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Design Thinking in the PBL Classroom to Address Community Needs

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ABSTRACT

In a Scholarship in Practice course, Design Thinking and PBL were used as the educational methodology to deliver the learning content in the class called Multilingual Marketing and Community Connection for undergraduate students. Students completed group work, community interactions, and projects all online. Design Thinking and PBL supported student motivation and engagements. This article provides an example of one class that utilized the integration of both Design Thinking and PBL to support innovative problem solving.

KEYWORDS

Design Thinking, Project-based Learning, Community engagement, student motivation

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Introduction

Since its development in the 1970s, Project-based and Problem-based learning (PBL) has become more widespread resulting interesting learning outcomes. Additionally, the methodological strength of the connection to real issues supports student motivation and the university mission of education for SDGs. Design Thinking can be combined with the PBL method to enhance the creativity of solutions to real problems that effect real people. This article documents a specific class example of applying PBL methods and Design Thinking to coursework as students worked together to help local businesses.

Problem-Based or Project-Based Learning (PBL)

Problem-Based (or Project-Based, depending on the resource) Learning (PBL) developed in the 1970s as a result of a new way to teach content in medical education programs (Wiemer, 2013). Through its years of development PBL has come to be called a "lectureless pedagogy" and has been applied to many disciplines in higher education (Wiemer, 2013). The problems used to inspire undergraduate students tend to be somewhat abstract, but also have real-world application. These situations often require students to use their knowledge beyond their own major and across disciplines (Wiemer, 2013).

Most definitions of PBL include at least the following aspects. Primarily, students use a driving question to guide their learning (Miller & Krajcik, 2019). The question could be provided by the instructor, or students could write and explore their own guiding questions. Additionally, the PBL model includes an underlying purpose that sustains the students' motivation outside the classroom. Halvorsen, Duke, Strachan, and Johnson described this aspect as providing "a purpose beyond 'doing school'"(2018, p. 24).For clarity, this article adheres the definition from Duch, (2001):

> *Problem-Based Learning (PBL) is a teaching method in which complex real-world problems are used as the vehicle to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts.*

Miller and Krajcik (2019) argue, "the capacity to enact knowledge to solve a problem requires a deeper level of science understanding than memorizing information or procedures" (p.1). Miller and Krajcik's research focused on science education, but PBL can be an asset to the development of a deeper level of understanding throughout and across disciplines. In a PBL classroom, the solutions for the guiding question provide evidence for deep learning. Strategically aligned assessments and learning goals maintain the rigor of the content, while also allowing for innovation and creativity.

Research indicates improvement in a number of skill sets. First, students' attitudes toward their work improve (Wiemer, 2013). Students also improve in knowledge retention. Students can develop better independent study skills like making better use of the library, stronger commitment

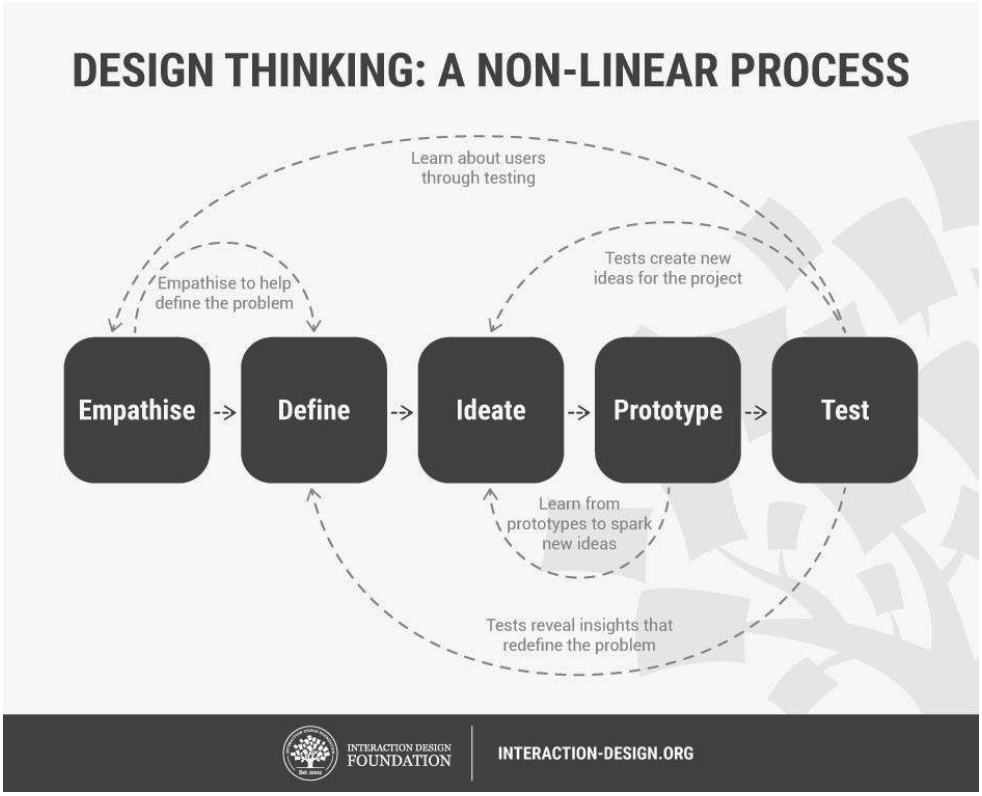
to reading the textbook, and improved class attendance. Students develop a deep learning ability to focus more on meaning rather than memorizing content (Wiemer, 2013). “The implication is that student may acquire more knowledge in the short term when instruction is conventional, but students taught with PBL retain the knowledge they acquire for a longer time” (Prince & Felder, 2006, p. 129 as quoted in Wiemer, 2013, p. 44.)

