

SELF-MADE BUSINESS PROPOSAL PRESENTATION: AUTHENTIC LEARNING IN GENERAL MATHEMATICS

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ABSTRACT

Authentic learning is a style of learning that encourages the students to produce an outcome that might be a big help in a real-world situation. And this was used in one of the subjects of senior high school, General Mathematics. A study was conducted to determine how authentic learning could aid teachers in discussing General Mathematics. The method of research used was focused action research to the senior high school students of one of the private schools in Marikina City. Learners were requested to have a reflection on their presentation of the self-made business proposals and be compared to their performances and outputs. Analyzing the data lead to three main themes, namely, focused Mathematical concepts, personal development, and principles of learning. Doing this kind of authentic learning shows ownership of the students on their output, which provided different areas of enhancements and learnings, not only in mathematical skills but also improvements for themselves as a person. Thus, Self-made Business Proposal Presentation shows real-world problems engagements, the use of flexible inquiry, intellectual skills and metacognition, students involve in social learning in a community of learners, and ownership of learning. Likewise, doing authentic learning could provide an opportunity for students to solve and explain problems mentally and promotes students' sensemaking, creativity, personal development, and sense of being a mathematician.

Keywords: Authentic Learning, General Mathematics, Self-Made Business Proposal Presentation, Focus Action Research, Philippines

INTRODUCTION

Twenty-first-century teaching is the new trend in the field of education. Innovation training must be conducted in which innovative methods of teaching are strategies of coaching that contain new methods of interplay between “teacher-student”, “teacher-student”, a certain innovation in sensible activity inside the procedure of mastering instructional material (Aigerim Mynbayeva & Akshalova, 2018).

Global citizens, thinking creatively, thinking critically, communicates, and collaborates with others are the key characteristics of the 21st century (Breed, 2019) which educators should be minded of to innovate or improve their teaching styles. That makes educators of mathematics produce different methods of teaching it which have been proposed also by specific educators and experts. An instructor must undertake a coaching technique after considering the



characters of the children. Every approach has certain merits and few demerits and it's far the work of a trainer to decide which method is high-quality for the students. Some of the techniques of teaching Mathematics are the lecture method, inductive-deductive method, heuristic method (discovery/inquiry method), analytical-synthetic method, project method, brainstorming, think-pair-share, learning by doing, and problem-solving approach (Merchant 2008). Besides, teachers should constantly be capable of showing how every concept of mathematics can be applied to the real world -- and when it allows improving the students' understanding (Beyranevand, 2016).

The research began when the Head of the Senior High School department of the selected private school told the researcher to teach the grade 12 students in a way that they will learn new things other than general mathematics, experience a sense of ownership of students' output and use a different mode of teaching style to catch the attention of this 21st-century learners. As the teacher of these 21st-century learners, the researcher initially interviewed students of what does the usual teaching style and activities that they have experienced. Moreover, the researcher also collected some studies that will guide him to provide an activity that will afford ownership and a new teaching style for 21st-century students in learning General Mathematics. The following are the relative studies to support the construction of the new possible teaching style:

Ownership. Learners should feel a sense of ownership once educators assign classroom roles, give students a choice, encourage group work, and focus feedback by asking students to self-assess and listen to the learner's voice (5 Tips for Encouraging Ownership in the Classroom, 2017). Likewise, providing choices, being flexible, and building eccentric relationships are the foundation of ensuring that learners understand that they may be the most important school stakeholders and own their learning (Plotinsky, 2019).

Teaching Style. Based on the literature, there are low-tech and high-tech teaching styles. Low-tech teaching styles are direct instruction and kinesthetic learning but teacher-centered learning. Differentiated instruction and expeditionary learning are still examples of low-tech teaching styles but student-centered learning. On the other hand, the high-tech teaching styles are flipped classroom (teacher-centered learning), inquiry-based learning, game-based learning, and personalized learning (student-centered learning). Thus, it is proven that an active learning style is best suited for an interactive classroom (Bohren, 2018).

Twenty-first Century Learners. The new way of providing learning in today's learning environment, educators must be minded of the students' personalizes learning, students' motivation and emotion in learning, usage of diverse knowledge sources, and assessment of their learning ("21st Century Learning: Research, Innovation, and Policy," 2008). Also, these new learners are more often to technology, and to have an effective learning activity teachers should form a discovery and creation approach to their teaching (Blair, 2012).

