

PENDIDIKAN TINGGI DAN MATLAMAT PEMBANGUNAN MAMPAN (SDG): SATU KAJIAN KES TENTANG PERANAN KHIDMAT MASYARAKAT MAYA

Higher Education and The Sustainable Development Goals (SDG): A Case Study on the Role of Virtual Community Service

* Lai Ti Gew¹, Ching Ting Ang¹, Annyza Tumar²

¹Department of Biomedical Sciences
Sir Jeffrey Cheah Sunway Medical School
Faculty of Medical and Life Science,
Sunway University, 47500 Petaling Jaya, Selangor, Malaysia.

²Centre for Academic Development
Sunway University
47500 Petaling Jaya, Selangor, Malaysia.

*Corresponding author's email: janeg@sunway.edu.my

Submitted: 22-Mar-2025	Accepted: 27-Mar-2025	Revised: 30-Jun-2025	Published: 30-Dec-2025
----------------------------------	---------------------------------	--------------------------------	----------------------------------

Abstrak

Kita mempunyai kurang daripada 10 tahun untuk mencapai Matlamat Pembangunan Lestari (SDG) Pertubuhan Bangsa-Bangsa Bersatu, dan terdapat kebimbangan bahawa kita mungkin tidak berada pada landasan yang betul untuk mencapainya menjelang tahun 2030. Bagi memastikan inisiatif ke arah pencapaian kesemua matlamat 2030 dapat diteruskan semasa pandemik COVID-19, pendekatan baharu terhadap modul khidmat komuniti tradisional telah diperkenalkan. Justeru itu, projek ini memberi tumpuan kepada usaha meningkatkan kesedaran terhadap SDG dalam kalangan pelajar universiti yang terlibat dalam khidmat komuniti secara maya sebagai sebahagian daripada modul pembelajaran mereka. Analisis kandungan ke atas 62 skrip nota reflektif telah dijalankan untuk menyelidik fenomena ini. Hasil analisis menunjukkan bahawa pelajar mempunyai pemahaman yang lebih mendalam terhadap SDG yang mereka fokuskan dalam projek komuniti sepanjang tempoh tujuh minggu, dan majoriti daripada mereka menunjukkan minat untuk terlibat dalam aktiviti berkaitan SDG pada masa hadapan. Kami mengesahkan bahawa pengintegrasian SDG ke dalam projek modul berbentuk amali telah meningkatkan kesedaran pelajar terhadap SDG.

Kata kunci: Projek komuniti, penglibatan komuniti, pendidikan tinggi, projek komuniti maya, pembelajaran dalam talian

Abstract

We have less than 10 years to achieve the United Nations Sustainable Development Goals (SDGs), and there is a concern that we may not be on track to achieve the goals by 2030. To ensure that initiatives toward achieving all the 2030 goals continued during the COVID-19 pandemic, an evolution of the traditional community service module approach was necessary. Thus, in this project, we focused on raising awareness of the SDGs among university students who participated in virtual community service as part of a module. Content analysis on 62 scripts of reflective notes was conducted to investigate this phenomenon. From our analysis, students showed a better understanding of the SDG that they addressed in their community project in 7 weeks, and the majority were interested in being involved in activities related to SDGs in the future. We

reaffirm that the integration of SDGs into the hands-on module project increased students' awareness of SDGs.

Keywords: *Community project, community engagement, higher education, virtual community project, online learning*

1.0 INTRODUCTION

The 17 Sustainable Development Goals (SDGs) in the 2030 Agenda, including health, education, social protection, economy, climate change, and conservation of environment, ensure that no one is left behind. The purpose of SDGs is to achieve a better and more sustainable future for all, economically, socially, and environmentally. SDGs' blueprint addresses global challenges such as peace, justice, poverty, inequality, climate change, and environmental degradation. The partnership of governments, the private sector, civil society, and citizens is important to ensure a sustainable and better planet for everyone now and for future generations. Thus, in achieving a more sustainable world, raising awareness of the SDGs in higher education is crucial. In this study, we aim to increase the awareness of SDGs by integrating them into a student community service module. In this work, we discuss and present virtual community service via Instagram to advance the concept and the practice of education for sustainable development. To ensure that initiatives towards achieving the 17 sustainable development goals (SDGs) in 2030 continued during the pandemic, an evolution of the traditional way of conducting community service modules was needed.

Education plays a vital role in achieving sustainable development goals (SDGs) (Gew & Tumar, 2023). According to Bashar (2022), education can encourage people to develop knowledge and awareness of sustainable development and change their behaviors to act in ways that address the sustainability challenges facing humanity. Regarding the implementation of SDGs in higher education, Reza (2016) added that higher education institutions (HEIs) are vital agents of change and can transform and even speed up the achievement of the 17 SDGs. Findler et al. (2019) highlighted the roles of universities in implementing SDGs. Firstly, universities are the means of connecting education with business, partners, health care, and entrepreneurs. Also, universities are the forerunners of scientific and technological advances engaged in global research. Universities are important in achieving SDGs as they help in educating future leaders and professionals. Nonetheless, the university is a place where learning takes place, thus enabling the power effect of knowledge transfusion to youth in all sectors across the nations. Universities also act as anchors to serve nationally and internationally. Moreover, they can facilitate change to have an equitable society and create a better world by having SDGs at the strategic level. Universities act as a means of connecting education with businesses, partners, health care, and entrepreneurs.

