

Enhancing Entrepreneurship Skills in Deaf Learners through the Flipped Project-Based Learning (F-PjBL) Model

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ABSTRACT: This study aims to test the Flipped Project-Based Learning (F-PjBL) model in improving entrepreneurship skills in deaf students. The study was conducted in three cycles, focusing on the production of *jumputan* batik. The study used an observation-based assessment design conducted by three observers to assess learners' performance in each cycle. The results showed significant improvement in performance test results for both groups tested. Group 1 experienced an increase in average score from 35% in Cycle 1 to 79.17% in Cycle 3, while Group 2 increased from 39.8% to 81.68%. These results demonstrate that the F-PjBL model is effective in enhancing the entrepreneurial skills of deaf learners. The practical and project-based approach allows learners to learn through hands-on experience, overcoming barriers to access auditory information, and strengthening skills in product manufacturing, packaging and marketing. This model has great potential to empower deaf learners by fostering independence, reducing reliance on traditional employment, and increasing their chances of future success. The findings support the importance of implementing learning models that suit the specific needs of deaf learners to improve the quality of education and open up economic opportunities.

Keywords - Deaf, Disability, Flipped Project Based Learning, Learning Model, Student

1. INTRODUCTION

People with disabilities, especially those with hearing loss, often face major challenges in their lives [1]. One of the main problems they face is limited access to economic opportunities on par with non-disabled individuals [2]. This often leads to them being trapped in a cycle of poverty and destitution. Moreover, social discrimination and negative stereotypes about their abilities often further marginalize people with disabilities in social and economic life [3]. This worsens their quality of life, and many feel alienated and neglected in society.

A consequence of this is the high unemployment rate among people with disabilities [4], [5]. Many of them find it difficult to find jobs that match their abilities and skills, as companies tend to hesitate to hire them [6]–[8]. Some companies assume that people with disabilities cannot contribute effectively to the workforce [9], [10], when in fact many of them have enormous potential [11]. In addition, their access to adequate skills training is also very limited, making it difficult for them to develop themselves in the professional world [12], [13]. As a result, many people with disabilities are unemployed or working in low-wage jobs.

One potential solution for people with disabilities to overcome poverty and unemployment is entrepreneurship [14]. By becoming an entrepreneur, they have the opportunity to open their own business and generate a more stable income without relying on other parties [15]. Entrepreneurship gives them the freedom to determine the direction of their lives, as well as the opportunity to develop according to their abilities and

interests [16], [17]. Through entrepreneurship, people with disabilities can gain greater social recognition, while building self-confidence and independence [18]–[20]. In addition, being an entrepreneur can also create jobs for others around them [21], [22].

However, becoming an entrepreneur is not easy [23], and requires various skills that need to be learned [24]. For people with disabilities, entrepreneurship education is essential to provide them with the knowledge and skills needed to run a business effectively. People with disabilities can benefit from entrepreneurial skills to manage themselves or, at a later stage, to start their own opportunity-driven enterprises [17], [25]. Entrepreneurship education that suits their needs can be key to preparing them for the business world [26]. Therefore, providing access to inclusive and relevant entrepreneurship education is necessary to help them start and manage businesses.

Entrepreneurship education for people with disabilities not only provides them with practical knowledge on how to run a business but also builds the mental attitude needed to become an entrepreneur [27]. Attitudes such as self-confidence, creativity and innovativeness are key assets needed to succeed in entrepreneurship [28]. Through entrepreneurship education, they can be equipped with the ability to think critically, make the right decisions, and manage the risks involved in running a business [29], [30]. This education will also help them overcome their fear of failure and learn from their experiences and failures [31], [32]. With the right attitude, they can be more confident in facing the challenges of the business world.

An effective learning model for people with disabilities must consider their specific needs [33], one of which is through the use of practice-based methods. This research offers a learning model that can be applied as Flipped Project-Based Learning (F-PjBL). F-PjBL prioritizes active and collaborative learning, where students are directly involved in projects that are relevant to the real world. The F-PjBL model is a combination of two learning model concepts, namely flipped learning and project-based learning. In the context of entrepreneurship, this model allows students to learn through the direct application of entrepreneurial concepts in the projects they work on. This provides an opportunity for people with disabilities to learn in a way that is more practical, effective and appropriate to their needs.

