Self-Improvement Plan as a Science Entrepreneur Through Social Media Optimization: Perspective of Female Pre-service Science Teachers

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ABSTRACT

This research aims to determine the perspective of pre-service science teachers regarding self-improvement plans as a science-entrepreneur through social media optimization. Researchers used a qualitative descriptive method with a total of 45 female pre-service science teacher participants enrolled as students of the 6th semester. The main instrument in this research is an open questionnaire containing 16 questions to express interest and entrepreneurship plans, the main profession after graduation, business management, the use of social media, and the effectiveness of it self. The findings showed that 95.6% of pre-service science teachers were interested in entrepreneurship, 88.9% of them had plans for entrepreneurship. There are two categories of entrepreneurs preference identified, namely science entrepreneurs (58.14%) and science edupreneurs (41,86%). Most of the participants (77.8%) planned to run the teaching profession as the main profession and entrepreneurship as a side profession, 17.8% planned to make entrepreneurship as the main profession. The output of assignments in lectures on several subjects such as development of science learning media, science teaching materials, science project, STEM, Biomimicry, science entrepreneurship, science edupreneurship, and halal product science also influence students' interest in entrepreneurship. Instagram (100%) and TikTok (93,02%) were chosen as the most widely preference social media. All participants view that social media is more effective and efficient because it has more advantages compared to conventional methods.

Keywords: Self-improvement, Science-entrepreneur, Social media, Pre-service science teachers.

INTRODUCTION

Education is a human activity that is very important, because through education a person can be educated into a human who behaves nobly (Sasongko & Sahono, 2016). The progress of times and globalization accompany changes in behavior and also changes in human behavior from time to time, which it leads to changes and developments in the education system in the world and in

Indonesia in particular (Risdianto, 2019). Education system is a collection of various strategies and methods implemented in the learning process, with the intention that students are actively able to develop their potential (Suryani et al., 2024).

Currently the world has entered smart society 5.0 era. It can be interpreted as a concept of a society that is centered on humans and based on technology (Nastiti & 'Abdu, 2020). Facing this era requires basic literacy skills such as data literacy, namely the ability to read, analyze, and big data in the digital world. In addition, the current pattern of integration of education and technology is being developed to be able to answer the challenges of sustainability. Internet users continue to experience a significant increase, which is a human effort to realize technological, economic, and comfortable life progress inclusively (Subandowo, 2022). In this case, the education system from basic education to higher education is also demanded to change.

One of the priorities in implementing smart society is Improving the quality of Human Resources (HR). Education can function as a medium of information to increase students' understanding and interest in the world of entrepreneurship. Communicating the importance of technology in developing entrepreneurs is a challenge in the world of education (Rukmana et al., 2021). One important factor in developing the quality of human resources including the pre-service science teacher, is by developing self-improvement through entrepreneurship, forcing everyone to make changes through creativity and innovation (Suryani et al., 2024). It is able to provide students to be open minded, productive and innovative thinking and the ability to adapt in the industrial world. Meanwhile, the students' hard skills are analytical skills, using social media, and the ability to promote the products in the society era (Shohib & Narsim, 2023). In this case, through education during lectures, pre-service science teachers are expected to be directed to be able to innovate various science products that can be developed as alternatives in entrepreneurship plans.

According to processed data from the Central Statistics Agency (BPS) in 2018 the number of entrepreneurs in Indonesia has only reached 3.1% of the total productive age population, this number is considered to be very low compared to the level of entrepreneurship in developed countries which reached 14 percent (Fisamawati, 2019). According Afriadi & Yuni (2018) the lower the percentage or index of entrepreneurship activity of a country has an impact on the high unemployment rate.

Efforts to overcome unemployment can be done by changing the mindset of pre-service science teachers from looking for work to creating jobs (Kristanti et al., 2012). According to (Priyanto, 2009) to be able to create jobs, one must

have an interest and entrepreneurial talent. An entrepreneur must have the following characteristics: 1) always think positively, 2) work hard and smart, 3) discipline, 4) high commitment with business progress, 5) independent without being dependent on other parties in making decisions, 6) creative and innovative (Sagoro, 2013). This attitude certainly needs to be shared by Pre-service science teachers.

The survey results in the Science Study Program at IAIN Kudus showed that the number of female pre-service science teacher was far higher than the males. This shows that women are potential human resources to be trained in developing themselves through entrepreneurship. Through entrepreneurship opportunities are created for women to develop themselves, cultivate all natural abilities for productive things. Women have a very strategic role in all efforts to tackle the family economy. Women must struggle to escape from all negative historical perceptions of patriarchal discrimination that label that women are not independent creatures, and as creatures dependent on men (Mokalu, 2016).

