

Students' Perception Towards Teaching Practices Among Lecturers With Professional Engineer Certification: A Qualitative Approach

Nurul Asmak Md Lazim¹, Rini Asnida Abdullah^{1,2}, Sharifah Hafizah Syed Ariffin^{1,3}, Siti Asmah Hassan^{1,2}, Hadijah Jaffri^{1,4}, Mohamad Hidayat Jamal^{1,2}, Siti Norafida Jusoh^{1,2}, and Narina A. Samah^{1,4*}

¹ Centre for Advancement in Digital and Flexible Learning (UTM Cdex), Universiti Teknologi Malaysia 81310 Johor, Bahru, Johor, Malaysia

² Faculty of Civil Engineering, Universiti Teknologi Malaysia 81310 Johor, Bahru, Johor, Malaysia

³ Faculty of Electrical Engineering, Universiti Teknologi Malaysia 81310 Johor, Bahru, Johor, Malaysia

⁴ Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia 81310 Johor, Bahru, Johor, Malaysia

These authors contributed equally to this work

* Corresponding author: narina@utm.my

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ABSTRACT

Engineering bachelor's degree programmes in Malaysia require up to thirty percent (30%) of lecturers in their faculty to have professional engineering certificates. However, the teaching approach by these professionally certified lecturers, compared to those who were not certified engineers has not yet been fully investigated. This study utilised a qualitative approach and selected eight (8) engineering students from the Faculty of Mechanical Engineering and the Faculty of Civil Engineering in a local university. The aim is to explore these students' perception of the teaching approaches implemented by the senior lecturers with professional engineer certification, each having vast experience and skills in engineering. The university students were interviewed using an online video conferencing service. The results of this study were then thematically analysed. The results revealed that their lecturers' mode of teaching usually involves the formation of groups for assignments or projects in the class, besides daily teaching using slides. By doing assignments in groups, it is believed that students will have a better understanding of the subjects. However, most of the students revealed that they have problems performing the assignments, despite realising the importance and advantages of these group assignments. Working together on an assignment would create good team spirit and instill good communication skills. They understood the purpose of pursuing their bachelor's degree at the university and hope that they could secure their lecturer support and other platforms like YouTube to increase their knowledge in the respective subjects. The students also suggested that the university and their faculty could provide sharing sessions from other experts in engineering as well as improve the facilities, and Wi-Fi connection on the university campus.

Keywords: Teaching practices; Student's perception; Student's need; Engineering students; Board of Engineers; Engineering council; Engineering accreditation

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INTRODUCTION

Learning styles are widely used to describe how learners gather, sift through, interpret, organise, come to conclusions about, and "store" information for further use. The different learning styles are often categorized by sensory approaches: visual, aural, verbal, either reading or writing and kinaesthetic (Chick, 2010). The fundamental idea behind learning styles is the same as each one of us has a specific learning style (sometimes called a "preference"), and we learn best when information is presented to us in this style. For example, visual learners would learn any subject matter best if given graphically or through other kinds of visual images, kinaesthetic learners would learn more effectively if they could involve bodily movements in the learning process, and so on. The message thus given to instructors is that "optimal instruction requires diagnosing individuals' learning style[s] and tailoring instruction accordingly" (Pashler, et al., 2008). It also means that different students

require different learning styles because the effectiveness in learning is varied among individuals” (Warn, 2009; Mansor & Ismail, 2012).

However, the COVID-19 pandemic has changed the entire society, especially in learning. It affects most sectors including the education sector which forced the students and lecturers to adapt the class through online. Such context transformation requires the sector to observe the quality and satisfaction of the students during class sessions. It is important to have knowledge of the weak aspects so that teaching methods can be improved in subsequent semesters (Flores-Cáceres et al., 2022).

