

<sup>1</sup>Siti Resmi  
<sup>2</sup>Reza Widhar  
 Pahlevi  
<sup>3</sup>Intan  
 Kusumawati  
<sup>4</sup>Damar Prasetyo

## Study of Enhancement of Student Entrepreneurship Competence through Digital Learning Models



**Abstract:** - This research aims to conduct a study of increasing entrepreneurial students at the Center for Excellence Vocational High School in the Special Region of Yogyakarta through digital learning models. The role of a vocational school teacher is required to give birth to graduates with an entrepreneurial mentality, for this reason it is necessary to familiarize students with the application of entrepreneurship. The habit of implementing entrepreneurship in schools can be achieved through learning activities, applying entrepreneurial characteristic values in schools and entrepreneurship practices. The research approach uses qualitative research and data collection through focus group discussions. The informants for the research were teachers from Center for Excellence Vocational High School in the Special Region of Yogyakarta. Data collection was carried out in a focused and directed manner to respond to questions related to student entrepreneurship, financial literacy and learning models. The results of the study show that the quality of education is inseparable from the role of digital technology, so it is only natural that there are differences in the quality of education in various regions. Therefore, the learning process in Vocational High School needs to be planned, implemented and controlled to achieve the goal of producing graduates with an entrepreneurial mentality

**Keywords:** Student Entrepreneurship, Learning Models, Digital Literacy

### 1. Introduction

On a macro level, entrepreneurship can boost a country's economic growth. The entrepreneurial ratio in Indonesia is still less than 5% of the population. The government's push to create entrepreneurs began at the secondary level by forming the Center for Excellence Vocational High School Program. Vocational High School (SMK) is a form of formal education unit that provides vocational education at the secondary education level which prepares students primarily to work in certain fields. Center of Excellence Vocational School (SMK PK) is a Vocational School development program with certain skill competencies in improving quality and performance, which is strengthened through partnerships and alignment with the business world, industrial world, world of work, which ultimately becomes a reference Vocational School that can function as a driving school and center improving the quality and performance of other vocational schools. In the Special Region of Yogyakarta Province there are 30 Central Vocational Schools of Excellence. The Creative and Entrepreneurship Program curriculum is a reference for the formation of students' entrepreneurial abilities. On the other hand, not all teachers have sufficient skills and knowledge to master entrepreneurial material, from idea development, production to marketing (Kurnia et al., 2022). Financial knowledge (literacy) is very important for a profitable business (Resmi et al., 2019).

According to Law Number 20 of 2013 in article 15 concerning Vocational Education, it explains that SMK is a secondary level education that aims to prepare students to be ready to work in certain fields (Indriayu, 2017). SMK prioritizes its students to be able to create a workforce that is skilled, competent and develops its professionalism to be able to enter the world of work. Vocational High School graduates are expected to be able to compete in the Business World of Industry, play a role as workers, or maybe become job openings for others (Saptono et al., 2021).

However, in reality SMK graduates are still graduates whose unemployment rate is higher than graduates of other education. this is also due to the large number of job seekers who are not comparable with the availability of jobs in Indonesia (Sari et al., 2021). Other factors can be caused by the skills or capabilities of prospective workers from SMK graduates who are not equal in each region. So it is not suitable with the demands of the labor market.

<sup>1</sup> Sekolah Tinggi Ilmu Ekonomi YKPN Yogyakarta, Indonesia

[sitiresmiamp@yahoo.com](mailto:sitiresmiamp@yahoo.com)

<sup>2</sup> Universitas Amikom Yogyakarta, Indonesia

<sup>3</sup> Universitas Cokroaminoto Yogyakarta, Indonesia

<sup>4</sup> Universitas Teknologi Yogyakarta, Indonesia

Now there are still many SMK graduates who don't understand the skills they already understand, or maybe they don't make good use of these skills (Aravik & Tohir, 2022). This low skill can be caused by the uneven ability of educators, or inadequate practice facilities in schools to be able to improve student skills. SMK not only aims to prepare students to be able to enter the world of work, but also aims to produce graduates who have an entrepreneurial spirit (Pranoto et al., 2020).

Students can start making entrepreneurship a career choice to support the welfare of others. Graduates who work professionally or as entrepreneurs need skills in financial management (Liu & Zhang, 2021). Financial literacy should be done as early as possible. Students should understand financial finance before graduating from high school so they can manage their finances independently (Gianakos et al., 2023). In addition to entrepreneurship education, students' knowledge of good personal financial management is necessary to start entrepreneurship. Students who understand good financial literacy will facilitate financial management in entrepreneurship. Research (Cao, 2022) shows that entrepreneurship education has not affected entrepreneurial behavior, financial literacy has no positive significant effect on entrepreneurial behavior (Arceo-Gómez & Villagómez, 2017). The results of the study (Mehrvarz et al., 2021) state that there is a significant effect of using social media on entrepreneurship. In addition to research that doesn't support it, there are factors that support that entrepreneurship education can increase entrepreneurial behavior (Winterstorm Värlander et al., 2020).