The F-PjBL model offers many advantages, especially for people with disabilities, as it promotes active and independent student learning by integrating theory with practice [34]–[38]. Students are given the opportunity to learn entrepreneurship materials first through media that they can access, such as videos or modules tailored to their abilities [39], [40]. Then, they can directly practice the material through projects involving entrepreneurial skills [41]. This approach enables them to acquire both theoretical knowledge and practical skills essential for entrepreneurship. This model provides a more in-depth and relevant learning experience and encourages students to actively participate in every stage of learning.

Through this research, it is expected to make a significant contribution to the development of a more inclusive entrepreneurship curriculum that is accessible to all, including people with disabilities. Entrepreneurship education based on the needs of people with disabilities will open up many opportunities for them to achieve economic independence. In addition, the results of this study can serve as a basis for the development of more inclusive entrepreneurship training programs in special schools. Thus, entrepreneurship education for people with disabilities will not only provide economic opportunities, but also empower them to become more active and productive citizens.

2. METHOD

This study used a research project design to evaluate the effectiveness of the Flipped Project Based Learning (F-PjBL) learning model on the entrepreneurial skills of deaf students at the Special High School (SMALB) in Jakarta, Indonesia, in the 2023-2024 academic year. The study was conducted over three cycles, with each cycle consisting of two meetings. The first meeting focused on providing learning materials, while the second meeting focused on practice by students. For the implementation of the research, students were divided into two groups, each of which would practice the material that had been given. During the process, three observers observed and assessed the skills demonstrated by the students.

The data analysis procedure was carried out by collecting the observation scores from the three observers and

then analyzing them using average and percentage statistical measures. The results of each test in each cycle will be compared to identify whether there is an increase or decrease in the percentage of students' entrepreneurial skills. By using this analysis, the research aims to objectively evaluate the effectiveness of the F- PjBL learning model in developing deaf students' entrepreneurial skills as well as seeing the significant changes that occur during the learning process

3. RESULT

The test of the F-PjBL learning model was conducted with the subject matter of *jumputan* batik. The learning implementation for each cycle is as follows:

1.1 Cycle 1

Table 1. Performance test cycle 1

Observer	Group	Score	Percentage
Observer 1	Group 1	14	35%
	Group 2	16	40%
Observer 2	Group 1	14	35%
	Group 2	17	42.5%
Observer 3	Group 1	14	35%
	Group 2	14	35%
Average Group 1		14	35%
Average Group 2		15,67	39.8%

Table 1 shows the results of the Cycle 1 Performance Test assessed by three observers for two groups. Group 1 received a score of 14 from each observer, with a percentage of 35% each. The average score for Group 1 was 14, with an average percentage of 35%. Meanwhile, Group 2 received varying scores from the observers: Observer 1 gave a score of 16 (40%), Observer 2 gave a score of 14 (35%), and Observer 3 gave a score of 17 (42.5%). The average score for Group 2 was 15.67, with an average percentage of 39.8%. Overall, Group 2 had a higher average score compared to Group 1, both in terms of score and percentage, indicating a slightly better performance in this test.

1.2 Cycle 2

Table 2. Performance test Cycle 2

Observer	Group	Score	Percentage
Observer 1	Group 1	26	65%
	Group 2	28	70%
Observer 2	Group 1	27	67.5%
	Group 2	29	72.5%
Observer 3	Group 1	26	65%
	Group 2	26	65%
Average Group 1			65,83%
Average Group 2			69,17%

Table 2 shows the Cycle 2 Performance Test data, it can be concluded that the average score for Group 1 is 65.83%, which falls into the Moderately Effective category, while the average score for Group 2 is 69.17%, also in the Moderately Effective category. The assessment in Cycle 2 showed a significant improvement compared to Cycle 1, where Group 1 experienced an increase of 30.8% and Group 2 experienced an increase of 30%. Group 1 received consistent scores from the observers, with 26 (65%) from Observer 1 and Observer 3, and 27 (67.5%) from Observer 2. Meanwhile, Group 2 received slightly more varied scores: Observer 1 gave a score of 28 (70%), Observer 2 gave a score of 29 (72.5%), and Observer 3 gave a score of 26 (65%).