Besides improving the standard of living of the families, women empowerment can go a long way in building gender equality and social acceptance of labor in the community (Kumar & Shehnaz, 2019). There are significant effect of female entrepreneurial leadership behavior on business performance. Female entrepreneurs should develop self-motivating drive, improve their knowledge and skills through training and education in order to improve their innovative abilities, take 'calculated risk' and explore more opportunities (Mensah & Quaye, 19 C.E.). There are positive association between risk-taking propensity and the performance of women-owned businesses (Neneh, 2019). Most business owners have succession plans but vary in their implementation approaches. Fundamentally, their succession plans are being affected by their family structures and successor's personal interest (Akinbami et al., 2019).

In entrepreneurship, a woman is influenced by external factors, especially resources (capital) and also internal factors such as age maturity, which will affect the balance between preparing to start a business, a sense of responsibility in running a business and obligations to the family. This is consistent with research conducted by (Rizal et al., 2016), namely the variable capital (resource) independence, capital, and education affect women's interest in entrepreneurship. Along with the advancement of the current globalization, one can start to develop a career in entrepreneurship without requiring a lot of capital. Through literacy in using information technology the problem of capital constraints can be overcome, especially with skyrocketing use of social media (Siswanto, 2013). With the development of information technology and the

internet, making many internet users take advantage of this opportunity as a profitable business opportunity such as online business. The euphoria of the use of social media (Instagram, TikTok, Facebook and others) through the internet has become a trend in society, of course it affects the behavior change in the community in interacting and communicating. The growth of social media users must be utilized by entrepreneurs in reaching consumers by innovating in doing business, marketing and communicating (Soputan, 2017).

Social media is a combination of sociology and technology that turns monologues into dialogue and information democracy that changes people from content readers to content publishers. Social media has become very popular because it gives people the opportunity to connect in the online world in the form of personal relationships, politics and business activities (Kartika et al., 2021). As a social media networking site has an important role in marketing. This is because, social media can play the role of communication, interaction, and attract other people to see and visit links that contain products and information.

The results also revealed that there were more women than man as a social media users. This is because women really prefer to socialize, buy and follow topics that are closely related to women, while men are more focused on knowledge, news, forums and buying goods that are close to their characteristics such as computers and gadgets (Indoworo, 2016). Likewise, the results of a survey of social media users in Science Education Study Program class of 2021 to 2022 showed that the majority of female pre-service science teacher accessed the most information, interacted, socialized, shopping or offered various products / items as resellers through social media compared to male. In this regard, it is necessary to reveal whether there are short-term or long-term plans for female pre-service science teachers related to the use of social media as a means of entrepreneurship.

This information / data can help provide an overview of the achievement of the vision and mission and goals of Science Education Study Program study programs in creating independent and innovative graduates through entrepreneurship careers, in addition to being a science teacher or laboratory assistant. Thus it is necessary to conduct research on the perspective of pre-service science teachers in self-improvement plans through entrepreneurship by utilizing social media. However, entrepreneurship experiences and entrepreneurship plans do not always mean continuity in an entrepreneurship career (Rusko et al., 2019). This research is a preliminary study that can be used as a basis for further research development.

METHOD

Researchers used a qualitative descriptive method with 45 female pre-service science teacher participants (age range 20 to 22 years) of the 6th semester from Study Program of Science Education, IAIN Kudus. The main instrument used in this research is an open questionnaire containing 16 questions which has been validated by experts, to express interest and entrepreneurship plans, the main profession after graduation, the use of social media, business management through social media, the effectiveness of the use of social media. In addition, researchers also conducted interviews to find out similar data. Questionnaire processing data in the form of descriptive data. Data analysis starts from data collection, data condensation, data display, and verification (Miles & Huberman, 1994). Furthermore, these results are analyzed descriptively to find a general description of the pre-service science teachers in self-improvement plans as science-entrepreneur through social media optimization.. The open questionnaire instrument used in captures data on the 5 main categories detailed in Table 1.

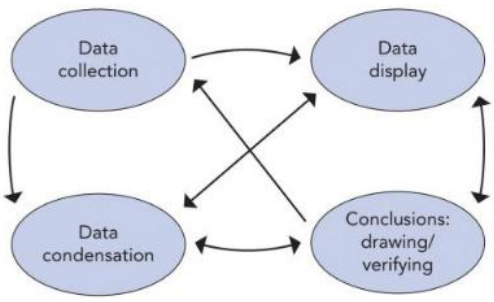
Table 1: Details of Research Instruments

Question categories	Asked Question
Entrepreneurial interests and plans	1. Are you interested / planning to make an entrepreneur? If so, what type of entrepreneurship are you interested in?
	2. Are you interested in innovating a science product that you made during your lecture to be used as your business? If so, what science products are you interested in?
	3. State what courses do you think have an influence on your entrepreneurship interests?
Profession after graduation	1. As a pre-service science teachers, after you graduate, do you prefer to work according to the profession, or choose to be an entrepreneur? Cite the reason please!
	2. Do you plan to make the entrepreneur a primary profession or a side profession? Cite the reason please!
	3. If you already have a permanent job in your professional path (eg: becoming a civil servant) are you still interested in developing yourself through entrepreneurship activities? Cite the reason please!