In the engineering sector, The Fourth Industrial Revolution, 4IR, or Industry 4.0 conceptualises a rapid change to technology, industries, and societal patterns and processes in the 21st century due to increasing interconnectivity and smart automation (Bai et.al, 2020). The term was made popular in 2015 by Klaus Schwab at the World Economic Forum and has since been used in numerous economic, political, and scientific platforms in reference to the current era of emerging high technology. Schwab asserts that the changes seen are more than just improvements to efficiency, but express a significant shift in industrial capitalism (Schwab, 2015). Industry 4.0 concept not only highlights the digitisation competencies (Nørgaard & Guerra, 2018; Beagon et al., 2021) but also focused on problem-solving, communication, creativity, leadership, collaboration, lifelong learning, etc., which are important for future engineers (Guerra & Nørgaard, 2019; Nørgaard & Spliid, 2021). Thus, global engineering education faces new demands for engineering graduates’ skills and competencies that would include interdisciplinary skills as well as transversal competencies. One of the ways to ensure that the training of future engineers is equipped with the right skills is to explore any weak aspects of the current teaching methods that can be improved in subsequent semesters (Flores-Cáceres et al., 2022).

In 2009, Malaysia was chosen to become a full member of the Washington Accord, a universal agreement among bodies handling engineering degree program accreditation. The Washington Accord recognises signatory bodies where it is compulsory to meet the engineering instructional requirements before entering engineering practice in real life. The Engineering Accreditation Council (EAC) in Malaysia, is a group that has been delegated by the Board of Engineers Malaysia (BEM), The Institution of Engineers Malaysia (IEM), the Public Services Department (JPA), and the Malaysian Qualifications Agency (MQA), among the bodies that offered professional engineer certification in the engineering curriculum. According to the Engineering Accreditation Council (EAC) of the Board of Engineering, Malaysia, thirty percent (30%) of the lecturers in the engineering department must be certified with a professional certificate accorded by the body (Engineering Technology Programme Accreditation Standard, 2020).

At the university, lecturers not only need to teach subjects related to engineering, but they also have to implement several different approaches to teaching their subjects, in addition to instilling critical thinking skills. At the Universiti Teknologi Malaysia (UTM), a model for teaching and learning called the New Academia Learning Innovation (NALI) was implemented (Alias & Aris, 2016). Within this model, the different techniques used are Outcome-Based Education (OBE), Case Study Teaching (CST), Problem-Based Learning (PBL), Scenario Based Learning (SBL), Peer Instruction (PI), Service Learning (SL), Job Creation (JC), High-Impact Educational Practices (HIEPs), and lastly, Conceive, Design, Implement and Operate (CDIO) for both pedagogy and andragogy. Meanwhile, under the learning materials or digital resources, there are UTM Open Courseware (OCW), UTM Massive Open Online Courses (MOOC), and UTM-MIT BLOSSOMS, which is a blended learning system for learning Science, Technology, Engineering and Mathematics (STEM) subjects in collaboration with Massachusetts Institute of Technology (MIT), United States of America. Additionally, there are also videos of Exemplary Professionals, Student-to-Student Edutainment, as well as UTM e-Learning (Alias & Aris, 2016; Lazim et al., 2023 (a & b)-to be published).

An earlier study conducted by Phang et al. (2020b) explored students’ perception of the Cooperative Problem-Based Learning (CPBL) model used under NALI. The study found that most students faced problems coping with the technique at the beginning of the semester. They felt that the approach disrupted their normal learning activities in the class because they were unfamiliar with the approach and were not exposed to the techniques from the beginning. However, after some time they started to open up to the implementation of the approach and understand the applications especially when it works for work-life in the future. At the end of the semester, they gave positive feedback on the approaches (Phang et al., 2020b).

In this study, a qualitative study using a semi-structured interview was chosen to explore engineering students’ perception of the teaching practices among lecturers who have a professional engineering certification. The questions this study seeks to answer include:

- (a) Which of the NALI technique used by the lecturer is the most favoured, and why?
- (b) What are the challenges and difficulties faced while doing a NALI-related assignment
- (c) How are these challenges overcome?
- (d) What are the motivations used to overcome these challenges?
- (e) What kind of support is needed to overcome the challenges?
- (f) What kind of support was given by the lecturers in overcoming the challenges?

