review conducted, it can be concluded that according to employers, graduates as a workforce still have low employability skills. In addition, the appropriate learning model to practice employability skills has never been developed. So, a learning model that is able to integrate employability skills in the learning process is needed.

The integration of employability in the learning process can be done by applying the SocioTech learning model through on blended learning. It is formed from a modified group investigative learning model with blended learning which has never been developed before. By the development of SocioTech learning model, it is expected be able to contribute on students' employability skills and technical skills simultaneously, especially in Vocational Schools (SMK). So, the learning gap between technical skills and employability skills can be minimized. This has been supported by researchers through a field study conducted in Surakarta area. After the research was conducted, a recommendation in terms of the need to integrate employability skills in learning through the blended learning based SocioTech learning model was obtained.

2. METHODOLOGY

Before the field research was carried out, a literature study was conducted on the employability skills most needed by employers and the demands of work in the future. As

explained above, there are four components of the employability skills that are ranked as the most needed by employers and the world of work. The employability skills include problem solving, communication, teamwork, and technology utilization skills (Fajaryati et al., 2020). In this study, it was seen how the learning process of these four skills was and to what extent the level of mastery of students' employability skills considering these skills were needed when the students enter the world of work. Research on students' employability skills was conducted at SMK in Surakarta. The data collection method at this stage used data collection instruments through interviews, observation, documentation, and questionnaires. The types of instruments used were interview guides, documentation sheets, and questionnaires. The indicators for each component of the employability skills assessed are presented as follows; communication skills, team work skills, problem solving skills, technology utilization skills.

Instrument was conducted through a process of validation and data reliability (Fajaryati et al., 2021). The questionnaire used a Likert scale with 5 alternative answers that had a positive score and a negative score, namely a score of 5, 4, 3, 2, 1 as shown in Table 1.

Table 1. Likert Scale with 5 Alternative Answers

Alternative answer	Score (+)	Score (-)
Excellent	5	1
Good	4	2
Average	3	3
Fair	2	4
Poor	1	5

The data analysis technique in this study used qualitative and quantitative analysis techniques. The assessment of the level of mastery of students' employability used score interpretation based on criteria in Table 2 (Budiyo, 2017).

Table 2. Interpretation of Scores Based on Criteria

Criteria	Category
$Score \geq \mu_i + 1,5 \sigma_i$	Excellent
$\mu_i + 0,5 \sigma_i \leq score < \mu_i + 1,5 \sigma_i$	Good
$\mu_i - 0,5 \sigma_i \leq score < \mu_i + 0,5 \sigma_i$	Fair
$\mu_i - 1,5 \sigma_i \leq score < \mu_i - 0,5 \sigma_i$	Middle Fair
$Score < \mu_i - 1,5 \sigma_i$	Poor

After conducting research to determine the level of vocational students' employability skills, it was concluded that there is a need for the integration of employability skills in every learning aspect. The model offered can be used as a solution, namely the SocioTech learning model through blended learning. This model is a combination of group investigation model and Picciano's multimodal blended learning model. Here, the SocioTech learning model as a learning solution for employability skills was obtained through a literature study.

3. RESULT AND DISCUSSION

3.1. Assessment of Students' Employability Skills

1) Communication skills

Based on the calculation of the interpretation of the score based on the criteria, it was found that the students' communication skills were in the poor category of 34.21%, 57.89% fair, and 7.89% average. Whereas, it was not found for students' communication skills in the very good and good categories.

2) Team Work Skills

According to the calculation of the interpretation of the score based on the criteria, it was found that the students' teamwork skills were in the poor category by 21.05%; fair by 39.47%; average by 28.95%; and good by 10.53%. The student teamwork skills in the excellent category were not found.

3) Problem Solving Skills

In accordance with the interpretation of the score based on the criteria, it was found that the students' problem solving skills were in the poor category by 26.32%; fair by 50%; average by 21.05%; and good by 2.63%. While, there was no excellent category for the students' problem solving skills.

4) Technology Utilization Skills

From the calculation of the score interpretation based on the criteria, it was found that the students' technology utilization skills were in the poor category of 7.89%; fair by 26.32%; average by 36.84%; good by 26.32%; and excellent at 2.63%.