In recent years, several local studies have examined the understanding of SDGs among undergraduates (Ang, 2021; Balakrishna et al., 2020; Ilham et al., 2021 Ghazi et al., 2020). Balakrishna et al. (2020) reported that sustainable development education in higher education institutions has cultivated an appropriate sense of responsibility towards sustainability among their undergraduate students. Education of Sustainable Development (ESD) is one way of spreading the ideas and principles of sustainable development to multiple individuals via education (Kopnina & Meijers, 2014). Al-Naqbi and Alshannag (2018) have stated that ESD is a platform for integrating the appropriate knowledge, skills, and values to infuse the fundamental concepts of sustainable development among undergraduates. Furthermore, the authors also mentioned that higher education institutions are important places to

develop the necessary perceptions and attitudes among future professionals toward sustainable development, which ultimately helps pave the way for humanity to achieve the goals of sustainable development. Another study by Ilham et al. (2021) also emphasized the importance of higher education as the findings show that education goes beyond the formal curricula; soft skills and critical thinking are the major components of and contributors to pro-environmental behaviour. Students may have only acquired theoretical knowledge, such as memorizing the 17 SDGs or understanding them in isolation without grasping their real-world relevance, interconnectivity, or application to local challenges. To our knowledge, local studies only examined the understanding of SDGs among undergraduates in Malaysia through cross-sectional design (Ang, 2021; Ghazi et al., 2019). Ghazi et al. (2019), their study revealed that more education and promotion of SDGs are needed as most students only have a superficial understanding of the SDGs.

The integration of Sustainable Development Goals (SDGs) into higher education curricula has increasingly emphasized community service as a pedagogical tool to cultivate sustainability-minded graduates. Various global studies highlight how experiential learning through community engagement enhances students' understanding, attitudes, and actions toward the SDGs. Baron et al. (2024) conducted a case study at the Turks and Caicos Islands Community College, employing a design-thinking workshop to promote student engagement with the SDGs. Students participated in a sustainability initiative that included developing proposals for renewable energy projects. The study found that hands-on community engagement activities helped students identify real-world challenges and co-create local solutions, enhancing their problem-solving and critical thinking skills. While the initial level of SDG awareness was low, structured community service led to greater understanding and personal investment in sustainability issues. In Japan, Ohta et al. (2022) implemented a rural SDG education program involving university students in interactive lectures and fieldwork. This grounded theory study revealed that direct involvement in rural communities enabled students to shift their perspectives from abstract understanding to personal responsibility for sustainability. Students reported acquiring competencies such as collaboration, empathy, and community-driven innovation.

In light of the COVID-19 pandemic, we conducted virtual awareness via Instagram in this community service module for 7 weeks starting from 18 January to 7 March 2021. As a part of the module, students submitted group proposals, with each group selecting a project related to SDG, creating an Instagram account, and submitting an individual reflective note at the end of the 7 weeks. This community project provided opportunities for deeper understanding by engaging students in experiential learning. Through direct involvement in identifying, planning, and implementing initiatives that address community needs, students can internalize the principles of sustainability (e.g., health, education, inequality, and environment), and develop practical skills such as problem-solving, communication, and stakeholder engagement.

This study aims to evaluate the impact of virtual community service projects on university students' awareness and promotion of the Sustainable Development Goals (SDGs). It also examines how participation in SDG-focused online activities contributes to the development of students' soft skills, such as communication and teamwork. In addition, the study explores students' willingness to organize future SDG-related public awareness events and their perceptions of their role in promoting sustainable development in Malaysia. It further assesses students' attitudes toward using social media for SDG advocacy and gathers their suggestions for improving the long-term integration of the SDGs in society. Thus, this study acts as a reference where it can

provide empirical evidence on the effectiveness of raising SDG awareness through community-based projects.

2.0 METHOD

2.1 Execution of community project

A total of 62 second year undergraduate students enrolled in MU4 2432 Community Service module offered by the Jeffrey Cheah Sunway Medical School (Previously known as School of Medical and Life Sciences) at Sunway University, Malaysia. These students were part of the Bachelor of Medical Biotechnology and Bachelor of Biomedicine programmes. Due to the COVID-19 pandemic, we conducted virtual awareness via Instagram in this community service module for 7 weeks starting from 18 January to 7 March 2021. During the first lecture, an hour of introduction to the community project was given. A quiz was given to assess students' knowledge of SDGs (Appendix A) before introducing SDGs in the presentation slide. Subsequently, students were divided into 13 groups (4-5 self-selected members in each group). In each group, students selected a project or a social cause to address one SDG. Each group was required to submit their project proposal in the second week. Project execution through respective Instagram accounts started from the third week onwards. Upon completion of this module, they wrote an individual reflective note, based on the given set of questions (Appendix B).

2.2 Ethical considerations

This study was reviewed and approved by the Sunway University Research Ethics Committee (Ethics Approval No. SUREC 2021/005). Since students' reflections and questionnaire responses were part of their course assessment, participants were informed that their names and identifying details would not be disclosed in this publication. Informed consent was obtained, and confidentiality was maintained by omitting names and identifiers for reporting purposes, to uphold ethical standards in educational research.

2.3 Content analysis

Firstly, a descriptive analysis was conducted to examine demographic characteristics and knowledge of the SDGs of target students in this research using SPSS. All demographic data and SDG questions were described using frequency and percentage for data presentation in the current study. Pie and bar charts were used to reveal the proportion or percentage of occurrences of categories or values for one variable. The results show the means and percentages of university undergraduates on demographic variables. In order to triangulate the data, 62 reflexive journals were submitted for content analysis by the researcher. Researchers evaluated each piece of data separately to create a list of codes, then defined relevant categories, carried out analysis using the selected categories, and synthesized the findings (Neuendorf, 2017). The content analysis on the individual reflective note was performed using MAXQDA. In addition, a quantitative content analysis software named KH Coder 3.0 was used to analyze the co-occurrence network of words found in each question.