This improvement in Cycle 2 occurred in several factors, including: (a) in the product creation indicator, especially

in the idea sub-indicator which showed better development, (b) in the packaging indicator, especially in the variety and up to date sub-indicators, which showed progress in the quality and relevance of the products produced, and (c) in the marketing indicator, especially in the account creation and product photo sub-indicators which were increasing. Although Group 1 had a more stable consistency of scores, Group 2 recorded a higher average score, reflecting slightly better performance in the aspects assessed in Cycle 2.

Cycle 3

Table 3. Performance test Cycle 3

Observer	Group	Score	Percentage
Observer 1	Group 1	30	75%
	Group 2	32	80%
Observer 2	Group 1	32	80%
	Group 2	33	82.5%
Observer 3	Group 1	33	82.5%
	Group 2	33	82.5%
Average Group 1			79,17%
Average Group 2			81.68%

Table 3 shows data from the Cycle 1 to Cycle 3 Performance Tests, it can be concluded that the average score for Group 1 in Cycle 3 is 79.17% which falls into the Effective category, while the average score for Group 2 in Cycle 3 is 81.68% which also falls into the Effective category, both groups experienced a significant increase in Cycle 3 compared to Cycle 2, where Group 1 experienced an increase of 13.36% and Group 2 experienced an increase of 12.5%. The increase can be attributed to several factors, including: (a) in the product manufacturing indicator, the sketch and product evaluation sub-indicators showed an increase, (b) in the packaging indicator, especially in the model and variety sub-indicators, and (c) in the marketing indicator, especially in the sub-indicators of creating captions and sharing shop links. These improvements reflect good progress in terms of skills and increasingly effective work quality in each group.

4. DISCUSSION

Based on the results of testing the Flipped Project-Based Learning (F-PjBL) model on deaf learners, it can be seen that this model has a positive influence on improving learners' entrepreneurial skills. In the three cycles tested, both groups showed significant improvement in performance test results, both in terms of scores and percentages. Group 1, which obtained an average score of 35% in Cycle 1, increased to 65.83% in Cycle 2, and reached 79.17% in Cycle 3, while Group 2 showed a more consistent increase, from 39.8% in Cycle 1 to 69.17% in Cycle 2, and reached 81.68% in Cycle 3. This increase indicates that F-PjBL can develop deaf learners' entrepreneurial skills.

The potential for deaf learners to become entrepreneurs is huge, especially if they get learning that suits their needs and characteristics. The F-PjBL learning model is proven to be effective in developing deaf learners' entrepreneurial skills, as it combines a practical approach with project-based learning that allows them to learn directly from experience and solve real problems. With this approach, learners can gain the knowledge and skills needed to build their own businesses, which provides opportunities for them to be more independent and less dependent on conventional employment. These results show that when deaf learners are given learning with the right approach it will have a good effect [42]–[45].

Research conducted by Marschark et al. (1986) shows that deaf learners have abilities comparable to other learners who do not have hearing loss. The problem of deaf people is only related to their limited access to auditory information [47]. The F-PjBL learning model can overcome this barrier, as it gives them the opportunity to learn through hands-on experience and relevant problem-solving, thus allowing them to develop according to their individual potential and needs.

Overall, the Flipped Project-Based Learning (F-PjBL) model showed good results in developing deaf learners' entrepreneurial skills. The significant improvement recorded in each cycle indicates that with the right approach,

deaf learners can develop their entrepreneurial potential to the fullest. Therefore, it is important for educators to continue exploring and implementing learning models that can address the specific needs of deaf learners, in order to improve the quality of their education and open up more opportunities for future success.

5. CONCLUSION

The limitations of this study, despite its positive impact, must be recognized. One of the main limitations is that the sample size is relatively small and limited to one geographical area, namely DKI Jakarta. Further research with a larger and more diverse sample from different regions in Indonesia would provide more comprehensive results. In addition, this study also did not explore external factors such as family and community support in the entrepreneurial learning process for people with disabilities. Therefore, future research is recommended to involve more external variables that can affect the success of entrepreneurship learning in people with disabilities

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