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Enhancing Students' Entrepreneurial Skills Through Problem - Based Learning Method

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Abstract— *This study aimed to determine the effectiveness of problem based learning (PBL) method in enhancing the entrepreneurial skills of senior high school students. A quasi-experimental method was used with two group designs, the control group taught with traditional method and the experimental group exposed in PBL. A total of 70 learners were involved in the study. And a rubric was used to measure the entrepreneurial skills, communication, comprehension, collaboration and information gathering skills before and after the implementation of the teaching methods. Results revealed that the traditional group's communication and comprehension skills were described as unsatisfactory in the pretest and both marginal level in the posttest, while their cooperation and information gathering skills were both marginal level in the pretest. But their cooperation skill remains marginal while information gathering improved to satisfactory level in the post test. The experimental group's entrepreneurial skills were described as marginal level except their cooperation skill which obtained a satisfactory level. Their skills have improved to good l and satisfactory level in the posttest. Also, the mean gained result obtained by the experimental group was significantly ($p < 0.05$) higher than the control group. Learners exposed to PBL has shown positive perception towards the method. Hence, PBL is effective in enhancing learners' entrepreneurial skills. It is recommended that an instructional intervention utilizing PBL in the classroom of entrepreneurship be implemented.*

Keywords— *Vocational Education, Problem –Based Learning method, Entrepreneurial Skills, Quasi - experimental research, Cebu, Philippines.*

I. INTRODUCTION

Entrepreneurship is integral to development, wealth creation, and employment development, just as political security. At its center, business is about better approaches for sorting out, new strategies for creation, new merchandise, new administrations, and new business sectors (Kerrigan, 2014). Today most governments agree that entrepreneurship is a necessary ingredient for stimulating economic growth and employment opportunities in all societies. Especially in the developing world, successful small businesses are the primary engines of job creation, income growth, and poverty reduction (Erenkol & Oztas, 2015). Thus, developing students' entrepreneurial skills deserves the utmost attention from authorities to create a self-sustained individual, which may contribute to the reduction of poverty, a global concern.

Entrepreneurial education is, therefore, important because it is recognized as a potentially effective means of promoting the transformation of ordinary people into entrepreneurs who are aware of future opportunities to make a career by creating a profitable business. This type of education differs from traditional teaching because it requires designing activities and learning spaces based on experiences that facilitate the implementation of specialized business knowledge and enable learning by doing instead of by reading or listening (Solis et al, 2017). Skills in Communication, information gathering, comprehension, and cooperation are essential in entrepreneurial instruction. Thus, an appropriate teaching method has to be used to develop such skills.

A problem-based learning (PBL) method is a student-centered approach of teaching and learning which can develop entrepreneurial skills because it uses relevant problems to the desired learning outcomes as a means of encouraging self-directed learning, critical learning, lifelong learning, and self-evolution among the students (Rideout &Carpio, 2001). It is reported by several studies as an effective educational strategy to improved learners' skills and capacity (Falard & Fenay, 2006; Brandao & Vencios, 2011). The teacher's role has a great contribution to the success of such a method because the teacher is required to facilitate the classroom learning environment efficiently to optimize students learning (Pecore & Bohan, 2012). Moreover, as the facilitator of PBL in entrepreneurship instruction, the teacher ensures the students with the skills of communication collaborative, comprehension, and information gathering.

In Moalboal National High School, the learners are given the opportunity to create and experience a corporate business in the entrepreneurship class. And in the implementation of their business, their entrepreneurial skills such as communication skill is necessary because they have to communicate to their customers, their collaborative ability is also vital as they will work as a group in carrying out their business. Comprehension skill is also essential as they need to understand the needs of their customers to be able to provide appropriate products and services. Hence they need to be skillful in gathering information as a basis for the improvement of their business. However, the learners are very poor in such skills. Thus, as a teacher of entrepreneurship, the researcher is challenged to address students' difficulties by utilizing an appropriate method that would equip them with the knowledge and skills of a competitive entrepreneur. Therefore this study aims to determine the effect of the Problem-Based Learning method in improving learners' entrepreneurial skills.