3.0 RESULTS AND DISCUSSION

3.1 Analysis of Demographic Background

A total of 62 university students were invited to participate in this current study which was carried out in February 2021. Students came from 10 countries namely Malaysia (n = 51), Maldives (n = 3), Bangladesh (n = 1), Syria (n = 1), Saudi Arabia (n = 1), Zambia (n = 1), Mauritius (n = 1), Swaziland (n = 1), Libya (n = 1) and Seychelles (n = 1). Table 1 shows the major geographic regions from which they came. Regarding their pre-university education background, the majority of students were from foundation programs (n = 19) followed by A-Level (n = 15), AUSMAT (n = 9), STPM (n = 5), Diploma program (n = 3), MUFY (n = 3), SAM (n = 3) and others (n = 5).

Among the group, 48 of 62 students had done volunteering before, whereas 14 students had not. Most of the total students (n = 51) knew about the Sustainable Development Goals (SDGs) while 11 students did not. However, only 3 students indicated that they knew SDGs very well; most of the students only knew a little (n = 38).

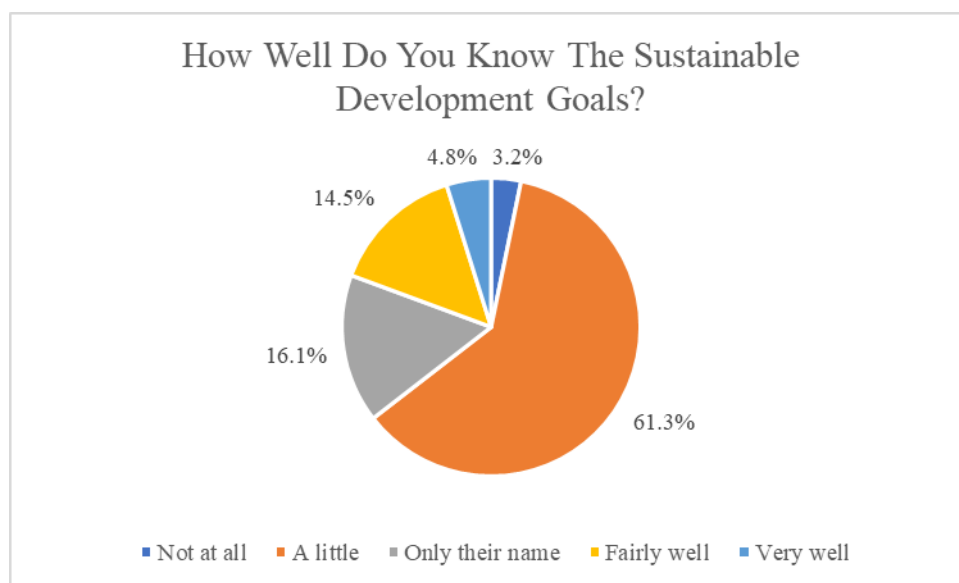


Figure 1 The Pie Chart of Students' Understanding of SDGs.

Generally, most students (n = 38) learned about SDGs through actions of Sunway University, followed by pre-university programs (n = 14), their high school (n = 14), Facebook (n = 10), NGOs (n = 9), Instagram (n = 7), Twitter (n = 5), NGDO (n = 1), assignment (n = 1) and project (n = 1) given by this author; only 1 student did not know about SDGs. Most of the students learned about SDGs via one channel (n = 37). Remarkably, only one of 62 learned about SDGs from 5 different channels (Figure 1)

Figure 2 shows the understanding of students about SDGs. Most students (n = 36) said that they were familiar with Goal 4, which is "Quality Education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." On the contrary, only n = 7 students selected Goal 9, which is "Industry, Innovation, and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation." Furthermore, the statistics reveal that only (n = 3) students knew all the 17 SDGs while most (n = 9) only learned about 4 SDGs.

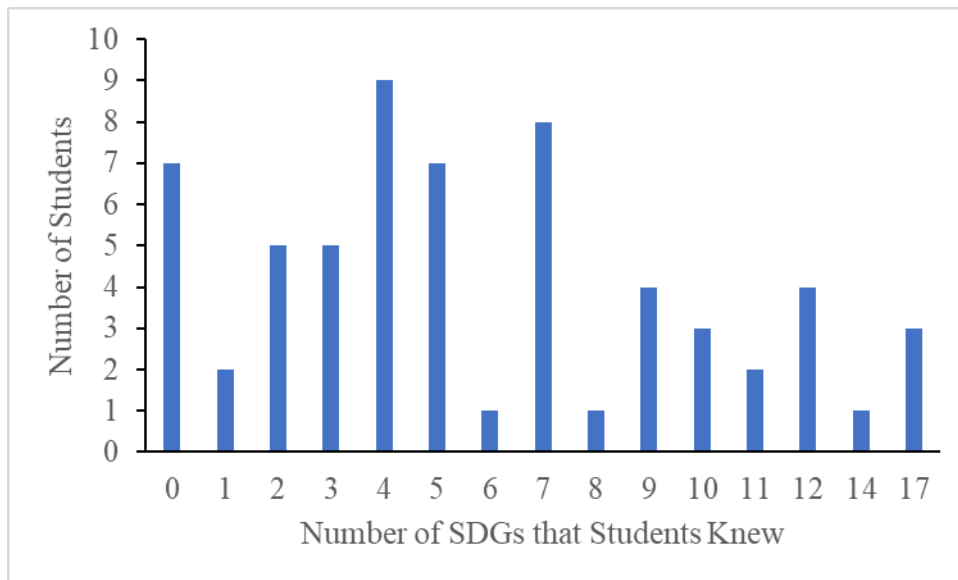


Figure 2 Number of SDGs that students knew.