The use of social media	1. How do you plan to promote the entrepreneur you are planning?
	2. Are you interested in using social media as the main promotional tools?
	3. What types of social media will you use to promote your business?
	4. Among these social media, which social media do you think is most effective to be used as a means of entrepreneurship?
Business management through social media	1. How do you manage your business through social media?
	2. How do you maintain the credibility of your business and increase consumer interest aimed the many social media-based business competition?
Effectiveof social media	1. Is the use of social media considered more effective to market the product / business that you make compared to conventional methods? Explain the reason!
	2. In your opinion, what are the benefits of using social media over conventional methods to support your business?
	3. What obstacles might you find in developing your business through social media?
	4. How do you overcome these obstacles?

The data that has been collected through the instrument is then reduced and sorted according to the predetermined categories. Researchers triangulate data sources between questionnaire instruments and interviews to test the validity of the data

Figure 1: Component Data Analysis



FINDINGS AND DISCUSSION

The results and discussion should be presented in the same part, clearly and briefly. Data on the interests and plans for entrepreneurship biology teacher candidates can be seen in Table 2 and Table 3.

Table 2: Entrepreneurial Interest of Female Pre-service Science Teachers

Category	Entrepreneurial interest					
	Yes, and already have plans	(%)	Yes, but no plans yet	(%)	Not interested	(%)
Total participants	40	88,9	3	6,7	2	4,4

43 participants who are interested in entrepreneurship plan some alternative business fields that they want, as for the general outline, a list of the business sectors that they design can be seen in table 3:

Table 3: Entrepreneurial Category of Female Pre-service science teachers

Entrepreneur category	Type / field of business	Total Participants	Percentage (%)
Science-entrepreneur	Science product: food & drink fermentation, halal culinary eco-printing, bioplastic, and recycling material	25	58.14
Science-edupreneur	game education, science KIT, science-comic, and science props	18	41.86

The professions chosen by participants after graduation can be seen in the Table 4 below:

Table 4: Type of profession after graduation

Type of Main Profession	Total Participants	Percentage (%)
Teachers	2	4,4
Teachers (as main profession) and entrepreneur (as side profession)	35	77,8
Entrepreneur	8	17,8

The results of this study also revealed the use of social media as an entrepreneurial facility for participants, the results of which can be seen in the Table 5 :

Table 5: How to Promote Business

How to Promote Business	Total Participants	Percentage (%)
Utilization of social media	41	95,3
Social media + conventional methods	2	4,7

The various types of social media available, there are 5 types of social media proposed by potential participants for business promotion. The types of social media chosen by participants are presented in the following Table 6:

Table 6: Types of Potential Social Media Used

Type of Social Media	Total Participants	Percentage (%)
Instagram	43	100
TikTok	40	93,02
WhatsApp	37	86,04
Market place	31	72,09
Facebook	8	18,60
Website	1	2,32

Based on table 2 it can be seen that as many as 43 participants are interested in developing themselves through entrepreneurship, 88.9% of them have plans about what type of entrepreneur they will choose, while 6.7% do not yet have an entrepreneurial plan that they will pursue after Graduated. Only two participants who are not interested in entrepreneurship, they prefer to focus on exploring the academic field, which is to become a teacher / teacher and continue their studies in order to achieve the ideals of becoming a lecturer. Pre-service female teachers who are interested and already have an entrepreneurial plan express their interest in various types / fields of business as listed in Table 3. Based on table 3, it can be seen that there are two category of entrepreneur preference that are most in demand by participants: science entrepreneur (58.14%) and science edupreneur (41.86%). That's because they have tried to practice making and promoting products during lectures.

Explanation obtained from the questionnaire revealed that development of various game education, science KIT, science comic, and science props was obtained through the course of development of science learning media, science teaching material, science project, science edupreneurship STEM and

Biomimicry. As for the practice of making food & drink fermentation, halal culinary, eco-printing, bioplastic, and recycling material was obtained when they practiced biotechnology, science entrepreneurship, and laboratory waste management.