Objectives

This research aimed to determine the effectiveness of the problem-based learning in enhancing the entrepreneurial skills of the grade 12 General Academic Strand (GAS) learners of

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Moalboal National High School, Cebu during the school year 2019-2020 as a basis for crafting an instructional intervention.

Specifically, it sought answers to the following questions:

1. What is the learners' profile as to:
   1.1 age and gender; and
   1.2 combined monthly family income?
2. What is the learners' level of entrepreneurial skills before and after exposing to the traditional and PBL methods in the competencies of Implementing and operating the business, as to the following skills:
   2.1 communication,
   2.2 cooperation,
   2.3 comprehension; and
   2.4 information gathering?
3. What is the learner's extent of perceived learning experiences using the PBL as to:
   3.1 learners' perception regarding the use of PBL in entrepreneurship
   3.2 learner-peer collaboration in PBL
   3.3 learner-facilitator collaboration in PBL
4. Is there a significant difference between the respondent groups':
   4.1 entrepreneurial skills before and after exposing in each of the aforementioned instructional methods
   4.2 mean gain results in each of the aforementioned skills?
5. Is there a significant relationship between the learners' level of entrepreneurial skills and:
   5.1 their learning experiences; and
   5.2 profile?

II. METHODOLOGY

The research used a Quasi-Experimental Method with two groups design, Control and Experimental Group utilizing survey and test questionnaires in gathering the data needed to enhance the students' entrepreneurial skills with the implementation of Problem-Based Learning. Appropriate statistical treatment was used in data analyses. The data were tabulated and interpreted to generate findings, conclusions, and recommendations.

Instrument

Two sets of questionnaires were used in this study. The first tool was a researsher-made guided with the competencies reflected in the DepEd curriculum guide. Such a test was used to gather data in the pre-test and post-test of control and experimental group to measure the learner's level of entrepreneurial skills. An adopted criteria from Sim et al., (2001) was used to descibed the learners' level of enterpreneurial skills.

The second instrument was a survey questionnaire adopted from Rashid, (2011) to measure the learners' perceived learning experiences in using the PBL. It has three parameters such as learner perception in the use of PBL (11 items), learners- peer collaboration in PBL (9-items), learner-facilitator collaboration in PBL (8-items). Each question was rated using a 5-point scale with 5 described as strongly agree and 1- strongly disagree.

Respondents

The respondents of the study were the two intact groups of learners from each section of the GAS 12 – Charoite & GAS 12 - Verdite of Moalboal National High School of the academic year 2019 -2020. From the 35 respondents of GAS 12 - Charoite (control group), twenty-one (21) were male, and fourteen (14) were female, and 35 respondents of GAS 12 - Verdite (experimental group), twenty-two (22) were males, and thirteen (13) were females.

Before the study has started, the researcher discussed the purpose of the study to the chosen participants. They were also informed that their participation is based on their willingness and that they have the right to refuse or to withdraw their involvement of the study at any stage for whatever reasons they have, like discomfort. The researcher asked the respondents to sign a consent form as evidence of their voluntary participation.

Data Gathering Procedure

The researcher wrote a letter to the principal to secure permission for the conduct of the study to the grade 12 Gas students, the respondents. As soon as the request has been approved, the researcher started to gather data from the two groups of respondents. The pre-hands on test were employed first to both the experimental and control groups. After the pretest, each group learned the identified competencies of entrepreneurship using traditional and problem-based learning methods.