3.2 Execution of Community Project

Table 1 summarizes the number of followers, posts, and Instagram stories generated by each student group. These illustrate the level of effort and digital engagement in each project, with follower counts ranging from 50 to 179. The followers of each campaign account were considered the target community. The number of followers serves as an indicator of public reach, reflecting the potential social impact and visibility of the student-led community awareness campaigns. It is an important consideration in evaluating the effectiveness of virtual community service projects.

Thirteen IG accounts were created addressing SDG 1 (@fightpoverty2021), SDG3 (@careforus_1, @mindalogy101, @mco_fitgor_fitlui, @i_cancer_vive, @positivetysource and @better_me_21), SDG 5 (@listen_to_her and @equalityforwomen), SDG 12 @_saynotosingleuseplastic and @wastenomore21), and SDG 13 (@climatechangeasigntostop). It is worth mentioning that all 62 students were pursuing a medical-related biology degree, thus the majority of them chose SDG 3 which addresses Good Health and Well-being, as they were knowledgeable and passionate about health-related topics as well as mental health. Approximately 50% of students who chose SDG1, SDG5, and SDG 12 and 13 were students who were willing to explore the social and environmental issues that were not related to their biology major in a non-exam-based subject such as a community project.

At the end of week 7, the number of followers of each IG account was recorded. Group @_listen_to_her had achieved the highest number of followers (n = 179), followed by @climatechangeasigntostop (n = 140) and @better_me_21 (n = 108). In contrast, group @positivetysource had the least followers (n = 50). For the number of Instagram posts, @_listen_to_her topped the list; the students posted (n = 98) Instagram posts during the community project. @better_me_21 and @wastenomore21 posted (n = 69) and (n = 48) posts respectively. Markedly, @fightpoverty2021 had the lowest number of Instagram posts, which was only (n = 20) during the period of the community project. The table below summarises the followers, number of posts, and number of stories that each Instagram account had.

Table 1 Instagram Accounts Of Students' Community Projects, The Number Of Followers, Instagram Posts, And Instagram Stories (As Of 1 April 2021).

Instagram accounts	No. of Followers	No. of Posts	No. of Stories
SDG 1			
@fightpoverty2021	70	20	66
SDG3			
@careforus_1	68	27	20
@mindology101	94	33	124
@mco_fitgor_fitlui	52	38	105
@i_cancer_vive	56	42	104
@positivetysource	50	27	35
@better_me_21	108	69	94
SDG5			
@_listen_to_her	179	98	81
@equalityforwomen	62	42	
SDG12			
@_saynotosingleuseplastic	91	37	196
@wastenomore21	75	48	44
SDG13			
@climatechangeasigntostop	140	43	28

3.3 Analysis of Self-reflective Notes

In this section, we discuss the five questions answered by students upon completion of their 7-week project. In general, this study successfully demonstrates the impacts of promoting SDGs through online activities among the students. And subsequently, enhance their soft skills. Notably, most of them were likely to organize some awareness events for the public in the future. Additionally, many of them believed that their action could push and promote sustainable development goals in Malaysia. Regarding the continuous promotion of SDGs, this study observes fewer students who agreed to continue their social media accounts because of some reasons. However, with some suggestions, most students were optimistic that the 17 Sustainable Development Goals could be instilled among the people and the societies in the long run. Table 2 (See Appendix) summarizes the feedback from students corresponding to each of the questions that emerged from the analysis of the self-reflective notes, which includes:

1. Question 1- Improvement of Soft Skills

Upon completion of the project, the students completed a self-reflective note with detailed elaboration on five questions given by the researcher (Appendix I). For question 1, "Did the implementation process of the community project of your team contribute to the improvement of your soft skills such as teamwork, communication, and creativity?", all students (n = 62) mentioned that they learned something after the SDG project.

Firstly, the study's finding illustrates that the SDG project indirectly helped all the students to learn soft skills while serving the community. Specifically, most students reported that the SDG projects improved their soft skills, namely communication, creativity, and teamwork. This finding aligns with local research (Razali et al., 2017), which studied students' learning through an online group project; it revealed that online collaborative projects improved the student's critical thinking, problem-solving skills, collaboration, and communication skills. Furthermore, creativity topped the list of improved soft skills as creativity is often a required skill on social media based on the complex social system dynamic behavior involving innovation and entrepreneurship (Ratten, 2016). Another possible explanation from Lee et al. (2015) is



that role diversity, shared leadership patterns, and positive knowledge sharing among group members contribute to a team's creativity level.