An interview with one of the teachers at SMK N Depok revealed that most of the teachers had a technical education background, so they did not have an in-depth knowledge of financial literacy and entrepreneurship. not all teachers have sufficient skills and knowledge to master entrepreneurship material, starting from idea development, production, to marketing. Thus efforts are needed to improve students abilities in entrepreneurship through mastery of financial literacy and entrepreneurship in the form of digital learning media that can be accessed and understood easily and quickly. The learning model in this study is applied to students of the Center for Excellence Vocational School who focus on the areas of business development and marketing and the output is expected to produce students who are compatible, able to think creatively, have a leadership spirit, dare to take risks, adhere to business ethics, have expertise in technology, think critically, be flexible, think logically, be proficient in non-verbal communication, be able to plan, have strategic planning, be able to build work teams, be capable of time management, and follow trends (Sari et al., 2021). The facts show that SMK graduates still find it difficult to face the challenges of meeting the need for reliable human resources in the world of work. In general, the big challenge faced is that not all SMKs are able to develop a curriculum together with the world of work and have facilities that are not up to standard (Irhamy & Cipta, 2021). This challenge is also faced by the Center of Excellence Vocational School in the Special Region of Yogyakarta in implementing quality and relevant education for the industrial world. In addition, the majority of schools still tend to apply a monotonous learning model, so that students are only able to absorb the material without the ability to implement the material they have learned in class. Furthermore, these conditions also have an impact on the low level of student creativity.

## 2. Materials and Methods

Digital media and software are used in business and everyday life in a combination of education (Zimmer & Matthews, 2022). The development of digital media has changed many aspects of life, including in the business sector. The growth of the digital economy in society and companies encourages the millennial generation to start their business and run their business with quality products through digital platforms (Kartini, et al, 2022). Digital literacy is needed to build and increase understanding of the existence of digital media at the level of human resource development (Pahlevi, et al, 2022).

The technological era forces students to be able to operate, develop, and utilize technology (Gerrans, 2021). Manual financial management is one of the causes of data loss and report files. Website-based financial reporting applications and Android platforms produce automated and computerized financial management (Resmi et al., 2021b). In recent years the internet has a close relationship with entrepreneurship. With good digital literacy, an entrepreneur is able to seize opportunities by using digital media, communication technology, and other information (Adeel et al., 2023). Knowledge is important for preparing prospective entrepreneurs, but it does not necessarily give birth to an entrepreneur (Cui et al., 2021). There are other factors that can support the effectiveness of entrepreneurship management, namely the use of digital infrastructure. The public is aware of

digital financial technology and is interested in using it. The development of digital technology is considered to make it easier to learn or find information about something (el Bouk et al., 2022)

Entrepreneurial behavior is one of the keys to the success of the business being run. Financial literacy and taxation are guidelines in running a business, especially in the financial sector (Resmi et al., 2022). SMK prioritizes its students to be able to create a skilled, competent and professional workforce, not only working as professionals, but also producing graduates who have an entrepreneurial spirit (Aravik & Tohir, 2022). Graduates who work professionally or as entrepreneurs need skills in financial management. Financial literacy should be done as early as possible. Students should understand financial finance before graduating from high school so they can manage their finances independently (Rostiana & Aransyah, 2023). In addition to entrepreneurship education, students' knowledge of good personal financial management is necessary to start entrepreneurship (Gumanti & Respita, 2023). Students who understand good financial literacy will make it easier to manage finances in entrepreneurship. The results of the study (Sari et al., 2022) show that entrepreneurship education has not yet influenced entrepreneurial behavior, financial literacy has no positive and significant effect on entrepreneurial behavior. Findings (Resmi et al., 2021b) financial literacy and taxation affect business growth and competitive advantage. Business growth can mediate the effect of financial literacy and taxation on competitive advantage (Resmi et al., 2019).

This research approach uses primary data through interviews. Besides that, using focus group discussions (FGD) with several vocational teachers to strengthen the research results. The population in this study were all SMK students in the Special Region of Yogyakarta. At D.I. Yogyakarta has 219 SMKs with various majors. The criteria for taking the research object were students from all majors who took part in the Center of Excellence Vocational High School program in the D.I. Yogyakarta. Another criterion is that students take part in the Creative and Entrepreneurship Program for the field in the SMK concerned. The data found were 29 Centers of Excellence Vocational Schools based on the Decree of the Director General of Vocational Education of the Ministry of Education and Culture Number 18/D/O/2023. This number can increase according to the number of applicants who pass the selection.

Data analysis in qualitative studies is always carried out before entering the field, while in the field, and after finishing in the field (Indana & Pahlevi, 2023). Data analysis is the process of systematically compiling data obtained from interviews, field notes, and documentation, by organizing data into categories, describing them into units, synthesizing them, compiling them into patterns, choosing which ones are important and which ones will be studied, and draw conclusions so that they are easily understood by themselves and others (Resmi et al., 2021a).