Authentic Learning. In a school-reform perception, authentic learning is related philosophically and pedagogically to strategies such as personalized learning, community-based learning, and project-based learning. Moreover, instructional strategies such as learning demonstrations, capstone project, personal learning plans, and compilations of work or activities is connected with authentic learning ("Authentic Learning Definition - The Glossary of Education Reform," 2014).

Personal Development. There is a notion that personal development should be included in the students' learning process because it could poster discipline, confidence, and punctuality. Nevertheless, adding this to classroom activities will develop better personalities and ensure not to do negative behavioral traits (Atieno, 2018). Furthermore, the main purposes of personal development activities to students are developing their social-

emotional competence, managing their emotions (positive and negative), achieving their autonomy and independence, developing their interpersonal relationships, establishing their identity, developing their purpose, and developing their integrity (Iulia, 2015).

Thus, the researcher decided to let his students make a self-made business proposal as part of their activity. Since, it was been alleged that doing self-made business proposals will help students make realistic plans and projections, help them secure funding, provide them with business with direction and structure, help them identify strengths and weaknesses, and put everyone on the same page or will work together as one (Stenger, 2016).

OBJECTIVE OF THE STUDY

The goal of this study is to determine if the self-made business proposal presentation could aid teachers to teach general mathematics and help students learn beyond the subject or topics in general mathematics. And if this activity could provide an opportunity for students to solve and explain problems mentally and promotes students' sensemaking, creativity, and sense of being a mathematician (Drake, 2016). This study is also conducted to determine if the self-made business proposal presentation is a kind of authentic learning in General Mathematics. Since the activity shows real-world problems involvement, use of open-ended inquiry, thinking skills, and metacognition, students engage in social learning in a community of learners and direct their learning in preparing the proposal (Rule, 2007).

METHODOLOGY

This study used focus action research, since the researcher collected a self-reflective investigation undertaken by the student participants to identify possible improvements for educational practices in a classroom setup (Choeda et al., 2018). The participants of this study were twenty-five (25) students of Grade twelve (12) senior high school who are taking

the subject General Mathematics at a private school. In relation to triangulation, performance was observed, and follow-up interviews were done on their college year experience. In conducting this study, ethical consideration was manifested; privacy, safety, and anonymity of the participants (Wang and Redwood-Jones, 2001), and pseudonyms were used to represent students for their right to be anonymity. This also considers Gibbs' Reflective Cycle since it enables the students to effectively reflect on an event (Self-Made Business Proposal Presentation) and learn from it (Rumson, 2016). Not only the students but the teacher can improve his or her teaching style after knowing the students' reflections

Figure 2 displays the milestone of students and teachers during a self-made business proposal presentation. The description part of the cycle is the activity (self-made business proposal) of the students while the feelings part is the experience of the students in doing the activity. This presentation will be evaluated by the group of panels and self-evaluation of the students thereafter (evaluation), on the analysis part, a reflection of the student shall be analyzed to improve the implementation of the activity, know what to retain, and improve on the execution of the activity (conclusion) and the final stage is revising the instructions and operation of the activity.

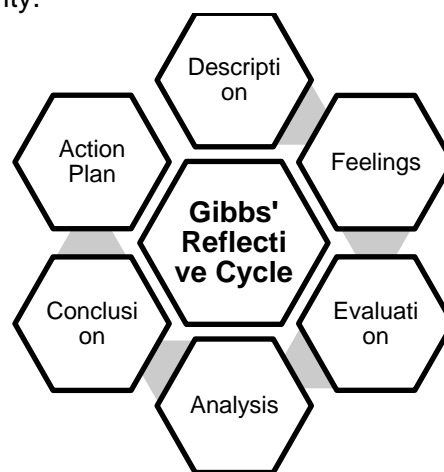


Figure 2. Gibbs' Reflective Cycle for Self-Made Business Proposal Presentation

RESULTS AND DISCUSSION

The following is the gathered data of the researcher that makes the students learn beyond the expected topic using authentic learning through self-made business proposal presentations and the self-reflection and learning of the researcher. After presenting their self-made business proposal, learners were asked to make a reflection on their activity (Business Proposal Presentation). These reflections were analyzed, interpreted and thematized into three themes that made the students think of what they have learned from doing the activity. The themes were Focused on Mathematical Concepts, Personal Development, and Principles of Learning.