As one of the essential elements of interpersonal skills, teamwork is also interrelated to group creativity. Many studies posited that creativity is the output of effective interpersonal skills (Geissler et al., 2012; Ozer & Zhang, 2021). Ozer and Zhang (2021) asserted that the results of their study showed that employees with a strong intention of making interpersonal connections enjoyed high-quality interpersonal relationships with their co-workers and exhibited high levels of creativity. Although the research context is different, it is possible that this happened in the current SDG project as the top three soft skills rated by students are communication, creativity, and teamwork. Another study highlighted the use of creativity in promoting both teamwork and communication skills (Acai et al., 2016). It found that integrating creativity into learning helps promote teamwork and collegiality among individuals, resulting in a more fun and accepting work atmosphere. Acai et al. (2016) further emphasized that utilizing creativity in learning also helped participants identify the strengths and weaknesses of their communication skills, made them more comfortable with different communication styles, and provided them with strategies to enhance their communication skills. Also, Ngadiman and Jamaludin (2018) found evidence that teamwork could enhance communication skills through teamwork activities implemented during the teaching and learning process, which is aligned with this study.

In line with a past study by Jewpanich & Piriyastrawong (2015), the current study enhanced students' problem-solving skills as the project-based learning method, which involved using discussion and lesson-learned methods, had effectively improved the problem-solving skills of the undergraduates. Notably, students also mentioned that their competency skills using social media had significantly improved at the end of the project. They were motivated to explore the application of social media to grow their followers and interact with them in order to create a positive impact on their work.

The current SDG project benefited students with better time management skills. This is aligned with a study by Killian et al. (2019), where project-based learning helped students improve their time management skills. SDG programs also helped students become more organized because many SDG activities involve developing a strong communication strategy and planning regular events focusing on the SDGs (Junior et al., 2019).

According to Essel and Owusu (2017), there are four leading causes of stress for students, namely relationship factors (working with new people), environmental factors (worries about the future), and academic factors (class workload) as well as personal factors (financial problems). About this, it is clear that in the current study, working in a group helped students improve their stress management skills, particularly for relationship and academic factors.

Regarding responsibility, the students' self-reflection was supported by Reisenwitz and Eastman (2006) who stressed that students often learn to be more responsible by documenting and taking responsibility when they are facing group problems. Additionally, this study also improved students' leadership skills. Endersby et al. (2017) highlighted that online interactions generally lack social cues, hence they encourage more emotionally and personality-driven leadership styles. However, this is not the case with this study, as could be seen in students' reflections. Furthermore, two students mentioned that the project they took on as part of the study enhanced their ability to adapt to change, known as adaptability, as seen by their better ability to learn from mistakes and quickly adapt to situations. With high adaptability, volunteers

also experience lower levels of burnout (Allen, 2023). It is worth mentioning that adaptability to change is a dimension of leadership.

Notably, a student mentioned that this project helped him focus more on his actions and thoughts that could contribute to SDGs. This is in line with Pérez-Sánchez et al. (2020), whose SDG projects were student-driven and provided more tangible positive results on the deepening and retention of knowledge related to SDGs.

The result of the current study shows that participation in SDG projects improved students' decision-making process. This is very similar to a study by (Utzschneider & Pruneau, 2010), which analyzed before and after an SDG project about the environment. The study reached the conclusion that students become more structured in their decision-making and more thoughtful, gradually balancing their needs with various contextual factors.

2. Question 2 – Organize Event in the Future

Question 2 "Did your community projects and the interaction you had with the people influence you at a level that could make you think seriously about the possibility of organizing some awareness event in the future for the general public for the 17 Sustainable Goals?" is summarized below. Among the 62 students, 52 of them (83.87%) indicated that they were looking forward to organizing an event in the future, 8 (12.90%) did not give any indication, and 2 (3.23%) indicated no.

The analysis revealed that only 48 of the 62 students had experience being involved in volunteering work before the SDG project. After completing this project, the findings showed that 52 of the 62 students were willing to organize events for the public on a voluntary basis. Hence, it was clear that this project had successfully influenced a significant number of the students to participate in volunteering activities such as promoting SDGs. Many students had a mutual belief that raising awareness was vital for the community. There were also some other reasons: positive feedback, intrinsic motivation, inspired by the project, and positive relationships among the teammates.

This is in accord with Senevirathna et al. (2023), who found that when volunteers feel they have opportunities to contribute to a meaningful task, they become more satisfied with the volunteering experience and are more likely to volunteer again in the future. They are also more likely to show extra helpful behaviours when they feel capable to perform the task. On the other hand, barriers to engagement included finding the task difficult and/or boring, and lack of time due to other priorities, e.g., studying. The finding from this current study shows that the issue with teammates is also another hindrance to organizing future activities. The student emphasized that there was no mutual commitment from all the members. Lack of mutual commitment may increase the stress of some members as they must bear extra responsibilities and workload, thus resulting in bad experiences in volunteering activities.

3. Question 3 – Impact of Action

Below is the summary of the answers to question 3 "Do you think your action (community project) can force (push) in the long term worldwide the planet to the Sustainable Development?". Generally, 49 of them (79.03%) believed that their action was able to push sustainable development, 9 of them did not give an answer (14.54%), 3 (4.84%) said no, and 1 (1.61%) neither agreed nor disagreed to the statement above.

According to the result of the current study, most students believed that their actions could push in the long term worldwide the planet to Sustainable Development. For instance, the members of the group @listen_to_her, and the group @itsyourearthtoo, believed that their actions had successfully pushed to achieve the

Sustainable Development Goal. This may be because the students' experience boosted their confidence in themselves as part of the contributors to achieving SDGs, despite their small actions.