3.2. The results of a literature study on the SocioTech learning model through on blended learning

Based on the recommendations, the SocioTech learning model through blended learning is a combination of the group investigation model and blended learning by Picciano. According to [Sharan & Sharan \(1992\)](#), there are six stages of implementing the group investigation learning model, namely grouping, planning, investigation, evaluating, presenting, and organizing. In stage I (grouping) there are four steps: 1) presenting general problems, 2) cooperative class planning, 3) sorting questions into subtopics, and 4) forming interest groups. In stage II (planning) after joining the group, each student focuses on the subtopic of their choice in which each group should take time to plan its investigations. In stage III (investigation), each group carries out the plan that has been decided in stage II. Furthermore, in stage IV (evaluating) the groups decide which findings they will share and present in front of the class. In stage V (presenting) each group is ready to present their findings to the class. Here, the audiences evaluate the clarity and attractiveness of each presentation. Finally, in stage VI (organizing) students share feedback about their investigations and affective experiences. Teachers and students collaborate to evaluate individual, group, and class learning. [Khandve & Shelke \(2016\)](#) stated, blended learning is an activity and a face-to-face and online learning format with the following characteristics: 1) student-centered where students become the active and interactive learners; 2) there is an increasing interaction of student-instructor, student-student, student content, and student-outside resources; and 3) Integrated formative and summative assessment mechanism for students and instructors.

Blended learning applied in the SocioTech learning model refers to a concept put forward by Picciano and Dziuban and it is defined or conceptualized as a variety of technologies/media integrated with the conventional face-to-face classroom activities ([Picciano & Dziuban, 2007](#)). Picciano stated that student learning can be influenced by many factors, including pedagogical techniques, technology and media used for delivery and student learning styles. Therefore, [Picciano \(2009\)](#) suggested a multimodal learning model, namely the blending with the purpose model. He argued that pedagogical goals and activities should encourage the

approach teachers use in teaching. Moreover, teaching is not always about learning content or skills but also about supporting students socially and emotionally.

Picciano's multimodel, blending with purpose model has six objectives and basic pedagogical activities and learning approaches. The goals and pedagogical activities include: a) content, which is the main driving force in the teaching process. In providing and presenting content, the blending with purpose model suggests that various technologies and media can be utilized. One of the technologies that can be used is LMS (Learning Management System) software, which is capable of displaying various media including text, images, video and audio or even simulations; b) reflection, pedagogical activities carried out by reflecting on what has been learned and sharing their reflections with teachers and fellow students is considered very positive. Picciano considered blogs as the right tools for students to reflect what is being learned; c) collaboration/student generated content, currently collaboration can not only be done by face-to-face in class, but can be done online via email or other electronic media.

The results of collaboration/group work are not just written on a sheet of paper or work reports, but the content generated from the collaboration can be shared with others via the Wiki. Today Wikis has become popular and has grown significantly and becomes a staple in group projects and writing assignments; d) social/emotional, as previously stated, teaching is not only about learning content or skills but also about practicing students' social and emotional skills. An approach that can be taken to train students' social and emotional skills in addition to online programs is face to face (f2f); e) dialectic/questioning, it is an important activity that allows teachers to investigate what the students know and to perfect their knowledge.

According to Picciano, the most effective approach to dialectical activity and questioning is to use a discussion board. Well-organized discussion activities generally attempt to present a topic or problem and ask students to answer questions, provide their own perspective and evaluate and respond to the opinions of others; f) synthesis/evaluation, another important component of the model is synthesizing, evaluating, and assessing learning. The approach taken can use a CMS or other online tools. Papers, tests, assignments and portfolios are some of the main methods used to assess student learning and are increasingly being conducted online. Student presentations can also be done online in addition to be done directly in class. Online technology allows for easier sharing of evaluation and assessment activities (Johan et al., 2019; Picciano, 2009).

The reason why the multimodal model, blending with purpose Picciano became the choice for the SocioTech learning model, because the multimodal model, in addition to the group investigation model, is also considered suitable for training social skills. The two models were selected and integrated to simultaneously hone technology utilization skills and social aspects including communication skills, teamwork, and problem solving.