**3. Results**

This descriptive analysis is used to describe some data that are narrative and qualitative in nature which are not possible to be presented in quantitative information. The following are a number of points from the results of a descriptive analysis of qualitative data from the respondents of SMK teachers participating in the FGD:

*3.1. Student Entrepreneurship Competence*

**Table 1.** Distribution of Student Entrepreneurial Competence

Respondent	Entrepreneurial Attitude	Risk Management	Entrepreneurial Literacy	Entrepreneurial orientation	Entrepreneurial Spirit	Digital Business	Digital Skills	Entrepreneurial Learning Curriculum	Entrepreneurial Learning Materials
1	v		v	v	v	v	v	v	v
2	v	v	v	v				v	
3	v	v	v	v	v		v	v	v
4	v	v	v		v				v
5	v	v				v	v	v	
6	v	v	v				v	v	v
7	v		v			v	v	v	v

8									
9		v	v			v			v
10	v	v	v					v	v
11	v		v			v		v	
12	v	v	v		v	v		v	v
<b>Total</b>	<b>10</b>	<b>8</b>	<b>10</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>5</b>	<b>9</b>	<b>8</b>

Table 1 shows that the results of the distribution of student entrepreneurial competences have the top three and the bottom three overall ratings mentioned by vocational teacher respondents. The top three rankings include 1) Entrepreneurial Attitude, 2) Entrepreneurial Literacy, 3) Entrepreneurial Learning Curriculum. While the lowest three rankings include 1) Entrepreneurial Orientation, 2) Entrepreneurial Spirit, and 3) Digital Skills.

3.2 Low Financial Literacy

**Table 2.** Distribution of Low Financial Literacy

Respondent	Lack of knowledge	Lak of Financial Information	Adaptability	Income orientation	Fear of risk
1	v	v			
2	v	v			
3	v	v			
4	v	v		v	
5	v	v		v	
6	v		v		v
7		v		v	v
8		v	v		v
9	v	v		v	
10	v	v	v		v
11	v	v			v
12	v	v	v	v	v
<b>Total</b>	<b>10</b>	<b>11</b>	<b>4</b>	<b>5</b>	<b>6</b>

Table 2 shows that the results of the distribution of low levels of financial literacy, an indication that has the top three and two bottom overall ratings mentioned by the respondents. The top three rankings include 1) Lack of financial knowledge, 2) Lack of Financial Information, and 3) Fear of risk. While the two lowest ranks include 1) Adaptability, and 2) Orientation on income

3.3. Supporting Entrepreneurship Learning

**Table 3.** Distribution of Entrepreneurship Learning Support

Respondent	Commitment	Digital Learning Model Support	Entrepreneurship Curriculum	Student Family Support	Competence Students support entrepreneurial activities
1					
2	v		v		v
3			v	v	
4	v	v	v	v	v
5	v	v	v		v
6		v	v	v	
7	v	v	v		

8	v	v	v		v
9	v				
10		v	v		v
11		v			v
12		v	v	v	v
<b>Total</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>4</b>	<b>7</b>

Table 3 shows that the results of the distribution of Entrepreneurship Learning Support have the top three and the bottom two aggregate ratings mentioned by the respondents. The top three rankings include 1) Digital Learning Model Support, 2) Entrepreneurship Curriculum and 3) Student Competence to support entrepreneurial activities. While the two lowest ranks include 1) Student Family Support, and 2) Commitment

3.4. Student Entrepreneurial Barriers

**Table 4.** Description of Student Entrepreneurial Barriers

Respondent	Work after graduation	Money Oriented	Low student entrepreneurial commitment	Motivation to earn money quickly	Weak family support
1	v	v			
2	v	v	v		
3	v	v	v		
4	v		v		
5	v		v		v
6		v			
7	v			v	
8	v				
9	v				
10		v	v	v	
11		v			v
12	v	v		v	
<b>Total</b>	<b>9</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>2</b>

Table 4 shows that the results of the distribution of Student Entrepreneurial Barriers have the top three and bottom two aggregate ratings mentioned by the respondents. The top three rankings include 1) Work after graduation, 2) Money Oriented and 3) Low student entrepreneurial commitment. While the two lowest rankings include 1) Motivation to get money quickly, and 2) Weak family support.

As an initial stage of presenting qualitative analysis data, what needs to be done first is the results of data collection in the form of initial coding or open coding of the results of data collection (Pizzi et al., 2020). The information and keywords were then matched with how many informants provided the same or similar understanding and keywords (Abad-Segura & González-Zamar, 2021). However, at this initial coding stage, researchers have not sorted out exactly which information and keywords are most relevant or least relevant to the conceptual framework that has been made. So that the focus of the collection stage this data rather than presenting briefly the information and keywords that emerged from all informants regarding certain topics of conversation presented in an informative table (ElMassah & Mohieldin, 2020). The data validation process is in the form of triangulation to ensure the accuracy of the information and keywords obtained will be presented in more detail at the data reduction stage after the explanation of this item.

The data sources obtained from the questionnaire form were in the form of narrative and descriptive data and minutes and recordings originating from the focus group discussion (FGD) activities which were held on July 25 2023 in one of the offline meeting rooms of the Prime Plaza Yogyakarta Hotel. Furthermore, the FGD activities

were specifically aimed at participating teachers of the Center for Excellence Vocational School in the Special Region of Yogyakarta which aimed to elaborate as well as validate the correctness of the data that had been informed by the informants in the questionnaire form that had been distributed and filled in beforehand. There were 12 FGD participants with identities in Table 5.