Most students believed that they had successfully educated the public about an issue, had motivated their participants, that their activities were all easy to practice, and had witnessed changes among the participants. However, some students disagreed, claiming that this project only lasted for a very short period, that it was a virtual event that might not have impacts on participants as well as having a lack of support. A student who answered neither agreed nor disagreed explained that the project should be extended so that the concept of SDGs could be instilled in the minds of participants, which is in line with a Sáenz (2019) who emphasizes that significant results cannot be achieved in just a few months; it takes years and even decades to achieve SDGs. However, this contradicts Cugelman et al. (2011) who mention that shorter interventions have produced an overall positive impact on voluntary behaviour change. The third account is that the students received little support and attention from the public, thus believing that their actions did not contribute to SDG development. Low support seemed to lower the students' self-confidence, which caused them to believe their actions contributed nothing to society.

4. Question 4 – Maintenance of account

Question 4 asked, "Will you maintain or create a social media account (e.g., Facebook, Twitter, Instagram) to promote any relevant event?" 41 students (66.13%) indicated that they would maintain or create a social media account to promote SDGs; 13 of them disagreed (20.97%), six did not give an answer related to this question (9.68%), and 2 (3.23%) answered neither agreed nor disagreed.

Forty-one students were willing to continue managing the social media account to raise awareness of SDGs. The group with the highest number of followers unanimously agreed to continue managing their Instagram account while the group. Students may develop confidence and passion about the SDGs topic because of the interactions and support that they received. They also indicated that they felt it was meaningful and effective to use Instagram as a platform to raise awareness for a cause. We also observed that the students with Instagram accounts having the lowest number of followers mentioned that they neither agreed nor disagreed to continue to maintain the account.

Those students who agreed to maintain their SDG Instagram account listed some factors that drove them to continue their project: the community requiring continuous support, positive perception towards the use of social media, and positive feedback from their participants. On the other hand, most of the students who disagreed reported having personal issues such as heavy academic workload, lack of time and management skills, not being equipped with sufficient knowledge, and not being skilled in social media. This is in line with Lee et al. (2018), who revealed that the most common reasons for nonparticipation in volunteering include lack of interest in volunteering for an organization and limited or no time. Nevertheless, students also believed that raising awareness should not be restricted to social media only. Although social media was a helpful tool in promoting SDGs, the students suggested that the promotional method should depend on each SDG goal's nature. Even though some students expressed that they would not continue to post updates to their project's account, they would share SDGs-related updates in their accounts.

5. Question 5 – SDGs in people and society

Lastly, question 5 "Do you believe that the 17 Sustainable Development Goals can in the long term instill in the people and the societies (environmentally, socially, economically)?" is summarized below. Among 62 students, 53 of them (85.48%) answered yes to the above statement, 6 (9.68%) did not provide any related answer, 2 (3.23%) neither agreed nor disagreed while 1 (1.61%) said no.

Lastly, most students believed the 17 Sustainable Development Goals could be instilled in the people and the societies in the long term. The number of Instagram posts reflected the hard work and passion of the group, while the number of followers indicated the response and support from the public. Thus, passion and feedback may be the main reasons students believe that the SDGs can be instilled in society.

Notably, students who agreed with the question prioritized education, given that the education of youth who were the future leaders was important. Also, two students who answered neither agree nor disagree held similar beliefs whereby they stated that only education could solve the challenges that might be encountered in instilling the SDGs. This could be explained by using the framework of Rüber et al. (2018). It suggests four mechanism clusters through which education may influence volunteering participation, namely shaping the learners' competencies for volunteering and their perception of the benefits of volunteering. Additionally, education may change the learners' self-perceptions that are relevant for the uptake of new activities, such as self-efficacy or self-esteem. It may also affect the learners' attitudes and values related to society within social contexts, thereby providing the opportunity to expand the learners' social networks and communities.

A student who disagreed pointed out that certain SDGs did not receive enough attention. For instance, people only focused on specific goals like SDG3 and SDG13, and there have been few campaigns or events organized to achieve other SDGs. This highlights the ignorance of all parties; thus, adequate attention shall be given to all SDGs equally from time to time.

3.4 Analysis of co-occurrence network of words

The analysis of the co-occurrence network of words of the reflective notes would give us an idea of students' experience in executing community projects virtually through their reflective thinking. It also allows us to identify which area requires improvement or requires more effort. It is worth noting that this analysis also represents the voice of the students.

Figure 1 shows 6 subgraphs of the analyzed co-occurrence network of words for Question 1. We found that the most frequent words used in the self-reflective notes were skill (see sub-graph 4, in red color), and it made up the largest proportion with other words namely: communication, creativity, improvement, team working, team, and work. Hence, by connecting the analysis to Question 1, this can be an important supporting evidence that most students noticed differences on their own; and this project had greatly polished their social skills.

Notably, the sub-graph 4 also correlated with the other 2 sub-graphs which were sub-graph 2 and 6 (Figure 1). There were 11 sub-groups from the analysis of Question 2, and the biggest sub-group was sub-group 01 showed connectedness between the words in action such as organize, event, and awareness (Figure 2). There were a total of 11 sub-graphs produced from the analysis of Question 3 (Figure 3). Despite pronouns They and Be, the result showed the largest subgraph (sub-graph 1) which had 3 indirect correlations with sub-graphs 2 and 3, respectively. The analysis of Question 4 presented a mixed result whereby the biggest sub-graph had 11 indirect correlations with 2, 3, and 5 (Figure 4). Under the sub-graph 1, the words that had the

highest frequency were: People, Media, Social, Event, and Promote (Figure 4). From the analysis of Question 5, the words that had the highest usage among others were: SDG, people, instill, and educate. Besides, subgraph 1 had indirect correlations with sub-graph 4 (SDG and Awareness; Instil and Social) while other sub-graphs did not correlate with each other.