Based on the explanation above and the integration of the two models, it can be concluded that there are six steps in the SocioTech model, each of which will integrate the four components of employability skills in the learning process. More details can be seen in Fig 1.

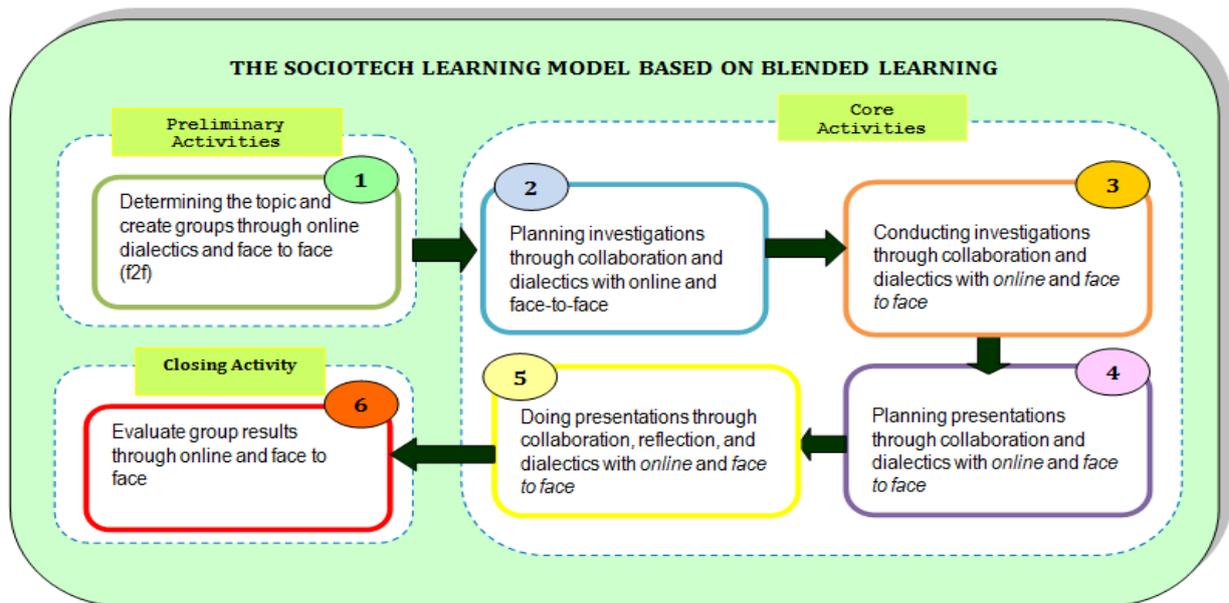


Figure 1. Sociotech Learning Model

Step 1 of the SocioTech learning model is to determine the topic and create groups through online dialectics and face to face (f2f). The teacher presents the topic in the form of a problem in general to trigger student reactions and then the students respond by giving various questions about the problems raised by the teacher. Students look for problem content presented by the teacher through books, articles, and other sources that can be accessed online. At this stage students express what they want to know and ask as many questions as possible. Dialectical activities between teachers and students are carried out to formulate and select various questions or what you want to know into subtopics to be investigated. After several questions (subtopics) are determined, group formation is carried out by students registering to investigate the desired subtopic. In step 1, the social aspect is trained, students learn to dare to communicate what is in their mind in front of the class when asking questions. This implies that students are trained in terms of the employability skills component, is communication skills.

Step 2 of the SocioTech learning model involves planning an investigation through collaboration and dialectics online and f2f. Each group that has been formed begins to collaborate with their respective group members to plan investigations according to the selected subtopic. Through dialectical and collaborative activities, each group has a dialogue and discussion to determine the aspects to be investigated. Every activity in step 2 is carried out online or by f2f. At this stage, the social aspects are sharpened in which the students are trained to work in team and communicate effectively when collaborating in planning and determining aspects to be investigated. So, at this stage students are trained in the employability skills component in the form of communication skills and teamwork.