METHOD

Initially, the researchers approached several senior lecturers from all the Engineering Faculties at the university. The lecturers approached had more than fifteen (15) years of teaching experience and had a certified professional engineering certification. Only two of them gave permission for their students to be interviewed provided it was done within a month and subject to the availability of the students themselves. The students, from the Civil and Mechanical Engineering Department, were in the third and fourth years of their degree programme.

The students selected were informed of the aim of the study and written consent was obtained from each one to participate in an online interview. The semi-structured interview was conducted in both the Malay language as well as in English. Two of the students were female while the rest were male.

DATA COLLECTION AND ANALYSIS

Data collection was done via an online video conferencing service. A total of eight (8) students participated in this study, five (5) were interviewed individually while three (3) of them were interviewed in a group discussion. The individual interviews lasted about fifteen (15) to twenty (20) minutes while the group discussion lasted approximately forty (40) to forty-five (45) minutes. The interview sessions were conducted within four (4) weeks during the students’ semester break. The main researcher conducted all the interviews which were done in both the Malay language and English language. The interviews in the Malay language were then translated into English. All the interviews were recorded and then transcribed verbatim. The data collected were then analysed thematically using N-Vivo software version 7.0.

RESULTS

This study was conducted to explore students’ reflections on the implementation of NALI techniques by their engineering lecturers who had professional certificates in teaching and learning in the class. Analysis by the N-Vivo software revealed five (5) themes with several sub-themes within each theme. Since the NALI technique was not familiar among the students, most questions were asked together with a narrative situation to describe, so that students are able to answer the questions accordingly. The five themes discovered were knowledge, challenges, overcoming the challenges, motivation, and expectations.

Theme 1: Knowledge

Within Theme 1, there were six (6) subthemes emerged as seen in Table 1.

Table 1: Theme 1: Knowledge

Theme 1: Knowledge	Sub-themes
	1: Group Project and Teamwork
	2: Giving Examples, Good Explanation and Interesting Lectures
	3: Questions and Answer Sessions (Q&A)
	4: Students’ Presentation
	5: Engagement with Students
	6: Scenario-based Learning (SBL) and Problem-based Learning (PBL)

Sub-Theme 1: Group Project and Teamwork

Students felt that by doing group projects, they gained more knowledge. S1 shared his view;

“For me, it is a group project, Dr. From here, I am not just learning on how to settle the problem, but I can discuss with my friends on how to settle it. It is not an individual task, but a group task”

Similarly, S7 also commented;

“When I do my internship in the industry before this, the task cannot finish if we do it individually. We need teamwork. And I feel comfortable with group assignments rather than individual assignments.”

Sub-Theme 2: Giving Examples, Good Explanation and Interesting Lectures

Students also found it useful when lecturers gave good examples and explained well . S3 elaborated;

“...he gives the example or just showed clearly and he has done that....he just explaining the slide and give us jot notes some important things and explained the priority things..so we know that this formula came from where..and what we use it (for). (Usually ‘after erm before the test or final exam, he always emphasizes the formula”

S8 agreed and added:

“...the way Dr shows to us is very interesting..for me”

Sub-Theme 3: Questions and Answer Sessions (Q&A)

Students enjoyed the Q&A sessions as they helped clarify their doubts and misconceptions. S5 stated;

“ (once he’s) done with the topic..the one hour after that that he will always use as Q & A session’

Sub-Theme 4: Students’ Presentation

Students believed that their presentation helped them to find more information about the topic and made them understand the topic better. S5 commented;

“ For me, I am interested more in presentation. because if we present, we must study the topic that we want to present. so, from that, we can understand more the topic’

S6 concurred and said;

“ We can have a better understanding after the presentation. So, when we present in front of the class, we first must understand the topic.”

Sub-Theme 5: Engagement with Students

Students enjoyed the engagement with their lecturers as the opportunity helped increase their understanding. S8 reflected;

“ For me, it was once Dr teach us, Dr do an engagement with the students. She wants to explain the example to us..’