**Table 5.** Recapitulation of FGD Participants at SMK

No.	Name Initials	Institution	Gender
1	NA	SMK Muhammadiyah 1 Moyudan	Female
2	PW	SMKN 1 Dlingo	Female
3	CH	SMKN 1 Pengasih	Female
4	TR	SMKN 1 Samigaluh	Female
5	BS	SMKN 3 YK	Male
6	SR	SMKN 1 Nanggulan	Male
7	LK	SMK Insan Cendekia	Male
8	MAR	SMK Muhammadiyah Bambanglipuro	Male
9	HSW	SMK Muhammadiyah Pakem	Female
10	JP	SMKN 5 YK	Male
11	CV	SMK Tamansiswa Jetis	Female
12	SP	SMKN 3 Kasihan	Male

The FGD activities aimed at elaborating, detailing information, and confirming the correctness of the informant's data in the previous questionnaire form were held in two sessions, namely the FGD session in a public forum and then followed by structured individual and face-to-face interviews. FGDs in public forums focused on providing stimulus questions which were answered freely and in turn by the FGD participants on a number of questions. These question points include: 1) Student Entrepreneurship Competence, 2) Low Financial Literacy, 3) Support for Entrepreneurship Learning, and 4) Obstacles to Student Entrepreneurship. After the general forum FGD session was over, they moved on to the FGD which was more of a structured interview aimed at each participant. The questions asked in this interview session more specifically discussed the dynamics, experiences, and perceptions of FGD participants on financial literacy and increasing student entrepreneurial competency in digital learning models. The FGD which was conducted in 1 day is estimated to take approximately 2 – 2.5 hours which includes the FGD with two sessions, namely the general forum FGD and individual interview sessions.

Initial coding was obtained by sorting and creating meaningful information keywords from each statement provided by the qualitative data informants from the results of the questionnaire form and FGD activities. The keywords that have been obtained will be matched to the meaningful information of each informant so that information is also obtained on how many times the frequency of a keyword is mentioned by all informants in the qualitative evaluation report (Shaivudi & Pahlevi, 2023).

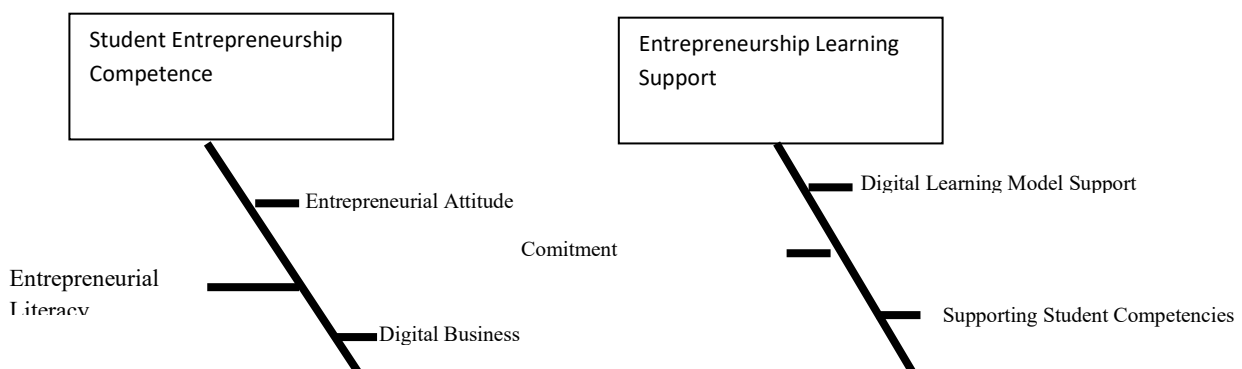
**Table 6.** Initial Coding of Data Collection

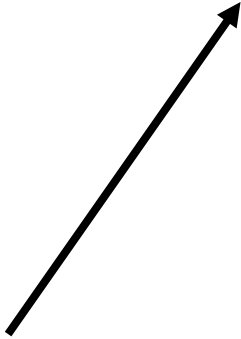
No.	Keyword	Number of Findings (Keywords Mentioned by Informants)	Percentage (%)
1	Entrepreneurial Attitude	10	6,29%
2	Risk Management	8	5,03%
3	Entrepreneurial Literacy	10	6,29%
4	Entrepreneurial Orientation	3	1,89%
5	Entrepreneurial Spirit	4	2,52%
6	Digital Business	6	3,77%
7	Digital Skills	5	3,14%
8	Entrepreneurial Learning Curriculum	9	5,66%
9	Entrepreneurial Learning Materials	8	5,03%

No.	Keyword	Number of Findings (Keywords Mentioned by Informants)	Percentage (%)
10	Lack of knowledge	10	6,29%
11	Lack of Financial Information	11	6,92%
4	Adaptability	4	2,52%
5	Income orientation	5	3,14%
6	Fear of risk	6	3,77%
6	Commitment	6	3,77%
8	Digital Learning Model Support	8	5,03%
9	Entrepreneurship Curriculum	9	5,66%
4	Student Family Support	4	2,52%
7	Competence Students support entrepreneurial activities	7	4,40%
9	Work after graduation	9	5,66%
7	Money Oriented	7	4,40%
5	Low student entrepreneurial commitment	5	3,14%
3	Motivation to earn money quickly	3	1,89%
2	Weak family support	2	1,26%
<b>Total</b>		<b>159</b>	<b>100%</b>

3.4 Ishikawa Diagrams

The study of increasing student entrepreneurial competence through digital learning models then uses an Ishikawa diagram image that is shaped like a fishbone image. The Ishikawa diagram in Figure 1 shows the causal and causal effect relationships of the relationships between keywords, predetermined categorization themes, and finally the relationship with the ultimate goal of qualitative research to answer research questions (Nresnandito & Pahlevi, 2023) namely identifying increasing student entrepreneurial competence through digital learning models. From this diagram one can obtain a holistic and comprehensive picture in order to obtain best practices in increasing increasing student entrepreneurial competence through digital learning models.