The control group was learning the competencies using the traditional method while the experimental group was introduced to the problem-based learning method (PBL). To implement the PBL, the teacher grouped the students and designed the PBL scenario that is a real, complex issue related to course content. The students then defined the problem and determined what they know about the problem, what they need to learn more about it, and where they need to look to find data. Then they created products and presentations that synthesized their research, solutions, and learning. Finally, the students were evaluated for their products and performances. Such PBL activity intends to develop their entrepreneurial skills, communication, cooperation, comprehension, and information gathering as these skills will be used in the entire activity.

After the administration of interventions, the researcher conducted a post hands on-test to both control and experimental groups to determine the effectiveness of the PBL instruction. For the experimental group, their learning experiences with PBL were assessed using a survey questionnaire.

Data Analysis

The gathered data were analyzed with the use of weighted mean, percentage, Spearman rho, t-test, and ANOVA. The weighted mean was utilized in obtaining the respondents' level of performance in the identified competencies and their perceived learning experiences. Then, a description of the profile of the respondent groups, the descriptive statistics were employed. The t-test was used to determine if there is a significant difference between the control and experimental results in their pre-test and post-test results. Moreover, to determine whether there is a significant relationship existed

between the respondents' performance and their identified profile, Spearman rho was used.

III. Result and Discussion

Learners' Profile

The respondents of the study were the two intact groups of learners from the GAS 12 of Moalboal National High School of the academic year 2019 -2020. Their personal profiles included herein are age, gender, and combined family income to have a better idea about the respondents' basic information.

Age. It is an important variable in this study for this measures the maturity of students in learning the subject.

The learners' profile is presented in Table 1. As shown in the Table, Half or fifty percent of the respondents were on the age bracket ranged 17 - 18 years old. Twenty-nine percent of them belong to the 19-20 age group, while 21 percent of them aged 21 and above.

Gender. This variable is one of the parameters in determining the commitment of the tasks assigned to every individual in the workplace.

As shown in Table 1, dominant of the respondents were male equivalent to 61.00 percent while 39 percent only were female. This scenario is a bit unusual as mostly female students dominate the class. In this study, the entrepreneurship class which is one of the subjects of the General Academic strand has dominated by male students. This implies that a such strand was more attracted to the male students in their locality.

Muntean and Ozkazanc-Pan, 2015 indicated that age and gender may influence students learning. They added that the literature generally indicates entrepreneurship as a male-dominated field (Muntean and Ozkazanc-Pan, 2015), meaning gender is a highly confounding variable that moderate's entrepreneurship behavior and intentions (Haus et al., 2013; Guzman and Kacperczyk, 2019), therefore, should always be accounted for.

Combined Monthly Income. This parameter has been concluded to affect learners' ability to learn. This study refers to the parents combined income.

As shown in Table 1, the majority of the respondents or 47% of them have an income under 10,000 – 19,000, and 34 % of them belong to an income of 9,000- below, while 4% got an income above 30,000.

TABLE 1. Profile of the Respondent Groups

Variables	F	Percentage (%)
Age		
17 – 18	35	50.00
19- 20	20	29.00
21 – above	15	21.00
Total	70	100.00
Gender		
Female	27	39.00
Male	43	61.00
Total	70	100.00
Combined Monthly Income		
40, 000 – above	2	3.00
30, 000 – 39, 000	1	1.00
20, 000 – 29, 000	1O	15.00
10, 000 – 19, 000	33	47.00
9, 000 and below	24	34.00

Learners' Perceived Learning Experiences Using The Pbl Method

This section presents the perceptions of the learners with the problem-based learning method. Their learning experiences were described as to the following parameters: learners' perception regarding the use of PBL in entrepreneurship, learner-peer collaboration in PBL, and learner-facilitator collaboration in PBL.

Learners' perceptions regarding the use of PBL in Entrepreneurship

This refers to learners' perception towards the PBL method based on their experiences as to enjoyment, satisfaction, and impact on the improvement of their skills.