Design Thinking

While PBL has traditionally been contained in the educational community, Design Thinking comes from the Information Technology (IT) industry. Specifically, Design Thinking was developed by User Experience (UX) designers to create the best layouts and processes effectively and innovatively for apps and websites. The Design Thinking process is quickly gaining traction across industries, including education.

Design Thinking focuses on the needs of the customer and involves strategic steps to create products that users actually enjoy. In the educational or community sense, Design Thinking works well to help identify who will be the beneficiaries of a solution and to empathize with them to determine the best solution for those beneficiaries. The figure below shows the five steps in the Design Thinking process.

Figure 1. The Design Thinking Process



Multilingual Marketing and Community Connection

The Multilingual Marketing and Community Connection (MMCC) class was offered in

Terms 1 and 2 of the 2021-2022 academic year. The class was offered as one of the choices for the "Scholarship in Practice" designation. The class sought to provide students with real-life experiences in working with local community businesses and gave students the tools to develop a marketing plan in English for a community business of their choice. Students worked with organizations to help build the international reach of local businesses through English language and social media support. The primary learning objective was for students to develop business marketing, project management, and improve English language skills.

Learner-centered outcomes were defined as follows:

1. Remember and apply the basic principles of business marketing in a real context.
2. Synthesize information for reporting in multiple ways throughout the project.
3. Identify marketing problems and brainstorm possible solutions to those problems.
4. Create a marketing plan, concept, and media for a local business.
5. Clearly communicate ideas in Japanese and English through the delivery of a marketing pitch (presentation).

Integration of the PBL Process

The PBL integration process began with the introduction of the overarching problem to be solved:

Local businesses are suffering financially because of the coronavirus pandemic.
What can be done to help them improve their business marketing to engage
Japanese and international customers?

Students were also given a goal for their coursework. The goal of the class was to strengthen the relationship between the community and the university and connect local businesses to a wider range of customers. Students were asked to form teams and find a community business that would partner with them to create multilingual marketing materials. Through their work in groups with a business in the community, students were challenged to immediately use their problem-solving, team building, and communication skills.

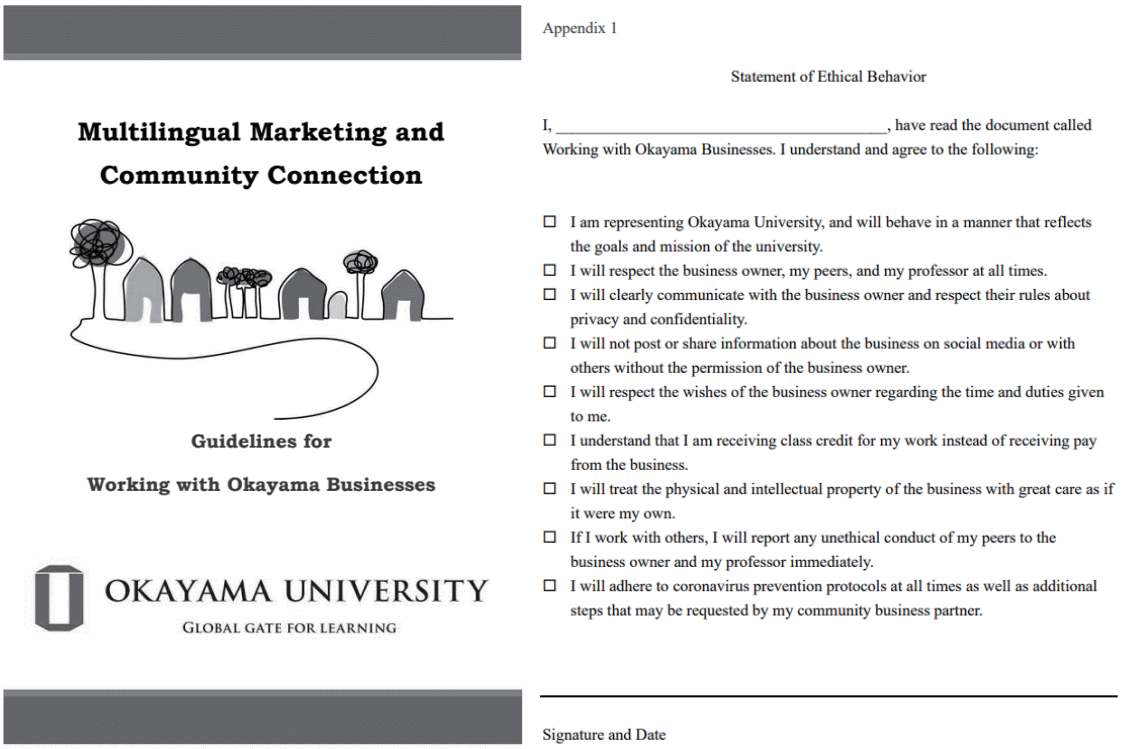
The PBL process continued throughout the term in four steps. First, the students were introduced to the course and the overarching problem. Students received scaffolded content that provided a basic understanding of marketing and details about the ethics of working with a community business. Students were required to sign an ethics statement before proceeding to work with their organization.