Sub-Theme 6: Scenario-based Learning (SBL) and Problem-based Learning (PBL)

SBL has helped students retain good memory and better understanding of the explanation given by their lecturers. According to S7;

“for me, the way Dr teach us is very interesting. Dr shows us..a visualise real situation like traffic flow all that..until now I can remember the topic. For example the situation when we must be a prop. we have to act like one. this way make us understand the situation more clear’

Theme 2: Challenges

There were eight (8) sub-themes that emerged within Theme 2 as shown in Table 2.

Table 2: Theme 2: Challenges

Theme 2: Challenges	Sub-Themes
	1. Commitment to Conducting Assignment
	2. Zero Experience, Unclear Vision and Lack of Time

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3. Not in the Syllabus
 4. Understanding the Topic
 5. Random Group
 6. Internet Access
 - 7: Limited Transportation and Same Location Assignment
 - 8: Conducting the Actual Research
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Sub-Theme 1: Commitment to Conducting Assignment

Some students in the university are local while some are international students. There appears to be some miscommunication between the two groups with regard to their commitment to the group project. S5 observed;

"...but for local, they don't want to admit that they can't do the task and last minutes, pass to others."

Yet for S8;

"...its different between group with local and international. if international, they cancel last minute"

Additionally, the commitment level between the students seems to differ. As S8 commented;

"if not in PKP, it's about time. Everyone (is) not free all the time. everyone has their own class. so, to make sure everyone did their task before due (the) date is very difficult, because some of them join the event. so we can't commit to the given task"

Sub-Theme 2: Zero Experience, Unclear Vision and Lack of Time

Students expressed that having zero experience was challenging when conducting group work. S4 commented;

"...it is my first assignment. So, we have zero experience on how to solve the project We learned basic concepts in the class, but the task is very complex project.."

Since most of the students had no prior knowledge and experience to conduct the projects assigned, they initially felt lost in starting the projects. S8 commented;

"We don't have a clear vision on how to plan or settle the task given. Often, we ask the industry and helpers on how to solve the problems. Due to that, our task is a bit delayed."

In addition, S3 felt that they did not have sufficient time to complete the project;

"I think ok la..but project I think we do rush time lah"

S3 also added;

"Because my team members are from different classes, we have to contribute to the task equally. So, in terms of time for assignments, it is difficult to discuss together in a team"

Sub-Theme 3: Not in the Syllabus

Students were challenged when they had to conduct a group project that was not in the university syllabus. However, S7 felt that they could still handle it'

"For me, it is okay. Because at least we do our feedback. I think the final project is on MATLAB. So, MATLAB is not the subject in our syllabus. It is not a MATLAB programme syllabus. But the lecturer will explain the general usage of MATLAB and coding."

Sub-Theme 4: Understanding the Topic

One of the students' difficulties was to understand the topic that they had to present. S6 shared his worry;

“The difficulty we face during the presentation is understanding the topic. If we don’t understand the topic, (other) students would not focus on our presentation. How we must understand the topic and how we can share knowledge in the class.”

Sub-Theme 5: Random Group

This study was conducted during the Pandemic Covid-19, so everyone in the country was subjected to the Control Movement Order (CMO) and stayed at home. Thus, when students were assigned in random groups to conduct their group work, there were challenges because they did not know each other and some were not reachable. S1 lamented;

“During PKP (CMO) time, the problem is that I got random group..when I got random group during PKP, I don’t know them and I can’t reach (out to) them ..’

Sub-Theme 6: Internet access

Students faced challenges conducting their project due to limited access to the internet. S6 shared his view;

“not all can access internet and not all can do the research there (at the University) because of limited internet”

Sub-Theme 7: Limited Transportation and Same Location Assignment

Conducting a project requires the students to be mobile and have access to a good transportation system. They either have to rely on public transport or depend on those in the group who has transport. S4 commented;

“ For me, not all students have transportation to go to site of assignments’

Another challenge is when different groups chose the same location for their assignment. S6 stated the following:

“ At the same time, we have group problems when our location is (the) same with another group”

Sub-Theme 8: Conducting the Actual Research

There were some students who reflected that they found it very difficult to conduct the actual research. S5 lamented;

“Ok..I think the difficult part about project assignment was for me to do the actual research lah..personally for a particular assignment that we did on particular myself, it is the hardest part for myself”

Theme 3: Overcoming the Challenges

Table 3 shows the third theme and the five (5) sub-themes that emerged within.