The result is reflected in Table 2. As depicted on the Table, the learners' perception was measured by the eleven (11) items having a mean range from 4.83 to 5.00. All items were perceived as **Strongly Agree**. They strongly agreed that they satisfied, enjoyed have understood the facts and materials used in the implementation of the PBL. Regarding its general mean, it obtained a score of 4.91. This means that the learners have a **Very Positive Perception** indicating a very positive learning experience with PBL. It implies that the problem-based method has brought positive learning experiences to the learners. As pointed out by Dochy et al., 2005, that problems are used to increase learners' motivation concerning the subject matter of the domain, particularly because the information is called for in the same way as in the real situation.

TABLE 2. Learners' perception s regarding the use of PBL in Entrepreneurship

No.	Items	MEAN	SD	D
1	The learning was effective in developing my communication skill Items	4.89	0.32	SA
2	The learning was enjoyable	4.94	0.24	SA
3	I was satisfied with the learning	4.94	0.24	SA
4	I learned with ease	4.89	0.32	SA
5	This type of learning is suitable for me	4.91	0.28	SA
6	I could understand the learning materials	5.00	0.00	SA
7	I could grasp the present facts	4.83	0.38	SA
8	I have gained knowledge	4.97	0.17	SA
9	I could identify the critical issues	4.83	0.38	SA
10	My ability to connect factual has increased	4.91	0.29	SA
11	I am more confident to speak and write through PBL	4.89	0.32	SA
	Average	4.91	0.27	The students have Very Positive Perception Towards PBL.

Legend: 1.0 – 1.79 (Strongly disagree, SD); 1.80 – 2.54 (Disagree);

Determination of learners' levels of participation in a PBL group discussion has been very subjective. Previous studies agreed that measuring participation can be done as a group property but not as an individual count (Paletz and Schunn,

2011). In this study, the survey was done individually but the data were analyzed as a group.

The result of the present study is parallel to the study of Mokhtar et al. (2010), which showed that the learners have a positive perception towards the implementation of the PBL approach.

Students perception on Peer collaboration in PBL

This refers to students' perception on how the PBL have made them interact with others. Presented in Table 3 is the result of the respondents' perception on students-peer collaboration in PBL.

As shown in the table students-peer collaboration in PBL was measured by a nine (9) item parameter of variable having a mean range of 4.89 to 5.00, all items were perceived **Strongly Agree**. Regarding its general mean, it obtains the score of 4.97.

TABLE 3. Students perception on Peer collaboration in PBL

No.	Items	MEAN	SD	D
1	Interacting with others students helped me greatly in my learning	5.00	0.00	SA
2	I had a chance to share knowledge with others	5.00	0.00	SA
3	I had a chance to cooperate with other students	5.00	0.00	SA
4	Learning by interacting with other students enhanced my confidence	5.00	0.00	SA
5	I experienced quality interaction with the other students in terms of learning	4.94	0.24	SA
6	The interaction enhanced my communication skills	4.97	0.17	SA
7	The interaction enhanced my confidence to raise my own ideas	4.97	0.17	SA
8	The interaction enabled me to value the opinion of the other students	4.94	0.24	SA
9	I managed to link up the different ideas raised in the interaction	4.89	0.32	SA
	Average	4.97	0.13	Very Positive

This means that the students-peer collaborations have **Very Positive Perception** indicating a very positive learning experiences with PBL. It is evident that all of them have agreed that learning by interacting with other students enhanced my confidence. It could also be noted that the interaction enhanced their confidence to raise their own ideas. Moreover, the interaction enabled them to value the opinion of the other students.

Hmelo-Silver (2004) stressed out that the PBL method carry out in small, facilitated groups and takes advantage of the social aspect of learning through discussion, problem solving, and study with peers. Moreover, PBL as a pedagogical strategy appeals to many educators because it offers an instructional framework that supports active and group learning—premised on the belief that effective learning takes place when students both construct and co-construct ideas through social interactions and self-directed learning. (Elaine H.J. Yewa,n , Karen Goh, 2016.