In Step 2, students worked together in teams to meet with their community business organization and find out more about the specific situations of each business. The students submitted several assignments to document their background findings.

In Step 3, the students began to create proposed solutions and marketing materials for the businesses. Finally, in Step 4, the student presented all of their accumulated materials to explain their ideas and reflect on their learning.

Figure 2. Booklet Cover for Guidelines for Working with Okayama Businesses

Figure 3. Statement of Ethical Behavior



Multilingual Marketing and Community Connection

Guidelines for

Working with Okayama Businesses

OKAYAMA UNIVERSITY

GLOBAL GATE FOR LEARNING

Appendix 1

Statement of Ethical Behavior

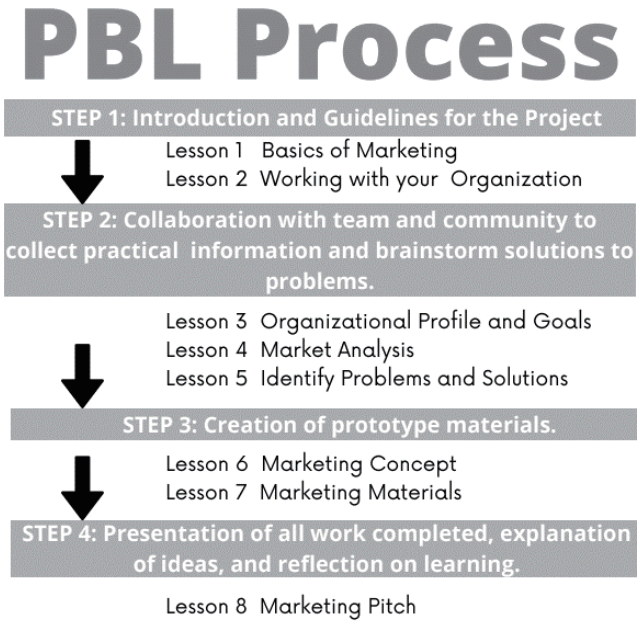
I, _____, have read the document called Working with Okayama Businesses. I understand and agree to the following:

- ☐ I am representing Okayama University, and will behave in a manner that reflects the goals and mission of the university.
- ☐ I will respect the business owner, my peers, and my professor at all times.
- ☐ I will clearly communicate with the business owner and respect their rules about privacy and confidentiality.
- ☐ I will not post or share information about the business on social media or with others without the permission of the business owner.
- ☐ I will respect the wishes of the business owner regarding the time and duties given to me.
- ☐ I understand that I am receiving class credit for my work instead of receiving pay from the business.
- ☐ I will treat the physical and intellectual property of the business with great care as if it were my own.
- ☐ If I work with others, I will report any unethical conduct of my peers to the business owner and my professor immediately.
- ☐ I will adhere to coronavirus prevention protocols at all times as well as additional steps that may be requested by my community business partner.

_____

Signature and Date

Figure 4. Integration of the PBL Process in MMCC



Student Output for the Design Thinking Process

The Design Thinking process was integrated through the required assignments. Each assignment addressed at least one of the design thinking steps.

Empathize

To develop empathy for the business owners and customers, students completed a Company Profile. The Company Profile helped to define the mission, vision, and purpose of their chosen business. Students often heard heartfelt stories from business owners about their love of what they do and their desires to serve the local community.

