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Incorporating Design Thinking Approach in Eco-Friendly Innovation Project for Communicative English Assessments

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ABSTRACT

An eco-friendly innovation project-based assessment was integrated in the teaching and learning of English course at a Malaysian polytechnic. The eco-friendly project is developed as part of the assessment for Communicative English 2 class whereby semester three polytechnic students are required to work collaboratively to come up with an eco-friendly innovative project using recycled materials. The purpose of integrating eco-friendly project-based assessment in the Communicative English 2 oral presentation assessment is to enhance students' 4C's skills namely collaboration, creativity, critical thinking and communication skills and develop environmentally-aware and ecologically conscious students. Students used Design Thinking approach to innovate and propose eco-friendly projects to achieve Sustainable Development Goals (SDGs) and later presented their projects using posters and prototype. Data collected from questionnaires administered to students upon completing their assessments indicated that they enjoyed this new form of assessment,it has facilitated their language learning and at the same time enhanced their environmental awareness.

Key words: Design thinking, Eco-friendly innovation projects, Sustainable Development Goals

1. INTRODUCTION

The teaching and learning of English at Malaysian polytechnics are centred around developing proficient graduates with excellent communication skills for future workplace. In addition according to Wallwork (2015), among the wide range of 21st century skills, the 4Cs skills namely collaboration, creativity, critical thinking and communication skills are the most sought after skills of fresh graduates in sustaining a job. The role of producing graduates with excellent workplace skills, namely communication skills rely mainly on the English language lecturers (Abdullah & Majid, 2013; Khan et al., 2017).

However, previous studies conducted in the polytechnic context found that traditional teaching methods are still prevalent in Malaysian polytechnics (Sanmugam, Shamsuddin & Gunadevi 2017; Behak et.al, 2017). In addition, the assessments for Communicative English modules which consist of test, written assignments and presentations are considered conventional. According to Siti Norida Wahab, Salini Devi & Yeap Swee Pin (2020) conventional assessments can be boring, unattractive to Generation Z and are unable to cultivate the practical and life-long learning skills. Similar issues were rampant when it came to carrying out oral presentation assessments in the Communicative English classroom. Students would usually resort to copy and paste culture and lacked the creativity when preparing for their presentation and usually would end up giving a poor and boring presentation. As a result, they would score very poorly for their oral presentation assessment. Therefore, English language lecturers need to take alternative and effective pedagogical measures to prepare students for their Communicative English learning, assessments and future workplace needs.

2. LITERATURE REVIEW

Design thinking is an approach on finding solutions to problems. It revolves around understanding people's needs, generating ideas through brainstorming sessions and developing a solution for the problem. The Design thinking is a human-centered innovation process that provides a basis for to solve real-world problems (Hashim, Aris & Chan, 2019). Design Thinking is an interative process consisting of 5 main steps. Figure 1 shows the Design Thinking process.

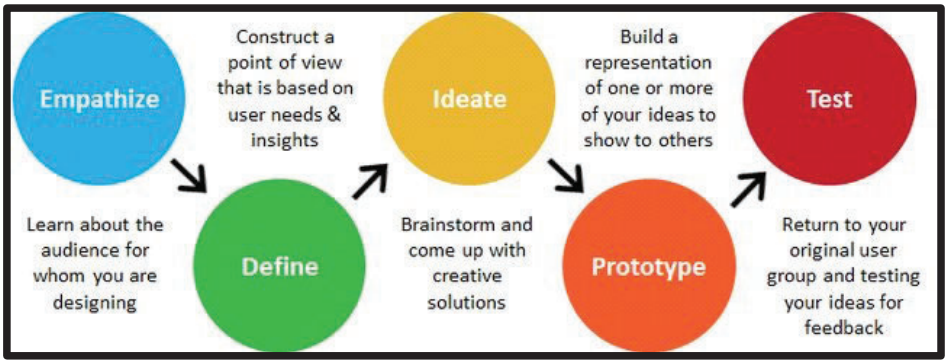

Figure 1: Design thinking process (Hoover, 2018).

The first is Emphatize which focuses on understanding the problem from user/audience. This step can be carried out through interview sessions, observation or immersing in the situation. The second step is Define where the information on user needs gathered from the emphathy stage is used to construct idea of design process. A problem statement will be created in this stage. Next, in the third Ideate stage ideas for the problem solution are generated through a brainstorm session. Ideation is the heart of Design Thinking process and there are various ideation techniques such as brainstorming, sketching, SCAMPER, and prototyping (Dam & Siang, 2019).

Following the Ideate stage, in the Prototype stage, a prototype, model, system or process will be developed and proposed as the solution for the problem. Finally in the Test stage, the developed prototype will be tested with the original user/audience and their feedback will be assessed. Their feedback can be used to refine the idea or solution further.