Students perception Facilitator collaboration in PBL

This refers to students' perception of their facilitator of PBL on how he/ she handle and address the needs of the class with PBL.

As shown in the Table, students-facilitator collaboration in PBL was measured by an eight (8) item parameter of variable having a mean range of 4.77 to 5.00, all items were perceived **Strongly Agree**. Regarding its general mean, it obtains the score of 4.95 which is equivalent to very positive perception. This means that students have experienced desirable learning experiences with their teacher as facilitator of learning through the use of PBL method. It further describes the teacher's good ability in the class for making students experience interactive learning as evident on their positive feedback. The quality interaction they have with their facilator may somehow help them to improve their skills hence resulting to effective learning.

TABLE 4. Students-Facilitator collaboration in PBL

No.	Items	MEAN	SD	D
1	Interaction with facilitator established effective learning	4.94	0.24	SA
2	It was easier to learn with help of facilitator	4.94	0.24	SA
3	Facilitator helped in my learning	4.97	0.17	SA
4	Facilitator encouraged my participation	4.97	0.17	SA
5	It was easy to contact facilitator	4.77	0.43	SA
6	Facilitator responded promptly on my query	4.97	0.17	SA
7	Facilitator provided guidance to the construction of new knowledge	5.00	0.00	SA
8	I experienced quality interaction with the facilitator in terms of learning	5.00	0.00	SA
	Average	4.95	0.18	Very Positive

Using PBL as a platform, a facilitator is the most important person who can influence students' participation in a group discussion (Alias Masek, 2013). Beyond the PBL scenario the single greatest factor that influences the success of a PBL program is the facilitatory skill, knowledge and ability of the teacher. Such is the importance of facilitation that, within PBL, the teacher is usually referred to as the 'facilitator'. The facilitator monitors and stimulates the PBL process by posing leading questions, challenging trainee thinking, and raising facts or issues relevant to the problem.

Moreover, the facilitator is a guide who assists students develop the necessary skills in reasoning, hypothesis design and testing, study and self-evaluation4 (R. W. JonES, 2006). Also Davison,(2015) cited that teachers are accountable for whatever learning outcomes that take place in instruction, they are obliged to cater individual needs through differentiated instruction to address individual learner needs and to conduct various intervention measures to reassure that learners have mastered competencies taught.

Test of Significant Difference

The succeeding Tables present the significant difference for the respondents' entrepreneurial skills before and after using

the PBL and traditional method. It also tests whether the PBL method is effective in improving student's entrepreneurial skills such as communication skill, cooperation skill, comprehension skill and information skill.

Difference before and after the use of each method

Table 5 reflect the result between the pretest and posttest of the control and the experimental groups.For the control group, the difference between the pretest and posttest obtained a t-value of 6.94 with a p-value of 0.000. The results lead to the rejection of the null hypothesis, " There is no significant difference between the pretest and posttest results of the control group." This implies that students have significantly improved their entrepreneurial skills when taught with traditional method.

TABLE 5. Test of Significant Difference Before and after using PBL and Traditional Method

Group	Test	Mean	t-Test	P- value	Decision	Interpretation
Control	Pretest	1.81	6.94	0.000	Reject Ho	Significant
	Posttest	2.11				
Experimental	Pretest	2.55	10.98	0.000	Reject Ho	Significant
	Posttest	3.87				

For the experimental group, a similar result was achieved with that of the control group. A significant increased of the posttest result over the pretest was evident. Implying students' improvement in their entrepreneurial skills with the problem based-leaning method.

Such result confirms the studies conducted by Mergendoller, Maxwell, and Bellisimo (2000) who compared the learning and attitudes of high-school students studying economics using problem-based and lecture discussion methods.They found no statistically significant pre–post differences in learning for individual units,but there was a statistically significant pre–post difference in general economics knowledge from the beginning to the end of the semester, with the lecture–discussion classes learning more. PBL was found to be more effective instructional approach for teachng microeconomics than traditional lecture-discussion . Additional analyses provided evidence that PBL was more effective that traditional instruction with students who were more interested in learning economics, and least confident in their ability to solve problems.