Table 3: Overcoming the Challenges

Theme 3: Overcoming the Challenges	Sub-themes
	1. Revise Lecture Notes, Verify and Consult With Lecturers
	2. Serve the Internet and YouTube
	3. Choosing Their Own Group Mates and a Good Leader
	4: Teamwork, Communication and Making Sacrifices
	5. Lecturers with Good Communication Skills

Once the challenges have been identified, the students have developed strategies to overcome them. These are discussed in the following sub-themes.

Sub-Theme 1: Revise Lecture Notes, Verify and Consult With Lecturers

When students faced difficulty in understanding the topic, they will refer back to the notes given by their lecturers. Student 7 commented;

“and for me myself I usually go through all lectures”

Another student feels that verifying with the lecturers will help them understand the project better. S3 said;

'We ask the lecturer..so we have verified with the person who teach us lah..For me, consult with Dr lah if the problem raises. Dr will suggest how to solve the problem...'

Sub-Theme 2: Serve the Internet and YouTube

Other students chose to find more information through the Internet and YouTube channels. S4 stated;

"...if let say not related to any somehow, I will just be surfing the internet and watching YouTube or how to solve the equation of those topics."

Sub-Theme 3: Choosing Their Own Group Mates and a Good Leader

Some students believed that the freedom to choose their own groupmates will help with their projects. S5 stated;

"I mean (let) student itself choose their own groupmate...Leadership is also important. They must give clear instructions so that everyone must stick to that allocated time.."

Sub-Theme 4: Teamwork, Communication and Making Sacrifices

Whatever the problems of working with other people in a team, students realise that they have to come together and make some sacrifices in order to succeed in the project. As stated by S3:

"For me, how to overcome it. We do group assignments together, so teamwork and communication are important in the group. For individual learning, we do our own. We serve YouTube, watch pre-recording that our lecturer provided and so on."

"So we need to sacrifice lah..because we usually have some time in the evening, but not in the morning because everyone is busy..."

Sub-Theme 5: Lecturers with Good Communication Skills

One of the ways to reduce challenges when doing a group project is to have lecturers who have good communication skills and are able to explain well. As commented by S7;

" explanation Dr must be very clear.....(so) we understand the problem and come out with idea lah.. Our lecturer was also very helpful. She knew what we were stuck with and she would explain it clearly. (It would be good if) supposedly from beginning (they) et the location for each group.... (then) every group must have location list that have (been) done already.."

Theme 4: Motivation

Students in this study suggested various factors that motivate them to succeed in their group projects. These are condensed into six (6) sub-themes. Theme 4 shows the factors that motivated the students in this study.

Table 4: Theme 4: Motivation

Theme 4: Motivation	Sub-themes
	1. Projects are Compulsory
	2. Feeling of Self-satisfaction
	3. Knowledge and Sense of Purpose
	4. Team Spirit
	5. Lecturer's Teaching Approach
	6. New Experiences

Sub-Theme 1: Projects are Compulsory

Knowing that the projects are compulsory and needed to be done has motivated some students to proceed despite the many challenges. S8 stated;

'I think (I have to finish it) because I need to submit my assignments.'

Sub-Theme 2: Feeling of Self-satisfaction

There is a sense of deep satisfaction when their course-mates understand the presentation made. S5 shared his feeling;

“When we do our presentation and friends in the class understand the topic clearly, we feel satisfied with ourselves. Realized that our friends can apply the content that we present.”

S2 agreed and commented;

‘Motivation for me, if I can solve some riddle, I feel satisfied. So, from here, it can motivate me to learn more on each subject. Even though it is difficult for me to do it, I think it is worth it to spend my time on learning, do more exercise. That is it.’