**Figure 1.** Ishikawa diagram

#### 4. Discussion

The quality of education is inseparable from the role of digital technology, so it is only natural that there are differences in the quality of education in various regions (Sinha et al., 2021). This digital revolution has changed the role of all players in the learning arena. Digital media makes knowledge obtainable not only in the classroom, but can be obtained anywhere as long as there are digital technology devices (Liu & Zhang, 2021). Learning is a cognitive process to gain knowledge, and technology is part of the learning process, meaning that technology is used like other tools in the educational process (Kurnia et al., 2022). The learning process is a systematic process consisting of several elements that influence each other, namely educators, students, teaching materials and the environment which are interrelated in achieving learning objectives. Teachers need to improve teaching and learning systems by providing resources and activities that benefit students through the use of technology (De los Ríos-Carmenado et al., 2021). The informant added that:

The rapid development of technology, cannot be denied, has brought innovation that can play an important role in education, in this case technological advances have touched many aspects of individual life. Making educational applications has implemented technology in the form of web and mobile applications that have been widely used in the world of education. The application of digital applications in learning is influenced by progress. Digital literacy is aimed at increasing the ability to read, analyze and use information in the digital world (big data), skills in technology literacy are aimed at providing an understanding of how machine and technology applications work, and human literacy is directed at improving communication skills and mastering design knowledge”.

Currently, the tendency for entrepreneurs to engage in entrepreneurial activity is young people who have the ability to access technology, especially Information and Communication Technology (ICT) (Gumanti & Respita, 2023). Young people's interest in doing business is also influenced by the development of ICT and the availability of facilities in accessing information and the ease of communicating with ICT media. This phenomenon when viewed from the perspective of an entrepreneur who tends to have the ability to utilize resources is a very profitable thing (Sari et al., 2022). This becomes the land to make it easier for an entrepreneur to start and develop his business. Therefore knowledge in entrepreneurship must be owned by students as intellectuals who can easily access information to spark ideas in entrepreneurship. Entrepreneurial opportunities that are currently growing should be a motivation for students to start entrepreneurial activities (Rostiana & Aransyah, 2023).



In addition, there are also competencies in mastering financial literacy, digital literacy by being able to utilize information and communication technology. The level of financial literacy in Indonesia is at a low level compared to other countries. Real evidence of low financial literacy is shown by the small number of people who have contact with financial institutions and financial products (Indriyani et al., 2022). One of the efforts made to increase financial literacy and inclusion in Indonesian society, the Financial Services Authority (OJK) has targeted students and teachers, including students, for educational programs (Aravik & Tohir, 2022). It was revealed by the informant that:

“Errors in financial management can also be caused by consumptive behavior. The causes of students' consumptive behavior include technological advances that make it easier for students to shop online through social media and environmental changes. Another cause is because at school, students meet other students who have a higher economic level, new associations and mindsets, increasingly developing styles, more advanced knowledge of technology and information, and the existence of pocket money given by their parents, and complete facilities that they have and use”.

According to OJK on *Bisnis.com*, the financial literacy level of students in Indonesia is only 28%. Due to the low level of public financial literacy, especially students, OJK has made a policy to develop financial literacy. One of the policies issued by OJK is to include a curriculum related to the development of financial literacy in schools, even from elementary school (SD)/equivalent to high school (SMA)/equivalent (Rostiana & Aransyah, 2023). The world of education, in this case the Vocational High School, has a very important role in giving birth to a generation of entrepreneurs. Therefore, the learning process in Vocational Schools needs to be planned, implemented and controlled to achieve the goal of producing graduates with an entrepreneurial mentality. The role of a vocational school teacher is required to give birth to graduates with an entrepreneurial mentality, for this reason it is necessary to familiarize students with the application of entrepreneurship. The habit of applying entrepreneurship in schools can be achieved through learning activities, applying the characteristic values of entrepreneurship in schools and entrepreneurship practices (Indriayu, 2017). It was revealed by the informant that:

“In the effort to give birth to strong entrepreneurs, education is one of the institutions that has a very important role. Because schools are expected to transform entrepreneurial characteristics to their students. Moreover, SMK has the goal of producing graduates who are ready to enter the workforce. In the context of working independently, these graduates must be able to become entrepreneurs. Characteristics of self-employment of students in SMK, situations and conditions are created that accustom students to think, behave and act as the characteristics of an entrepreneur. The application of entrepreneurial characteristics in SMK can be done through learning activities. Through learning it is expected to be able to create a generation with an entrepreneurial spirit. Entrepreneurial learning not only provides a hypothetical stance on business ideas but also frames the mentality, behavior and views (mentality) of a business person”.