Also Visser (2002) compared the effects of problem-based and lecture-based instruction on student problem solving and attitudes in a high-school genetics class. She found statistically significant differences in learning outcomes and motivation for students in the PBL and lecture–discussion treatments,with the PBL students reporting less motivation and learning yet recounting more confidence in their learning.

Difference Between the Control and the Experimental Groups

To determine if the PBL method is effective in improving students' entrepreneurial skills over the traditional method, an independent t-test was used in the analysis of data. The result is presented in Table 6.

Result revealed that the mean gained obtained by the experimental group of 1.31 was significantly higher compared to that of the control group of 0.3. The t-value of 1.97 with a p-value of 0.000 resulted to the rejection of the hypothesis. Hence, there is a significant difference between the result of the control and experimental groups. Indicating that the students under the experimental group have more improvement of their entrepreneurial skills compared to that of the traditional method. Further, it implies that the PBL method is effective in improving students' entrepreneurial skills.

TABLE 6. Test of Significant Difference between the Control and Experimental group

Groups	Mean gained	t-Test	P-value	Decision	Interpretation
Control	0.3	1.97	0.000	Reject Ho	significant
Experimental	1.31				

Tayyeb, (2011) exposed that teaching through traditional method significantly improved content knowledge, but did not considerably improve clinical reasoning and problem solving skills whereas, content knowledge of students who studied through PBL remained the same but there was marked improvement in their clinical reasoning and problem solving skills ($p = < 0.001$). Conclusion: PBL is an effective instructional tool to foster critical thinking and problem solving skills among medical students.

This present study cotradicts the result of Tan, 2011 who concluded that in knowledge acquisition, PBL does not show advantage. Also, there was no significant difference in the final examination score for students who experienced different teaching method. He added that to get better teaching effect, there still is something to do in applying PBL in economics teaching (Tan, 2011).

Test of Significant Relationship

This section presents the relationships between the students' entrepreneurial skills and their learning experiences with the PBL method. It also shows the correlation between their skills and their profile, age, gender and their income.

The results are reflected in Table 7. As seen from the Table, students' learning experiences show a positive and low correlation with their entrepreneurial skills as shown I n the obtained spearman rho value ranging from 0.23 to 0.31. The positive relationships explained that as one variable increases the other variable increases as well. For example, if students have positive learning experience with PBL then most likely they have a more improve entrepreneurial skills. Considering the age, older students have better entrepreneurial skills compared to the younger ones.

Moreover, among the variables students' learning experiences with PBL and their age shows significant relationships with their skills as shown in the their p- values of 0.02 and 0.03 respectively which are both less the set alpha of 0.05. The results further imply that students' entrepreneurial skills may be influenced by their learning experiences with the

PBL and their age. On the other hand, their gender and their income did not significantly affect their entrepreneurial skills.

TABLE 7. Relationship between students' entrepreneurial skills, learning experiences and their profile

Variable	Sr- value	Interpretation	P- value	Decision	Interpretation
Entrepreneurial skills and Learning Experiences	0.31	Low	0.02	Reject Ho	Significant
Entrepreneurial skills and Age	0.29	Low	0.03	Reject Ho	Significant
Entrepreneurial skills and Gender	0.23	Low	0.13	Failed to reject Ho	Not Significant
Entrepreneurial skills and Income	0.23	Low	0.08	Failed to reject Ho	Not Significant

IV. CONCLUSION

Based on the findings of this study, it is concluded that problem based learning method is effective in improveing students' entrepreneurials skills particularly the skills of communication, cooperation, comprehension and information gathering. Hence, a need to be implemented in the enterpeneurship class to ensure desirable learning experiences of the students.

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