Visually (Figure 5), the biggest node is the verb word followed by SDG, people, and educate, and these four keywords are close together. Besides, the word instill is connected to the word educate, both are linked to the words how, goal, aware, and vital. This co-occurrence network of words highlights a denoting trend of application of SDGs in Malaysia, revealing that SDGs can be installed by educating the public.

4.0 CONCLUSION AND OUR RECOMMENDATION

We reaffirm that this integration increases the awareness among the students towards SDGs through hands-on projects. From our observation and conversation with the students, students showed a better understanding of the SDG they addressed within 7 weeks of the community project. Eventually, we will better achieve the SDGs goals for an economically secure, ecologically stable, and socially prosperous world now and in the future. The effort of making community project modules compulsory significantly benefits the students and community. However, there is a need to make a sustainable impact on the students so that they will continue to be involved in community projects and contribute to society.

To support long-term institutionalization, universities could integrate this model by embedding SDG-focused projects into the formal curriculum across disciplines. Such projects can be introduced as part of existing modules or elective courses that promote civic responsibility, communication skills, and sustainability awareness. In addition, universities can provide institutional support through structured guidelines, mentorship, and recognition of impactful student projects. This approach not only enhances student engagement with the SDGs but also reinforces the university's role in promoting sustainable development through education and public outreach.

Future study is encouraged to address all SDGs equally so that the SDGs with lower public attention such as SDG 6 (Peace, justice, and strong institutions) and SDG 9 (Industry, innovation, and infrastructure) could be attended to and achieved. Besides, future studies need to consider the nature of the SDG as raising awareness online may not be applicable or effective for certain SDGs. It is suggested to incorporate physical events or hybrid events for a better event outcome.

Virtual community service empowers students to build self-advocacy, especially on critical social and environmental issues aligned with the Sustainable Development Goals (SDGs). Students can engage with communities, raise awareness on important issues, and serve as change agents for sustainable causes in health, education, inequality, and climate—without geographical limitations. This approach develops responsibility and active citizenship and enhances digital communication, leadership, as well as problem-solving skills. By encouraging students to raise their voices and act online, virtual community service produces a generation of champions who are ready to make an impact in achieving the SDGs by 2030. The impact is twofold: communities benefit from innovative solutions and outreach, while students grow into socially conscious changemakers equipped for a sustainable future.

5.0 CONFLICTS OF INTEREST

The authors declared no conflict of interest.

6.0 ACKNOWLEDGEMENT

We would like to express our deepest appreciation to Sunway University for the research support provided.

7.0 AUTHOR CONTRIBUTIONS

LTG and AT contributed to the conception and design of the study. LTG conducted the data collection, and CTA performed the data analysis. LTG and AT validated the findings. LTG and CTA drafted the manuscript. All authors reviewed and approved the final version of the manuscript.

8.0 REFERENCES

- Acai, A., McQueen, S. A., Fahim, C., Wagner, N., McKinnon, V., Boston, J., ... & Sonnadara, R. R. (2016). 'It's not the form; it's the process': a phenomenological study on the use of creative professional development workshops to improve teamwork and communication skills. *Medical Humanities*, 42(3), 173-180. <https://doi.org/10.1136/medhum-2015-010862>
- Allen, J. A. (2025). Using the conservation of resources theory to understand volunteer adaptability: a personal resource for reducing burnout. *European Journal of Training and Development*, 49(1/2), 63-76. <https://doi.org/10.1108/EJTD-05-2023-0082>
- Al-Naqbi, A. K., & Alshannag, Q. (2018). The status of education for sustainable development and sustainability knowledge, attitudes, and behaviors of UAE University students. *International Journal of Sustainability in Higher Education*, 19(3), 566-588. <https://doi.org/10.1108/IJSHE-06-2017-0091>
- Ang, S. M. (2021). Awareness of sustainable development goals among university students in Malaysia. *Asian Journal of Research in Education and Social Sciences*, 3(1), 105-116.
- Balakrishnan, B., Tochinai, F., & Kanemitsu, H. (2020). Perceptions and attitudes towards sustainable development among Malaysian undergraduates. *International Journal of Higher Education*, 9(1), 44-51. : <https://doi.org/10.5430/ijhe.v9n1p44>
- Baron, J., Lawrence, S. A., & Nevins-Bennett, C. (2024). Sustainable Development Goals: A Case of the Community College Student Initiative Project. *European Journal of Education and Pedagogy*, 5(3), 24-35.
- Bashar, M. K. (2022). Attitude and awareness of university teachers towards implementing Sustainable Development Goals in public universities in Malaysia. [Master's thesis, Tallinn University of Technology]
- Cugelman, B., Thelwall, M., & Dawes, P. (2011). Online interventions for social marketing health behavior change campaigns: a meta-analysis of psychological architectures and adherence factors. *Journal of Medical Internet Research*, 13(1), e1367. <https://doi.org/10.2196/jmir.1367>