Step 3 of the SocioTech learning model is investigated through collaboration and online dialectics and f2f. Each member of each group has a dialogue to carry out the plan that has been decided and collaborates to work according to his or her job description to gather information and various sources needed in the investigation. In addition, each member discusses to exchange ideas and information as well as integrates the results obtained and together form conclusions. Each activity in step 3 is carried out online or by f2f. The social aspect is sharpened where students are trained to work together in a team to carry out

investigations, communicate effectively to exchange information and convey their ideas. Students are also trained in solving problems encountered during the investigation process.

Step 4 of the SocioTech learning model is planning presentations through online collaboration and dialectics and f2f. At this stage, the group members discuss and have a dialogue to plan findings or results to be presented to the class and how to present them. The social aspects are trained at this stage. Students learn to collaborate in work and coordinate with group members to divide assignments during presentations. Indirectly, step 4 teaches students about communication skills and teamwork skills. Step 5 of the SocioTech learning model, is making presentations through online collaboration, reflection, and dialectics and f2f. During the presentation, each member of the group carries out his or her duties according to the plan agreed upon in step 4. Each member collaborates to complement each other during the presentation. Dialectical activities were also carried out to provide feedback during the question and answer session after the presentation. Reflections on the investigation are carried out during the presentation and presented through online media. Step 6 of the SocioTech learning model is to assess the results of student groups online and f2f. Teachers and students collaborate to evaluate the learning process and the results of group work. Students share feedback about investigations carried out and experiences they have in completing assignments as given by the teacher.

From the description above, it can be seen that steps 1 to 6 of the SocioTech learning model apply the online learning system and f2f. In the process of searching for information and study sources, it was carried out online. The results of the work and discussions were presented using the existing technology. Therefore, it can be concluded that the activities from steps 1 to 6 trained the students in technology utilization skills.

The SocioTech learning model uses online learning in addition to face to face. Therefore, teachers need to provide classes that can be accessed online. Learning through online classes requires a software application often called a Learning Management System (LMS) - a software that includes various services that help teachers in managing their courses (Kraleva et al., 2019; Ouadoud et al., 2018). In line with this statement, LMS is a software platform for managing subject matter, student interaction, and assessment (Haghshenas, 2019; Krouska et al., 2018). There are several LMS software, including Moodle, Edmodo, or Google Classroom.

In developing the SocioTech learning model, the LMS software chosen is Google Classroom. The reason for choosing this device is because it can be used for free and easily either using a computer or using mobile phone (Deiniatur, 2019; Kalogiannakis & Papadakis, 2017). Google Classroom is a new application introduced in Google Apps for Education in 2014. It allows teachers to quickly create and organize assignments, provide feedback efficiently, and make it easy to communicate with students online, or combine teaching and learning styles that offer many advantages over conventional teaching styles (Sukmawati & Nensia, 2019). Google Classroom is required in the learning process when it involves activities such as making observations; asking question; checking books and other sources of information to see what is already known; planning investigations; reviewing what is already known, using tools (computer software) to analyze and interpret data; propose answers, explanations, and predictions; and communicating the results (Shaharane et al., 2016). The reason for choosing Google Classroom in the SocioTech learning model is because Google classroom is effectively used as an active learning tool (Shaharane et al., 2016). It is an online learning platform that is popular among the public and easy to use (user friendly) (Deiniatur, 2019). In addition, Google Classroom can be used as a blended learning tool to increase class productivity, free for teachers who want to create classes and use their time more effectively in the learning

process. Google Classroom is also considered to have some advantages in the fields of communication, interaction, perceived benefits, and is easy to learn and use (Azhar & Iqbal, 2018; Heggart & Yoo, 2018; Khalil, 2018). Students who do not have the courage to express their opinions directly can communicate their ideas through Google Classroom. This platform is also effective to encourage student collaboration. This means that this software is able to train students' cooperation skills.

Based on the above statement, this development research used Google Classroom as a software platform to manage the learning process online. The main reason for choosing this software is because Google Classroom is an LMS easily accessible via mobile phone and free to use by users.