1. Focused Mathematical Concept

Through the reflections of the students, this theme was separated into three subthemes, namely (a) fundamental operations, (b) interest, and (c) basic concept of loans. These themes were the focused mathematical concept of the business proposal presentation activity as per the students' realization. Below are some of the lifted reflections of the students that talk about the focused mathematical concept of the self-made business proposal presentation and its interpretation.

1.1. Fundamental Operations

"Since we are making our own (business) proposal, my addition and multiplication skills were improved" – Student A

"I think the basic math operation because our group do lots of adding, subtracting and multiplying to check our business proposal" – Student B

With the above statements, it shows that the students enhanced their basic fundamental operations by performing calculations with a general understanding of numbers and operations that is applied on the given task

(Ontario, 2018). This means making self-made business proposals improved students' fundamental operations skills.

1.2. Interest

"The topic you have discussed that we use in making our business proposal is simple interest" – Student C

"We apply our knowledge in Basic Concept of Interest, even if it is hard, we realized that having a business proposal is one of the used of interest" – Student D

Students reflected that doing the self-made business proposal activity led them to learn more about interest. And to let students learn more about interest we teachers must aid our discussions with a real-life situation that uses interest (Picardo, 2018).

1.3. Basic Concept of Loans

"The activity let us master the topic loan because we have to interview real businessmen and ask them about loaning" – Student E

"...and basic concept of loan because we have to be the sellers of our business" – Student F

Through the activity, students reflected that they were still able to learn the basic concept of loans. And basic concept of loans is an application of mathematics (Rains, 2012). This means that self-made business proposal presentation activity does not only teach our students one lesson or topic of mathematics but a variety of mathematical concepts.

2. Personal Development

During the analysis of the students' reflection, the Self-made business proposal presentation not only teach the students about mathematical concepts, but it also teaches

them how to improve and develop their characters. This kind of personal development could help them as a person in their chosen career soon. Self-esteem, confidence, problem-solving skills, preparedness, and leadership are the identified personal characteristics that were boosted by just doing the activity. Below are the students' reflections and interpretations that emphasize their personal development.

2.1. Resilience

"We did lots of revisions but still came to one business proposal" – Student G

"Our leader divided the task so that we can do (finish) it, even though we have different subjects other than mathematics" – Student H

The statements above show the enrichment of personal characteristics highlighting resilience. Resilience is reaching one's goal through personal strengths and hardships they endured and overcame during the process. And students who develop resilience can face disappointment, learn from failure, cope with loss, and adapt to change (Price-Mitchell, 2015).

2.2. Self-Confidence

"I am really shy when I'm in front of the class, but because of the activity I realized that I could do it in front" – Student I

"When sir said that we are going to present our proposals, I got nervous but when I presented my part, I'm proud of myself" – Student J

It was analyzed that doing the activity boosted the students' self-confidence. Self-confidence is important to students since it involves interaction with other students. Likewise, students' self-confidence can be used to foresee the correctness of work, performance, and learning achievement, as the

cognitive meta-process also functions well. Self-confidence also encourages students to be optimistic when completing tasks, and responsibilities, and to have a competitive attitude, as well as academic attainment, reducing cognitive anxiety, affecting success motivation, and increasing academic accomplishment (Blegur et al., 2019).

2.3. Problem-Solving Skills

"I was able to solve our groups' problem, because we are making our computations..." – Student K

The above statements indicate that through the prepared activity, students are practicing their problem-solving skills. In this case, students need to be able to recognize and apply different strategies to solve such problems. Problem-solving skills needed to be explicitly taught in a way that can be moved across multiple settings and contexts because it do not develop naturally (Mills & Kim, 2017).

2.4. Preparedness

"I did my preparation because we are going to defend our business proposal" – Student L

"I prepared for this because I am really shy when I'm in front of the class..." – Student M

Another personal development that can be improved by giving a self-made business proposal presentation is that students become prepared. Once a student is prepared, he or she can discuss something that they are unfamiliar with and learn more by examining the part of his or her discussion. Thus, students need to be mentally prepared because their mind wandering will be great and more likely to succeed in his or her task. Furthermore, being prepared leads to less stress. If one student is not prepared, then they may feel stressed out. On the other hand, if one student has completed the assignments, read the material, and



understands the material, he or she will be more likely to be able to focus on the class (Stowers, 2012).