Sub-Theme 3: Knowledge and Sense of Purpose

Another factor that motivated students to complete their project is the realisation that these projects however hard they are, is the area of study that they have chosen themselves. As stated by S6;

“ why (do) we learn? What (do) we want?... (so) every time we felt down, we (will) remind ourselves all that. we want the knowledge, so we got the passion for our future career. The reason why I stay at UTM..why I choose this course..’

Sub-Theme 4: Team Spirit

Doing a project together with other team mates is enjoyable. S5 commented;

“For me team spirit that motivate me more. everyone excited to do the task outside the campus.. we were in the pandemic for about a year and we learn through online, but this time we can go outside and make calculations together..’

Sub-Theme 5: Lecturer’s Teaching Approach

Another factor that motivated students was the approach utilised by the lecturers that made learning interesting and fun. S8 commented;

‘the way she teaches us is very interesting. the way she did in the class is the reason why we love the subject..’

Sub-Theme 6: New Experiences

The novelty of doing something new was also something that motivated students to conduct the projects. As stated by S5;

“experience new things lah..because when we go for intern, we need the experience. without experience, we will get the problem with the boss during internship”

Theme 5: Expectations

Reflecting on the challenges they faced while doing the projects, students suggested some steps to overcome or reduce these challenges as revealed by the following sub-themes. Table 5 shows students’ expectations and the four (4) sub-themes that emerged in this study.

Table 5: Theme 5: Expectations	
Theme 5: Expectations	Sub-themes
	1. Lecturers’ Support, Understanding and Guidance
	2. Shorter Slide Presentations by Lecturers
	3. Facilities by University
	4. Site Visits and Funding

Sub-Theme 1: Lecturers' Support, Understanding and Guidance

Some students feel that support and understanding from the lecturers are crucial for them to succeed in their projects. S7 commented;

'Erm support I think of course lecturer support because you can't study on your own. and the other support is based on ourselves. I think my support would be lecturer and YouTube.'

S1 agreed and stated;

*'Maybe tolerance..we take many subjects. so tolerance from our own lecturer (would be good)...'
Also flexibility flexibility from them, we appreciate lah. Another thing is guiding and teach us how to do it..'*

S6 added;

" but I think lecturer would be support with he just give sharing session so that everyone with the same problem can join the session "

Sub-Theme 2: Shorter Slide Presentations by Lecturers

Students felt that lecturers' slide presentations should be short and succinct. S2 commented;

"Maybe his slides can make it short and with keywords compared to many slides but we can't focus well.."

Sub-Theme 3: Facilities by University

Almost all the students felt that the facilities provided by the university could be improved. S6 commented;

"More to Wi-Fi. Because, without the Wi-Fi, it is difficult for me to finish the task. They need to improve Wi-Fi connectivity. It was very slow when all the students stayed on campus. It is very important for us to finish the assignments.'

Sub-Theme 4: Site Visits and Funding

Several suggestions have been made related to site visits for students. S4 commented;

" have industrial visit to attract the students with the course they took in the class...preferably somewhere not too far away. If it is far, the faculty provide us funding to visit the site with the (university) bus ke..."

DISCUSSION

The results appear to indicate that students' favourite teaching approach in the class was forming group projects for assignments rather than using slides presentation. This method or approach was mentioned 20 times during the interviews. The students in this study admitted that forming group projects provides a better understanding of the subject in the class. When lecturers asked for group assignments and report writing, they were keen to search for more information on the respective topics. These findings seem to concur with a study done by Planchard et al. (2015) who found that "assignments or homework has significantly linked to students' improvement in the test performance, course enrollment and improving self-regulatory behaviour like motivation to study, self-efficacy, goal setting and time management". Not only do students perform well in their assignments, but they also did well in their exams (Li et al., 2018). Apart from helping to increase students' understanding, assignments also helped students' out-of-class learning which would later help in building their own knowledge systems and contribute to bigger academic success.