3.3. Assessment Of Students' Employability Skills.

Based on the description of the research results above, it can be concluded that the employability skills of SMK students in Surakarta for student problem solving skills were in the middle fair category by 50% and 26.32% poor; Communication skills were in the middle fair category of 57.89% and 34.21% poor; teamwork skills were in the middle fair category of 39.47% and 21.05% poor; and technology utilization skills were categorized as fair at 36.84%, 26.32% middle fair, 7.89% poor. Meanwhile, the assessment of the employability skills overall was 31.58% of students who had fair employability skills; 44.74% of students were in the middle fair category; and 23.68% of the students were classified as poor, while there were no students classified as good and excellent (0%). Thus, based on the research results the students' employability skills were in the middle fair category. More details can be seen in the Figure 2.

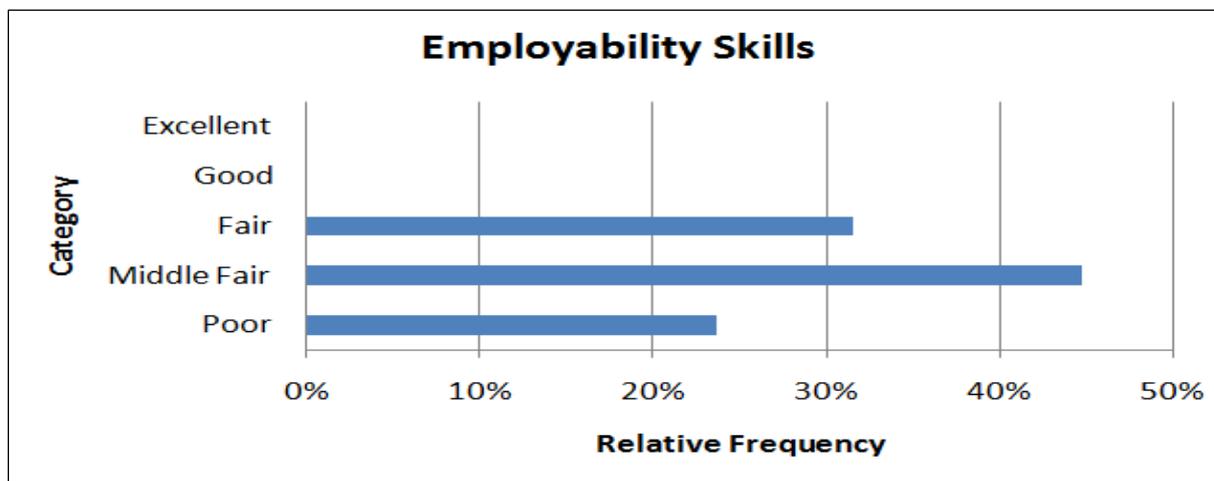


Figure 2. Results of employability skills categories

The data regarding the students' employability skills mastery level were obtained through a questionnaire distributed to students. To support the data, interviews were conducted with a number of students and teachers. The results of interviews with homeroom teachers were in line with questionnaire data, which showed that employability skills including communication skills, teamwork, problem solving, and the use of technology from most students were still low. In addition, to avoid subjectivity, four researchers and field observers made direct observations or observations. From the results of interviews, observations, and lesson plan analysis, it can be seen that the learning process that has been carried out so far

was still emphasized on technical skills, while learning about the social aspects was only accepted during Religion and Citizenship Education lessons and was not integrated into every subject. In addition, the learning approach used was still in the form of teacher centered. Students tended to rely on the teacher in the learning process, passive, became listeners, and only did what the teacher told them to do. In addition, the learning process was not fully integrated technology, whereas currently technology is developing rapidly and its role will greatly help in improving the quality of learning.

Based on the results of the preliminary study, it can be concluded that education providers need to prepare learning models that are able to answer the demands of disruption of technology and work skills in the future, especially SMK as education providers that produce work-ready graduates. Apart from technical skills, employability skills are needed in the world of work. This statement has been supported by Nathan & Rajamanoharane who revealed in their research that one of the most important factors needed by students is employability skills. Many students struggle to find jobs, not because of a lack of knowledge, but because of a lack of employability skills (Nathan & Rajamanoharane, 2016). Therefore, education providers, especially SMK need to equip their students with employability skills so that later they become graduates who are ready to work and have the skills that employers are looking for. Acknowledgements, avoiding identifying any of the authors prior to peer review.