2.5. Leadership

“I distribute the task equally to my groupmates to make the proposal...” – Student N

“Our group has done it quickly because our leader and Sir Roxas guided us” – Student O

It was also analyzed that doing the activity shows an indication of enrichment of leadership skills of the students. Recognizing the enhancement of students’ leadership also recognizes the improvement of their communication skills, social awareness, emotional management skills, self-awareness skills, and decision-making skills (Kirchner, 2014). Having this activity relative to leadership, the leader prevents the group from conflicts, make them accountable for every decision they make, motivates themselves, aware of all obligations and tasks, and collaborates with the other students (Clark, 2017; Kirchner, 2014).

3. Principles of Learning

Another theme that was identified in the reflection of the students was the principles of learning. These principles of learning help them learn beyond the topic in General Mathematics and could aid teachers in how to manage such principles in their classes. These principles of learning are namely, discovery approach, collaborative learning, brainstorming, and experiential learning. Below are the students’ reflections and interpretation of the researcher relative to principles of learning:

3.1. Discovery and Collaboration

“I thought our group will not make it, because sir only give us what shall we do, but with the help

of everyone and businessmen we were able to do it” – Student P

“At first it is hard to make a proposal, but when everyone is doing their work, it becomes easy” – Student Q

“I was able to learn the application of Business Mathematics in real life and it is not easy to sell products” – Student R

“I learn more about businesses...” – Student S

On this note, students made their business proposals and showed a practice of ownership through collaboration. It also demonstrates a deeper and more meaningful learning experience for the students. These approaches were also suggested and approved by educators from the time when learners displayed productive and visible learning. Discovery and collaborative approaches to learning have been seen as an effective ways of engaging the students in the lesson (Roxas et al., 2016).

3.2. Brainstorming

“... on our free time, our group do computations and apply what we have learned in Gen Math” – Student T

“Constructing your own business is hard, but our group thinks hard to identify one, which is the (name of the business).” – Student U

Another principle of learning analyzed in the students’ reflection is brainstorming. Brainstorming encourages students to come up with thoughts and ideas using problem-solving with head-to-head thinking. It brings group members’ diverse experiences into the piece, increases the richness of ideas explored with the peer, and encouraged each member to contribute fully by helping develop a rich array

of creative solutions which often be a better solution to the specific problems that they face (Naser & Almutairi, 2015)

3.3. Experiential Learning

“We do not experience the presentation in front of the class, I think we can do it again in our college (years)”
– Student V

“...because of the defense, I can now defend our future thesis” – Student W

These students’ reflection indicates that the experience they had encountered during the implementation of the activity give them a boost and learning on how to face the future. Proven that experiential learning builds students’ social skills, work ethics, and practical expertise that is needed in the future. This principle of learning leads the students to master and use the subject matter in a real-life setting, gives students the capacity to deal with complex new situations, and develops skills for lifelong learning (Eyler, 2009).

Self-reflection and Learning

As the teacher, facilitator, and researcher of this activity and study, to give the best learning to your students, let them have ownership of the learning they had gained. To do so, give all instructions and tasks, guide them, and let them discover all answers and solutions to the specific problem they are facing on their own. The researcher also comprehended that doing the self-made business proposal presentation will not only aid you, as an educator, to teach the application of mathematics in real-life concepts but will let your student have personal development and be trained through different principles of learning. Subsequently, facing a new generation of students, 21st-century learners, is facing an upgraded teaching style that will help them learn actively and fruitfully. Thus, educators must also have new teaching styles for these learners, and that is authentic

learning. Due to this self-made business proposal presentation, the researcher was motivated to do more authentic learning, since it will aid educators to impart learning to our students beyond our expected or targeted learning.

Figures 3 to 5 are some proofs of transformation that happened to students who experience authentic learning through self-made business proposal presentations in general mathematics for senior high school. With the literature and analyzed data.