The government's efforts to increase entrepreneurship and create entrepreneurs are by adding entrepreneurship subjects to the learning curriculum that has been implemented by schools and universities with the hope of fostering an interest in entrepreneurship among students (Rangchian et al., 2020). Currently educational institutions are required to produce quality human resources and be able to compete. this is also trying to be realized by the Center of Excellence Vocational School, namely to produce qualified, personable and professional human resource candidates to succeed the government program in creating new entrepreneurs who are independent, skilled and innovative. However, from the results of interviews with informants that:

“Students tend to look for work after graduating from SMK or continuing at the university level. This is caused by constraints on the lack of skills and insight to be successful as an entrepreneur and also low motivation making it difficult to develop entrepreneurship independently. lack of literacy about entrepreneurship, have no capital, do not have support from their families because they prefer to look for a job that gets a fixed salary compared to entrepreneurship which has a risk of failure, are less courageous to face the risk of failure in entrepreneurship and have a negative view of entrepreneurship”.

Before someone starts or creates a business, an entrepreneurial understanding is needed regarding what business to start, how to manage the business, what strategies are needed for business success, and how to anticipate and overcome existing problems (Babu et al., 2022). Entrepreneurial literacy is a person's view regarding

entrepreneurship in developing a business opportunity that can benefit oneself and consumers by applying various kinds of positive, innovative and creative characters to attract customers (Pires et al., 2023). Entrepreneurial literacy needs to be possessed by an entrepreneur in order to have deeper skills and knowledge to predict what the market needs in running a business. Therefore, entrepreneurial literacy is very important to be equipped before starting a business (Zimmer & Matthews, 2022). However, student expectations are influential because the majority of people will choose jobs that offer high income or more benefits, so that it will affect a person's interest in determining his life's career (Usman & Tasmin, 2015).

It tends to be seen that some students are more prepared to become employees or employees than to create jobs. That's what they believe assuming they make the job. Their salary will not be as high as the salary of working in an agency. For this reason, entrepreneurial characteristics in vocational schools need to be conditioned both through intracurricular and extracurricular activities. So that with environmental conditions that apply entrepreneurial characteristics, it is hoped that students will become accustomed to applying them and will eventually become student personality traits.

### 5. Final considerations

The quality of education is inseparable from the role of digital technology, so it is only natural that there are differences in the quality of education in various regions. The rapid development of technology, cannot be denied, has brought innovation that can play an important role in education. Knowledge in entrepreneurship must be owned by students as intellectuals who can easily access information to spark ideas in entrepreneurship. Entrepreneurial opportunities that are currently growing should be a motivation for students to start entrepreneurship activities. Therefore, the learning process in Vocational Schools needs to be planned, implemented and controlled to achieve the goal of producing graduates with an entrepreneurial mentality. The role of a vocational school teacher is required to give birth to graduates with an entrepreneurial mentality, for this reason it is necessary to familiarize students with the application of entrepreneurship. The habit of implementing entrepreneurship in schools can be achieved through learning activities, applying entrepreneurial characteristic values in schools and entrepreneurship practices.

### Acknowledgment

The research team would like to thank to Directorate of Research and Community Service, Directorate General of Research and Development, Ministry of Education and Culture for providing financial assistance during the research output process in the 2023 Basic Research Scheme Grant.

### References

- [1] Abad-Segura, E., & González-Zamar, M. D. (2021). Sustainable economic development in higher education institutions: A global analysis within the SDGs framework. *Journal of Cleaner Production*, 294. <https://doi.org/10.1016/j.jclepro.2021.126133>
- [2] Adeel, S., Daniel, A. D., & Botelho, A. (2023). The effect of entrepreneurship education on the determinants of entrepreneurial behaviour among higher education students: A multi-group analysis. *Journal of Innovation and Knowledge*, 8(1), 100324. <https://doi.org/10.1016/j.jik.2023.100324>
- [3] Aravik, H., & Tohir, A. (2022). Meningkatkan Pemahaman Literasi Finansial Pada Siswa SMK Muhammadiyah 1 Kota Palembang. *AKM: Aksi Kepada Masyarakat*, 3(1), 29–36. <https://doi.org/10.36908/akm.v3i1.429>
- [4] Arceo-Gómez, E. O., & Villagómez, F. A. (2017). Financial literacy among Mexican high school teenagers. *International Review of Economics Education*, 24, 1–17. <https://doi.org/10.1016/j.iree.2016.10.001>
- [5] Babu, G. M., Wong, K. W., & Parry, J. (2022). Federated Learning for Digital Pathology: A Pilot Study. *Procedia Computer Science*, 207, 736–743. <https://doi.org/10.1016/j.procs.2022.09.129>
- [6] Cao, Y. (2022). A Study of the Influencing Factors of Higher Vocational College Students' Entrepreneurial Intention. *Procedia Computer Science*, 214(C), 212–220. <https://doi.org/10.1016/j.procs.2022.11.168>
- [7] Cui, J., Sun, J., & Bell, R. (2021). The impact of entrepreneurship education on the entrepreneurial mindset of college students in China: The mediating role of inspiration and the role of educational attributes. *International Journal of Management Education*, 19(1), 100296. <https://doi.org/10.1016/j.ijme.2019.04.001>
- [8] De los Ríos-Carmenado, I., Sastre-Merino, S., Díaz Lantada, A., García-Martín, J., Nole, P., & Pérez-Martínez, J. E. (2021). Building world class universities through innovative teaching governance. *Studies in Educational Evaluation*, 70(August 2020). <https://doi.org/10.1016/j.stueduc.2021.101031>