Define

To better understand the current situation of each business, the students conducted a basic Market Analysis. The Market Analysis helped the students and businesses to define the industry standards, customer preferences, company risks, and goals to better make plans.

Figure 5. Company Market Analysis Template

Ideate

Using the Company Profile and Market Analysis, the students talked with their businesses about specific problems. Using the Identify Problems and solutions assignment, students brainstormed in 2 phases. The phase 1 brainstorming session allowed for any idea to be valid. The purpose of the second phase of brainstorming was to narrow down the list of solutions to only those that were feasible.

Prototype

Students used their previously collected information and brainstorming to identify the feasible solutions for a few of the business' problems. Each team created a marketing concept that was visually represented by a design board. The design board reflected the colors, fonts, pictures, and overall aesthetic of each business. Students then created digital marketing pieces to address at least one of the problems specified during the ideate phase. To practice their language skills, they

were asked to create the materials in English and Japanese.
Marketing concept and materials

Test

The student presented their work from the entire term in a final presentation. Each group created a marketing company name and logo. They were asked to provide a short biography of each member, as might be expected if conducting a real marketing presentation for a business. After the presentation the professor and other students provided feedback about the marketing strategy and materials presented.

Observational Data

While this article is not a formal research report, some observational data can be noted. Because the courses were conducted in English, the class enrollment for Term 3 was 15 students, while the enrollment for Term 4 was 8 students. In the two terms, seven local businesses were assisted. There are many other courses like this one that are offered in Japanese that often have more than 25 students per class. All this to say that these types of PBL, Design Thinking, and community courses are increasing in popularity with students and teachers alike.

It was evident that student engagement and motivation was high during the period of instruction. Students were usually on time, ready to show their assignments to the class. Minimal absences were logged and often with detailed explanation for the absence. Students were also uniquely motivated because they were given the freedom to choose the business with which to work. This choice was important as students often built meaningful relationships with the business owners sometimes resulting in part-time work opportunities. The PBL and Design Thinking model in this course met all the criteria for increasing student motivation according to learning experts (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010). Table 1 shows the motivational strategies that establish value, descriptions of course alignments, and corresponding learning outcomes.

Unique challenge online

The course was offered during a time of restricted campus entry, meaning that all classes were required to meet online due to the coronavirus pandemic. Students were consistently reminded to limit their interaction with others and adhere to the Three C's policy in Japan. Nevertheless, students safely made contact with their business owners and groups. They were diligent about using services such as LINE to communicate safely. While some classroom community may have suffered, the students still performed well in groups despite the unique challenges of the situation.

Table 1. Motivational Strategies to Establish Value

(Criteria adapted from Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010)

Criteria	Course Alignment	Learning Outcome
Connect the Material to Students' Interests	Students selected their own organizations	1.Remember and apply the basic principles of business marketing in a real context. 2. Synthesize information for reporting in multiple ways throughout the project.
Provide Authentic, Real-World Tasks	Students worked with real businesses in the city and created materials that were used by the businesses.	Applies to all learning outcomes
Show Relevance to Students' Current Academic Lives	Students developed skills that they could use in other courses like graphic design, problem-solving, and online presentation skills.	2. Synthesize information for reporting in multiple ways throughout the project. 3. Identify marketing problems and brainstorm possible solutions to those problems. 5.Clearly communicate ideas in Japanese and English through the delivery of a marketing pitch (presentation).
Demonstrate the Relevance of Higher -Level Skills to Students' Future Professional Lives	Students developed skills that they could use in their future careers like teamwork, communication, and meeting deadlines.	3. Identify marketing problems and brainstorm possible solutions to those problems. 4. Create a marketing plan, concept, and media for a local business. 5.Clearly communicate ideas in Japanese and English through the delivery of a marketing pitch (presentation).
Identify and Reward What You Value	Students were graded on submissions and allowed to make changes for the end of semester project. This technique solidified the value of problem-solving as a process.	2. Synthesize information for reporting in multiple ways throughout the project.
Show Your Own Passion and Enthusiasm for the Discipline	The professor told personal stories related to the content and provided feedback for each group to enhance their work.	1. Remember and apply the basic principles of business marketing in a real context.

Conclusion

In a Scholarship in Practice course, Design Thinking and PBL were used as the educational methodology to deliver the learning content in the class called Multilingual Marketing and Community Connection for undergraduate students. Despite the restrictions due to the coronavirus pandemic, students remained engaged and highly motivated in the class. Student produced creative solutions and artifacts to document their learning and their interactions with the community. This article serves as one example of a course integrated with the PBL and Design Thinking methodology. In the future, perhaps other professors can use this example to expand their own course offering to include these innovative pedagogies.

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