PM ko na lang response ko sir. Nakatulong yung Self Made Business Plan sa akin sir ngayon sa school kasi bukod sa may background na ako dun medyo nadalian na ako sa ibang parts at kung paano mag-iisip ng pwedeng ioffer. Lalo na ngayon sir, sa technopreneurship namin, nagagamit siya.
- 01/05/2020, 19:48

I'll just PM my response sir. The Self Made Business Plan helped me now in school because apart from the background I already have, It was easy for me to recognized the other parts and how to think of what can be offered. Especially now, sir, it can be used in our technopreneurship.

Figure 3. Student’s response on the follow-up question who has a subject of Technopreneurship

The "Self Made Business Proposal Presentation" is one of the experiences I had that helped me to have more confidence when speaking in front of the class. Though I'm still not so good at class presentation, at least I could say that I improved. It also encouraged us to be more creative since we needed to come up with our own business that we have to propose. After the presentation, we were also asked several questions about some details of the group's presentation. That really made us nervous but I think it taught me to pay more attention to details when preparing for a presentation which I think a lesson we could also apply in our daily lives.

- 02/05/2020, 23:57

Figure 4. Student’s Response Saying that Self-Made Business Proposal Presentation help him improve as a student

The self-made Business proposal helped us in many we can imagine such as being strategic and most importantly is the courage to ask questions, these are the things that would make us successful for our chosen careers in the near future. Being strategic in how we can manage a business proposal is something inherent yet we can learn from the process and will continue to develop our personality as we grow. Being able to execute a successful business proposal helps us develop our personality and our maturity as we grow up. As we learn about the business world we are also learning how to adapt and evolve as we grow our personality grows stronger that we are able to be strategic and diligent in some situations. Of course as we grow, we become mature enough to understand certain things such as being business minded which is prevalent from the business proposals we made. Sir I totally forgot how we managed the proposal pero I still had some lessons as to how it helped us. Ito napo.

- 02/05/2020, 22:37

Figure 5. Student's Response Saying that Self-Made Business Proposal Presentation help him improve his personality

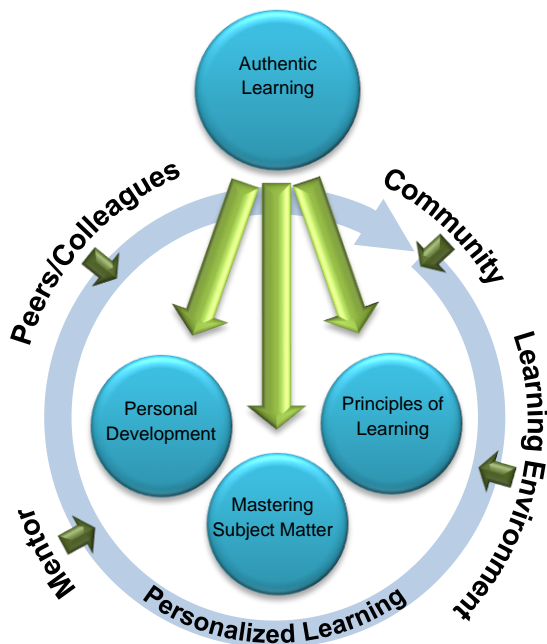


Figure 6. Roxas' Authentic Learning Model

Above is the attained and proposed model for future educators to get familiarized with authentic learning, with the gathered data, this framework was developed which shows that authentic learning leads to three (3) continuous personalized learning namely personal development, mastering of the subject content and principles of learning that are influenced by mentors, peers, community and learning environment.

CONCLUSIONS

Self-made Business Proposal Presentation shows real-world problems engagements, the use of flexible inquiry, intellectual skills, and metacognition, students' involvement in social learning in a community of learners, and ownership of learning. Likewise, doing authentic learning could provide an opportunity for students to solve and explain problems mentally and promotes students' sensemaking, creativity, personal development, and sense of being a mathematician. It is also concluded that for the improvement of the school community, it is suggested to include authentic learning as part of the assessment task of the teachers and personalized learning as a teaching style.

RECOMMENDATIONS

This study suggests that senior high school teachers may use Self-made Business Proposal Presentations in teaching business mathematics, a chapter in General Mathematics, for the students, may gain learning beyond computations. Additionally, the framework cannot be proven unless carried out in the other field of specialization. Thus, it is suggested that future research may extend this research to their field of specialization and do more literature review to expound the developed framework.

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