- [9] el Bouk, F., van Geel, M., & Vedder, P. (2022). Entrepreneurship: An attractive career path for immigrant vocational students in the Netherlands? The role of negative and positive stimulating factors. *International Journal of Intercultural Relations*, 88(March), 22–31. <https://doi.org/10.1016/j.ijintrel.2022.03.003>
- [10] ElMassah, S., & Mohieldin, M. (2020). Digital transformation and localizing the Sustainable Development Goals (SDGs). *Ecological Economics*, 169(September 2019), 106490. <https://doi.org/10.1016/j.ecolecon.2019.106490>
- [11] Gerrans, P. (2021). Undergraduate student financial education interventions: Medium term evidence of retention, decay, and confidence in financial literacy. *Pacific Basin Finance Journal*, 67(August 2020), 101552. <https://doi.org/10.1016/j.pacfin.2021.101552>
- [12] Gianakos, A. L., Semelsberger, S. D., Saeed, A. Al, Lin, C., Weiss, J., & Navarro, R. (2023). The Case for Needed Financial Literacy Curriculum During Resident Education. *Journal of Surgical Education*, 80(4), 597–612. <https://doi.org/10.1016/j.jsurg.2022.12.007>
- [13] Gumanti, D., & Respita, R. (2023). Strengthening the Financial Literacy of Padang 3 Vocational High School Students in the Digital Era: indonesia. *Jurnal Nusantara Berbakti*, 1(2), 73–84. <https://ukitoraja.id/index.php/jnb/article/view/99%0Ahttps://ukitoraja.id/index.php/jnb/article/download/99/99>
- [14] Indriayu, M. (2017). Kajian Literasi Keuangan Pada Siswa Menengah Atas (SMA): Sebuah Pemikiran. *Prosiding Seminar Pendidikan Ekonomi Dan Bisnis*, 1–9.
- [15] Indana, F., & Pahlevi, R. W. (2023). A bibliometric approach to Sustainable Development Goals (SDGs) systematic analysis. *Cogent Business & Management*, 10(2). <https://doi.org/10.1080/23311975.2023.2224174>
- [16] Indriyani, S., Rakib, M., Hasan, M., Mustari, M., & Dinar, M. (2022). Pengaruh Literasi Kewirausahaan, Ekspektasi Pendapatan Dan Aktualisasi Diri Terhadap Minat Berwirausaha Mahasiswa Fakultas Ekonomi dan Bisnis Universitas Negeri Makassar. *Eklektik: Jurnal Pendidikan Ekonomi Dan Kewirausahaan*, 5(2), 229. <https://doi.org/10.24014/ekl.v5i2.18577>
- [17] Irhamy, E. D. H., & Cipta, W. (2021). Analisis Tingkat Literasi Keuangan SMK N 1 Singaraja dan SMA N 4 Singaraja. *Ekuitas: Jurnal Pendidikan Ekonomi*, 9(1), 85. <https://doi.org/10.23887/ekuitas.v9i1.27363>
- [18] Kartini, Pahlevi, Pahlevi, R. W., & Rachmi, N. H. (2022). Mapping Of Digital Financial Literacy Research : A. 9(1), 159–174. <https://doi.org/10.24252/minds.v9i1.28358>
- [19] Kurnia, H., Pahlevi, R. W., Rinaldi, R., & Kusumawati, I. (2022). Innovative Teaching Governance and Teacher Performance in Special Region of Yogyakarta and Antecedent Factors. *JPP (Jurnal Pendidikan Dan Pembelajaran)*, 29(2), 69–75. <https://doi.org/10.17977/um047v29i22022p069>
- [20] Liu, L., & Zhang, H. (2021). Financial literacy, self-efficacy and risky credit behavior among college students: Evidence from online consumer credit. *Journal of Behavioral and Experimental Finance*, 32, 100569. <https://doi.org/10.1016/j.jbef.2021.100569>
- [21] Mehrvarz, M., Heidari, E., Farrokhnia, M., & Noroozi, O. (2021). The mediating role of digital informal learning in the relationship between students' digital competency and their academic performance. *Computers and Education*, 167(March), 104184. <https://doi.org/10.1016/j.compedu.2021.104184>
- [22] Nresnandito Abrian Anggalih Hutomo & Pahlevi, R. W. (2023). Evaluasi Kualitas Produk Hasil Olahan Daging Sapi Pada Depot Daging Sapi Sari ECCO. *Jurnal Ekonomi, Manajemen, Bisnis Dan Akuntansi*, 2(4), 1–7.
- [23] Pahlevi, Reza Widhar, Dian Retnaningdiah, Retno Kurnianingsih, Eko Prasajo, M. A. S. (2022). A Systematics Literature Review of SMEs Entrepreneurial Orientation: Bibliometric Analysis. *Management Analysis Journal*, 12(4), 120–128.
- [24] Pires, F., Leitão, P., Moreira, A. P., & Ahmad, B. (2023). Reinforcement learning based trustworthy recommendation model for digital twin-driven decision-support in manufacturing systems. *Computers in Industry*, 148(November 2022), 0–2. <https://doi.org/10.1016/j.compind.2023.103884>
- [25] Pizzi, S., Caputo, A., Corvino, A., & Venturelli, A. (2020). Management research and the UN sustainable development goals (SDGs): A bibliometric investigation and systematic review. *Journal of Cleaner Production*, 276, 124033. <https://doi.org/10.1016/j.jclepro.2020.124033>
- [26] Pranoto, P., Fauzi, R. D., Kustini, E., Maduningtias, L., & Yuangga, K. D. (2020). Financial literacy for the vocational high school students of Sasmita Jaya. *BAKTIMAS: Jurnal Pengabdian Pada Masyarakat*, 2(2), 119–122.
- [27] Rangchian, M., Nezami, S., Jafari Seresht, D., & Larki-Harchegani, A. (2020). Pharmacy students' level of financial literacy and its differences among students with various career intentions. *Currents in Pharmacy Teaching and Learning*, 12(6), 671–679. <https://doi.org/10.1016/j.cptl.2019.10.008>
- [28] Resmi, S., Pahlevi, R. W., & Sayekti, F. (2019). The effect of financial and taxation literacy on sustainable competitive advantage through business growth: A study of creative msme in special region of Yogyakarta, Indonesia. *International Journal of Entrepreneurship*, 23(4), 1–9.
- [29] Resmi, S., Pahlevi, R. W., & Sayekti, F. (2021a). Implementation of financial report and taxation training: performance of MSMEs in Special Regions Yogyakarta. *Jurnal Siasat Bisnis*, 25(1), 57–68. <https://doi.org/10.20885/jsb.vol25.iss1.art5>
- [30] Resmi, S., Pahlevi, R. W., & Sayekti, F. (2021b). *The Effect of Financial and Taxation Literation on Competitive*