3.4. Recommendations learning models to increase students' employability skills

According to the research results described above, it can be concluded that a learning model that is able to integrate employability skills in the learning process is needed. Based on literature studies, the learning model that is able to meet these needs is an integration between two learning models, are the group investigation model and the multimodal blended learning model. The integration of these two models produces a SocioTech learning model through blended learning. The reason for choosing the two models was because based on a literature review, these models are able to train social aspects including communication skills, teamwork, problem solving, and technology utilization.

Many studies have been conducted to examine the importance of blended learning in increasing employability skills. However, the focus of the employability skills that are honed and improved in each study is different. In addition, based on the knowledge of the author, no one has developed the SocioTech learning model through blended learning to increase employability skills, especially for students at SMK. For example, Singh and Singh did not develop a learning model, but examined students' perspectives on the benefits of e-learning for increasing employability skills. The results of his research showed that from a student's point of view, e-learning flexibility is the most prominent factor for developing job-specific skills. Other factors that stand out are a) e-learning is easy to use and work-oriented, respondents consider e-learning very useful when in remote places and in remote areas. According to respondents, online learning helps in developing professional skills & continuing education. Respondents also had a view that e-learning is able to train people to collaborate interactively and help in developing reflective & critical thinking. b) e-learning is useful in the transfer of knowledge and skills (Johan et al., 2019; Singh & Singh, 2017).

The magnitude of the benefits of blended learning in increasing employability skills has also been studied by Lane. The results of his research indicated an important role of e-learning in the future as a teaching tool in classrooms and a means of independent learning for the development of job skills. However, Lane also stated that online learning is not adequate; hence, it requires a mixed learning that combines online and face-to-face learning

to obtain optimal learning outcomes (Lane, 2016; McCutcheon et al., 2015). The opinions of Singh and Singh and Lane received support from Nathan and Rajamanoharane who stated that employability skills are absolutely essential for students to master to face the world of work in future. According to Nathan and Rajamanoharane, currently increasing employability skills with the help of e-learning is not only a possibility but also a definite need. Each student can access the subject matter by simply touching the screen (smart phone) (Nathan & Rajamanoharane, 2016).

Based on the results of research and literature review that has been conducted, it can be concluded that employability skills are things that cannot be underestimated by education providers. This is because, to get a job and be successful in the world of work, it needs not only knowledge and technical skills but also employability skills. Even according to employers, employability skills are absolutely essential for workers to have and control. Therefore, departing from these problems, education providers, especially SMK, need to pay attention to the level of mastery of their students' employability skills. The school needs to integrate employability skills in each learning process and this requires an appropriate learning model so that the learning transfer process regarding employability skills can be fully mastered by SMK students as prospective graduates who are ready to work. The recommendation for the appropriate learning model to increase employability skills is the SocioTech learning model through blended learning, because based on a literature review this model is considered to be capable of increasing employability skills, which include communication skills, teamwork, problem solving, and technology utilization.

4. CONCLUSION

The need of employers for job seekers who have good employability skills in addition to aspects of knowledge and technical skills is very high. However, in reality many job seekers do not have employability skills even though the mastery of their technical skills is quite capable. This causes job seekers failed in getting a job. The failure of these job seekers is the responsibility of the education administrators as graduates. From various literature reviews and research that have been done, this is related to the concentration of learning more emphasized on the aspects of knowledge and technical skills in the field being occupied; while, the learning process regarding employability skills is often neglected. Therefore, it is necessary for education providers, especially SMK as a school for producing graduates to concern with the level of mastery of students' employability skills so that students become graduates who are ready to work and able to survive in the world of work. One of the efforts that can be made by the school is to improve the learning model, by integrating employability skills in each learning process. The way that schools can take is by applying the SocioTech learning model through blended learning. Through this model, it is hoped that students can improve employability skills and become graduates who are ready to work in accordance with the needs of employers.

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