3. METHODOLOGY

The students involved in this study were 80 third semester mechanical and aircraft engineering students enrolled in a Communicative English course at a Malaysian polytechnic. They were young adults with an average age of 19. The course Communicative English 2 is a 45-hour English course designed for semester 3 Malaysian polytechnic students. The main objective of the course is to have students practice skills needed to describe products and services as well as processes and procedures. Students are required to complete 4 continuous-assessments for the paper throughout the semester in forms of test, assignment, and presentations. As a requirement of the course, students had to fulfil the oral presentation assessment for the topic of product and services and submit an assignment for the topic of processes and procedures.

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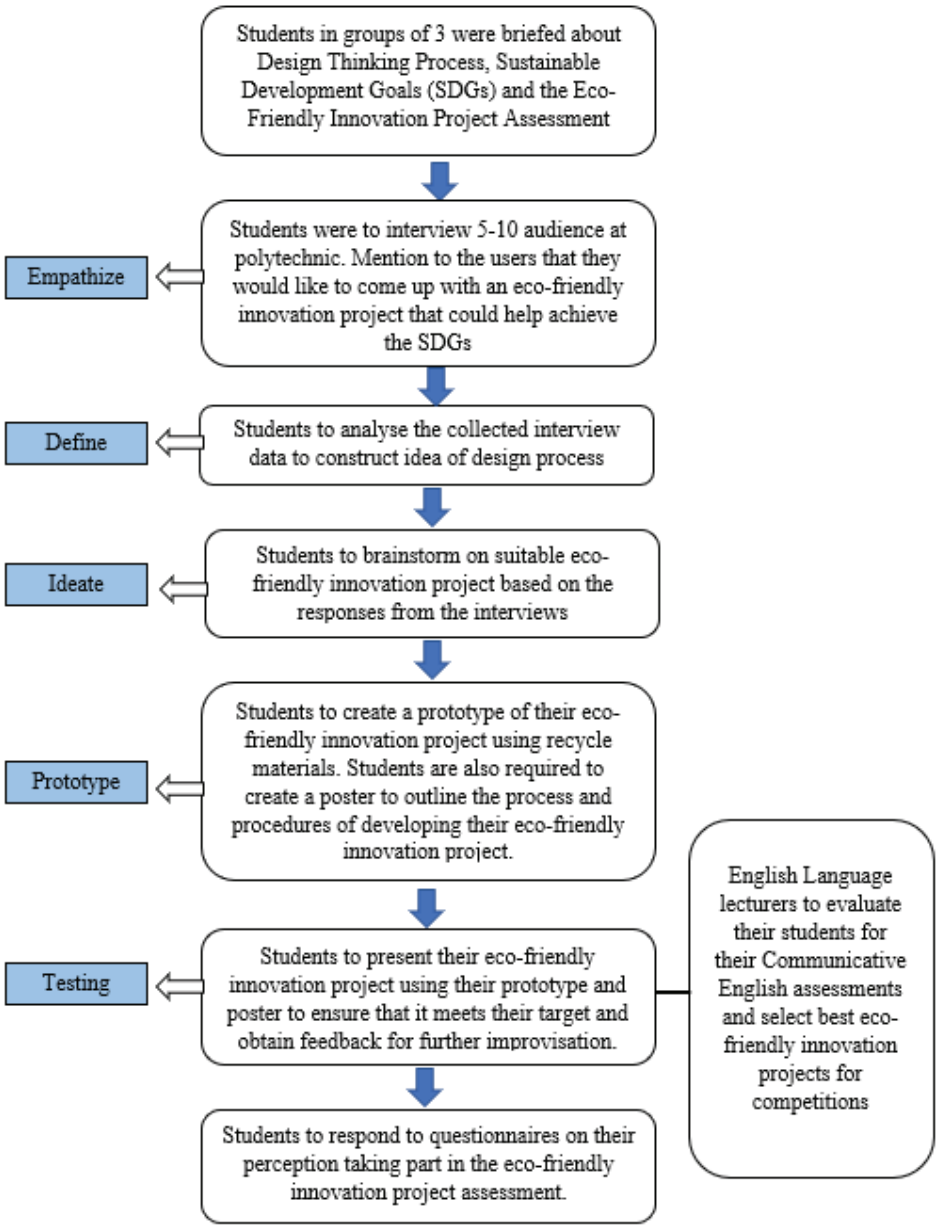
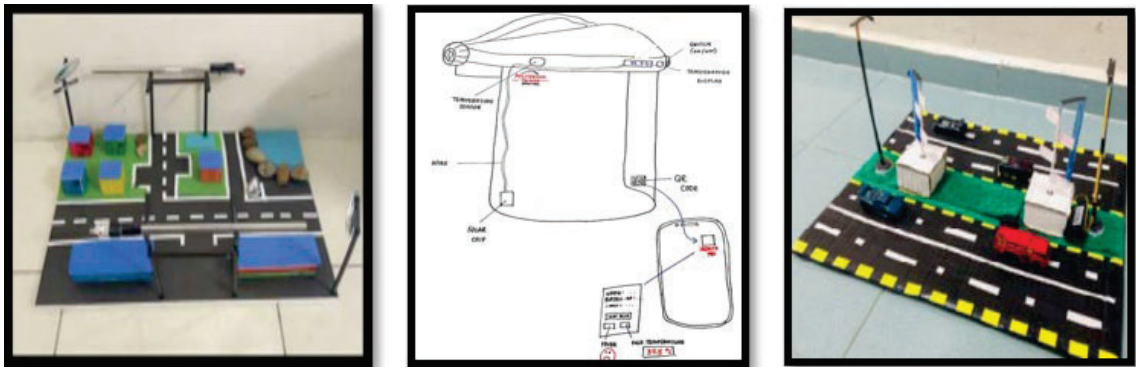