Although students preferred group assignments, they professed that one of the biggest challenges was the initial difficulty in performing them. This was mentioned nine (9) times during the interview. This was because they needed to understand the topic and familiarise themselves with their assignments first before performing the task. In other words, they had zero experience with the particular topic given in the assignment. Another challenge mentioned three (3) times by the students was that the task given by their lecturers were not in their current syllabus. The third challenge was member commitment while performing the assignments. As mentioned three (3) times, students admitted that it was difficult to stay together for the assignments when everyone had a different schedule or commitment while performing the task. Some of the students could not differentiate what they should

focus on and what was not. This happened when some students studied in detail certain topics that were not in the final exam or the topics were not in the syllabus. Thus, it was a wasted time to spend long hours on unnecessary topics. Another challenge is to deal with the different personalities when working in a group. Different students will have different levels of intelligence, conscientiousness, attitude as well as study styles. Thus, within the group, the students themselves need to increase their tolerance level and adapt while having the same goal of making their assignment a success.

In order to overcome the challenges faced while performing the task, students needed to find ways to have good teamwork and communication skills, be able to sacrifice their time, revised their lecture notes, take the initiative to search through the internet and YouTube, follow and verify with their lecturers their understanding of the particular topic and so on. Throughout the learning process, students found that they were motivated or inspired by the purpose to pursue the study. Some felt a sense of self-satisfaction when they were able to explain to their classmates, or while seeking knowledge and gaining new experiences. In short, they enjoyed teamwork, team spirit, experience, and the common need to finish the compulsory task given by their lecturers. By helping each other, it motivated the students to learn more about the subject offered. As stated by Planchard et al. (2015), obtaining academic achievement are strong motivators to complete assignments.

The students in this study expected to get support from their lecturers. They preferred to be given videos from YouTube that they can refer to for their studies. Since these university students came from different backgrounds and had different entry-level skills, they were keen to explore the topic differently. They were very appreciative when their lecturers praise their achievements, and guided them to optimise their skills. Most of them felt that sharing sessions about the topic or real situation in the industry was very helpful as they began to be aware of what the real-life situation in the industry is like. From the university side, the students felt that the internet connectivity could be improved.

However, in order to overcome the challenges that they face while performing the task, students are encouraged to have good teamwork and communication skills, sacrifice their time, revise lecture notes, take the initiative to search through the internet and YouTube, and follow up with verifying the understanding with lecturers and so on. They realised the importance of working together on the task and improved their communication skills in order to work better on the project assigned.

In conclusion, all the students agreed that, compared to the previous semester, they have benefitted much more from their current lecturers for their sharing of real-life applications, industry experience and the guidance that they obtained from the real practice in the class with simulation.

Limitation of Study

Due to unavoidable circumstances, the interview sessions with the students in this study were limited. This was because the beginning of the study was conducted during the pandemic, and the students were going off for their semester break. Secondly, it was quite difficult to get an agreement from students to volunteer for the interviews. Some of them were not well, some were not available at the university, and some did not respond to their university emails. Thus, the number of interviewees was limited.

CONCLUSION AND RECOMMENDATIONS

From this study, it can be concluded that lecturers who have professional engineer certifications appear to be more effective as their teaching approaches were perceived to be very beneficial. Students were able to remember the quality time and the topics that they imitated in real-life applications. In addition, students also need their support while doing the task since it is their first experience working on the project. The support from their lecturers is also very important so that they can do the task, optimally. Students also needed support from the university by providing them with good Wi-Fi connectivity and facilities for their assignments. Sometimes, a nice class environment can help students to focus in class and pay more attention to the learning subject.

For future studies, it is recommended that a mixed method of quantitative and qualitative research be carried out to fully explore the subject. The level of experience among lecturers with professional engineer certification in the early years of teaching could be examined in further research through surveys and interviews. It could also investigate how the level of experience could change or improve over time based on perspectives and experiences as a new lecturer. More research is also required to see students' opinions of these new lecturers' teaching methods.

DECLARATION STATEMENT

The lead author* affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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CONFLICT OF INTEREST

The authors declare no self-interest in the study conducted.

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