- Advantages and Business Performance: A Case Study in Indonesia.* 8(2), 963–971. <https://doi.org/10.13106/jafeb.2021.vol8.no2.0963>
- [31] Resmi, S., Pahlevi, R. W., & Sayekti, F. (2022). IMPROVING ENVIRONMENTAL MANAGEMENT LITERACY AND PERFORMANCE OF MICRO, SMALL AND MEDIUM ENTERPRISES (Msmes) THROUGH FINANCIAL TRAINING. *Procedia Environmental Science, Engineering and Management*, 8(4), 931–938.
- [32] Rostiana, & Aransyah, M. F. (2023). Pengaruh literasi kewirausahaan lingkungan keluarga dan locus of control terhadap minat berwirausaha pada mahasiswa universitas mulawarman. *Jurnal Pendidikan Dan Kewirausahaan*, 11(1), 276–287.
- [33] Saptono, A., Wibowo, A., Widyastuti, U., Narmaditya, B. S., & Yanto, H. (2021). Entrepreneurial self-efficacy among elementary students: the role of entrepreneurship education. *Heliyon*, 7(9), e07995. <https://doi.org/10.1016/j.heliyon.2021.e07995>
- [34] Sari, D., Dewi, A. S., Safitri, M., Rozi, M. F., Iman, M., & Pradana, K. C. (2022). Peningkatan Kompetensi Siswa dalam Berwirausaha di Era Society 5.0 Melalui Penyuluhan Digital Marketing dan Fintech di SMKN 1 Tegingeneng. *I-Com: Indonesian Community Journal*, 2(3), 695–703. <https://doi.org/10.33379/icom.v2i3.1907>
- [35] Sari, I. I., Kanzu, A., & Kosim, N. (2021). *Analisis Kemampuan Literasi Keuangan Siswa Smk Dalam Kehidupan Sehari-hari ( Survey Siswa Smk Patriot Nusantara Teluknaga Kabupaten Tangerang )*.
- [36] Shaivudi, Abu Rochmad Maulana & Reza Widhar Pahlevi. (2023). Implementasi Knowledge Management System UMKM di Kota Salatiga (Studi Kasus Pak Kun Frozen Food Dusun Ngepos). *Jurnal Ekonomi, Manajemen, Bisnis Dan Akuntansi*, 2(4), 453–462.
- [37] Sinha, A., Mishra, S., Sharif, A., & Yarovaya, L. (2021). Does green financing help to improve environmental & social responsibility? Designing SDG framework through advanced quantile modelling. *Journal of Environmental Management*, 292(February), 112751. <https://doi.org/10.1016/j.jenvman.2021.112751>
- [38] Usman, A. S., & Tasmin, R. (2015). Entrepreneurial Skills Development Strategies through the Mandatory Students' Industrial Work Experience Scheme in Nigeria. *Procedia - Social and Behavioral Sciences*, 204(November 2014), 254–258. <https://doi.org/10.1016/j.sbspro.2015.08.148>
- [39] Winterstorm Värlander, S., Sölvell, I., & Klyver, K. (2020). Entrepreneurship as a vocational choice in contested entrepreneurship communities: The role of entrepreneurs' justification strategies. *Journal of Business Venturing*, 35(3), 106006. <https://doi.org/10.1016/j.jbusvent.2020.106006>
- [40] Zimmer, W. K., & Matthews, S. D. (2022). A virtual coaching model of professional development to increase teachers' digital learning competencies. *Teaching and Teacher Education*, 109, 103544. <https://doi.org/10.1016/j.tate.2021.103544>