Figure 2: The process of incorporating Design Thinking in Eco-friendly innovation project assessment.

The author, who is also the English language lecturer, implemented a new project based assessment in the form of an eco-friendly innovation project to replace the common oral presentation assessment in which students would usually end up searching and presenting about existing products taken from the internet. Students would be presenting information that is

copied and pasted into their slides and it lacked creativity. In the new eco-friendly innovation project challenge, students are required to work collaboratively to come up with an innovative product/project prototype using recycled materials. Figure 2 outlines the process of incorporating Design Thinking in eco-friendly innovation project assessment.

They were given themes related to achieving Sustainable Development Goals (SDG's) such as quality education, good health, environmental sustainability, affordable and clearn energy and responsible consumption and production. Besides that, students were asked to come up with attractive digital posters for their assignment. The digital poster replaced the conventional assignment students need to submit for the topic of processes and procedures. In this digital poster students would outline the process and procedures in developing the eco-friendly innovation product that was carried out for their oral presentation. Therefore, this eco-friendly innovation project is able to cover two different assessments students need to fulfil for the Communicative English 2 course. Figure 2 below demonstrates example of students eco-friendly innovation projects.



One Light One City Project | The Smart Solar Faceshield Sketch | Traffic Powered Wind Turbine Project

Figure 2: Example of students' eco-friendly innovation project prototypes/sketch

4. RESULTS & DISCUSSION

This section reports on the students responses on the questionnaire pertaining to their perceptions in terms of their experience undertaking the eco-friendly innovation project as part of their Communicative English 2 assessment. A total of 80 students took part in this study. The majority of them were from mechanical enginnering department (65 students) while the rest were from aircraft maintenance engineering department (15 students). There were 63 male and 17 female students. Table 1 shows students opinions towards undertaking the eco-friendly innovation project assessment.

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Table 1: Students' perceptions undertaking eco-friendly innovation project assessment

No.	Items	Strongly agree (%)	Agree (%)	Disagree (%)	Strongly disagree (%)
1.	The eco-friendly innovation project has developed my creativity and innovative skills	70 (87.5)	10 (12.5)		
2.	The eco-friendly innovation project has developed my collaborative skills	72 (90)	8 (10)		
3.	The eco-friendly innovation project has developed my critical thinking skills	65 (81.25)	10 (12.5)	5 (6.25)	
4.	The eco-friendly innovation project has developed my oral presentation skills	68 (85)	8 (10)	2 (5)	
5.	The eco-friendly innovation project has developed my confidence in to speak in English with others.	62 (77.5)	10 (12.5)	8 (10)	
6.	The eco-friendly innovation project has developed my awareness on Sustainable Development Goals	70 (87.5)	5 (6.25)	5 (6.25)	
7.	The eco-friendly innovation project has developed my enhanced my knowledge about Design Thinking Process	65 (81.25)	10 (12.5)	5 (6.25)	
8.	The eco-friendly innovation project has motivated me to join innovation projects/competitions in future	70 (87.5)	10 (12.5)		
9.	I prefer eco-friendly innovation project assessment compared to the traditional assessment method	72 (90)	8 (10)		
10.	I enjoyed undertaking the eco-friendly innovation project assessment and would like this assessment to continue.	72 (90)	8 (10)		

The frequency and percentages scores in Table 1 indicated that the majority of the students either strongly agreed or agreed with the items above and had positive perception towards the eco-friendly innovation project assessment. Specifically, students perceived that the eco-friendly innovation project assessment has helped them to develop and improve 4Cs skills namely collaboration, creativity, critical thinking and communication skills and developed their awareness on Sustainable Development Goals (SDGs). They have also indicated they prefer the eco-friendly innovation project assessment compared to the traditional assessment method and would like the eco-friendly innovation project assessment to be continued.

5. CONCLUSION

The current study explored engineering students' towards the implementation of the new interesting project-based assessment in the form of an eco-friendly innovation project. The overall analysis of students' opinion indicated positive responses. This study is significant for educators in finding alternative instructional methods to facilitate students' learning.

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