Figure 2: Product samples planned for self-improvement

It shows that, the role of education through learning activities is enough to influence the mindset of pre-service science teachers and becomes a source of inspiration to innovate science products that they have made to then be packaged into more innovative products. For example, they plan to innovate fermented drinks (Yogurt) into plain yogurt and yogurt drinks with various flavors and toping, by not reducing the taste so that it attracts more consumers' attention. There are also participants who plan to make waste recycling products into various types of handicrafts and also make waste into other products that have more economic value, such as processing used cooking oil into aromatherapy candles ,air freshener, then given a mixture of essence variants so as to produce a decent air freshener for commercialized.

Further analysis of the types / fields of entrepreneurship that are of interest to pre-service science teachers as shown in Table 3 reveals that various types of business fields they are interested in are related to science products, so in general they are planning to develop themselves with become a science-entrepreneur or science edupreneur. This is in accordance with the vision and mission and goals of Science Education Study Program, namely to form graduates who can not only be science educators, but are able to take advantage of

opportunities to become a highly competitive science entrepreneur and able to keep up with the times. Referring to this, Science lecturers have an obligation to analyze the potential of the material in each Science Education Study Program study course that enables them to produce innovative products through practicum activities, so as to increase the literacy of science products that can be developed by pre-service science teachers in the future. However, they still prioritize their main profession as a pre-service science teachers and other academic occupations.

Based on Table 4 it can be seen that 77.8% of participants plan to make the teaching profession the main profession, and continue to run the entrepreneurial profession as a side profession. Much of this is based on the reason that, being an educator (teacher) is not just a source of income, but is a form of service. Being a teacher cannot be judged by how much money we receive or how much the country gives us, but how much we can give to this country. Becoming a teacher is a noble profession, because this profession is seen as a profoundly restricted profession to produce a superior and educative generation. Becoming a teacher provides an opportunity to improve the country and make it a charity Jariyah whose reward will never be interrupted even though we have died. It would be a pity if most of the subjects we studied during lectures namely directing to become an educator (teacher) could not be practiced and utilized.

The self-improvement through entrepreneurial activities is used as a side business because it can be done together with the main profession. Moreover, the use of social media makes them to have flexible time in managing planned businesses. However, they say that good time management is needed and must provide special time to manage the business. On the other hand, there are 17.8% of participants who plan to make entrepreneurship as the main profession. That is because, entrepreneurship if carried out and done wholeheartedly can provide opportunities for earning a much greater income when compared to working in schools or certain educational units. Especially if the status is still an honorary teacher. It will be a pity if we waste the opportunity and potential to open businesses that are more promising and can increase the value of a better economy.

In addition to the fields of business that are of interest and the main professions planned, this study also revealed how pre-service science teachers would promote the business. Table 5 shows that the majority (95.3%) chose to utilize social media as a means of facilitating them in the promotion and marketing of businesses, while a small proportion (4.7%) chose to combine social media and conventional media. The results illustrate that all participants who are interested in entrepreneurship, plan to utilize social media in order to introduce,

promote and market the products they sell. This was motivated by a disruptive era in which one of the characteristics was digitalization. They consider that media that is more suitable for use and can compensate for the times is through social media that has been very widely used by potential consumers of all ages.

The types of social media that are considered potential and suitable for use as data presented in Table 6 include: (1) Instagram (2) TikTok, (3) WhatsApp, (4) Market Place, (5) Facebook and (6) websites. Among the five types, Instagram and TikTok are seen as the most suitable social media to use. That is because its provides a variety of interesting features that can make it easier to promote the products you want to sell. Besides WhatsApp and Market Place is also still considered to be a potential social media favorite, because many Indonesian people are already familiar with and often access social media. They also argue that the use of social media is also seen to be more effective and efficient than using conventional methods. That is because the use of social media has more advantages, mainly related to budget savings because they do not need to pay for opening a store, flexible time, broad reach of consumers without distance restrictions, as well as free marketing. The weaknesses in the use of social media include lack of consumer confidence in the products or services sold, lack of security in transactions, internet network infrastructure constraints, quota availability, barriers to delivery and lack of understanding of social marketing.

CONCLUSION

Almost all of pre-service science teachers (95,6%) were interested in entrepreneurship, 88.9% of them had self-improvement plans either as a science entrepreneur or science edupreneur. Most of the participants (77.8%) planned to run the teaching profession as the main profession and entrepreneurship as a side profession, 17.8% planned to make entrepreneurship as the main profession and 4.4% planned to become a teacher (academic field) because they were not interested for entrepreneurship after they graduate. All participants plan to optimize social media for promoting, managing and maintaining their business. According to their perspective, Instagram and TikTok is considered the most suitable social media preference. All participants view that social media is more effective and efficient because it has more advantages compared to conventional methods.

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