- Endersby, L., Phelps, K., & Jenkins, D. (2017). The virtual table: A framework for online teamwork, collaboration, and communication. *New Directions For Student Leadership*, 2017(153), 75-88. <https://doi.org/10.1002/yd.20231>
- Findler, F., Schönherr, N., Lozano, R., Reider, D., & Martinuzzi, A. (2019). The impacts of higher education institutions on sustainable development: A review and conceptualization. *International Journal of Sustainability in Higher Education*, 20(1), 23-38. <https://doi.org/10.1108/IJSHE-07-2017-0114>
- Geissler, G. L., Edison, S. W., & Wayland, J. P. (2012). Improving students' critical thinking, creativity, and communication skills. *Journal of Instructional Pedagogies*, 8. <https://files.eric.ed.gov/fulltext/EJ1097114.pdf>
- Gew, L. T., & Tumar, A. (2023). Incorporation of Sustainable Development Goal 4 in Biology Curriculum Design: A Case Study. *ATTARBAWIY: Malaysian Online Journal of Education*, 7(1), 58-65.
- Ghazi, H. F., AbdalQader, M. A., Baobaid, M. F., Hasan, T. N., Mohammed, M. F., Shebl, H. A., ... & Ads, H. O. (2020). Knowledge regarding sustainable development goals (SDG) among medical students at a private university in Shah Alam, Malaysia. *Global Journal of Public Health Medicine (GJPHM)*, 2(Special Issue), 196-202.
- Ilham, Z., Kamal, A. S., Wan, W. A. A. Q. I., & Jamaludin, A. A. (2021). Youth awareness level towards sustainable development goals (SDGs) in Greater Kuala Lumpur. *The Journal of Indonesia Sustainable Development Planning*, 2(3), 217-233. <https://doi.org/10.46456/jisdep.v2i3.173>
- Jennett, C., Kloetzer, L., Schneider, D., Iacovides, I., Cox, A., Gold, M., ... & Talsi, Y. (2016). Motivations, learning, and creativity in online citizen science. *Journal of Science Communication*, 15(3). <https://doi.org/10.22323/2.15030205>
- Jewpanich, C., & Piriyasurawong, P. (2015). Project-based learning using discussion and lesson-learned methods via social media model for enhancing problem solving skills. *International Education Studies*, 8(6), 24-31. <http://doi.org/10.5539/ies.v8n6p24>
- Junior, R. M., Fien, J., & Horne, R. (2019). Implementing the UN SDGs in universities: Challenges, opportunities, and lessons learned. *Sustainability: The Journal of Record*, 12(2), 129-133. <https://doi.org/10.1089/sus.2019.0004>
- Killian, S., Lannon, J., Murray, L., Avram, G., Giralt, M., & O'Riordan, S. (2019). Social media for social good: Student engagement for the SDGs. *The International Journal of Management Education*, 17(3), 100307. <https://doi.org/10.1016/j.ijme.2019.100307>
- Kopnina, H., & Meijers, F. (2014). Education for sustainable development (ESD) exploring theoretical and practical challenges. *International Journal of Sustainability in Higher Education*, 15(2), 188-207. <https://doi.org/10.1108/IJSHE-07-2012-0059>
- Lee, D. S., Lee, K. C., & Seo, Y. W. (2015). An analysis of shared leadership, diversity, and team creativity in an e-learning environment. *Computers in Human Behavior*, 42, 47-56. <https://doi.org/10.1016/j.chb.2013.10.064>
- Lee, S. H., Johnson, K. J., & Lyu, J. (2018). Volunteering among first-generation Asian ethnic groups residing in California. *Journal of Cross-Cultural Gerontology*, 33(4), 369-385. <https://doi.org/10.1007/s10823-018-9358-4>
- Neuendorf, K. (2017). *The content analysis guidebook*. SAGE Publications, Inc, <https://doi.org/10.4135/9781071802878>
- Ngadiman, S. H., & Jamaludin, M. F. (2018). Hubungan di antara kemahiran kerja berpasukan dan kemahiran komunikasi dalam kalangan pelajar semesta akhir politeknik (The relationship between teamwork skills and communication skills among polytechnic's final semester students). *International Journal of*

- Education, Psychology and Counselling, 3(19), 1-18. <https://ssrn.com/abstract=3277360>
- Ohta, R., Yata, A., & Sano, C. (2022). Students' learning on sustainable development goals through interactive lectures and fieldwork in rural communities: grounded theory approach. *Sustainability*, 14(14), 8678.
- Owusu, P., & Essel, G. (2017). Causes of students' stress, its effects on their academic success, and stress management by students. <https://urn.fi/URN:NBN:fi:amk-201704134793>
- Ozer, M., & Zhang, G. (2022). Interpersonal relationships and creativity at work: A network building perspective. *Journal of Product Innovation Management*, 39(3), 312-333. <https://doi.org/10.1111/jpim.12575>
- Pérez-Sánchez, M., Díaz-Madroñero Boluda, F. M., Mula, J., & Sanchis, R. (2020). The Sustainable Development Goals (SDGs) applied to higher education. A project-based learning proposal integrated with the SDGs in bachelor degrees at the campus Alcoy (UPV). *EDULEARN Proceedings (Internet)*, 3997-4005. <https://doi.org/10.21125/edulearn.2020.1078>
- Ratten, V. (2017). Social media innovations and creativity. In *Revolution of Innovation Management* (pp. 199-220). Palgrave Macmillan, London. https://doi.org/10.1057/978-1-137-57475-6_8
- Razali, S. N., Noor, H. A. M., Ahmad, M. H., & Shahbodin, F. (2017). Enhanced student soft skills through integrated online project-based collaborative learning. *International Journal Of Advanced And Applied Sciences*, 4(3), 59-67. <https://doi.org/10.21833/ijaas.2017.03.010>
- Reisenwitz, T. H., & Eastman, J. K. (2006). Dealing with student group project traumas: Teaching students recognition, responsibility, and resolution of group project problems. *Marketing Education Review*, 16(2), 9-21. <https://doi.org/10.1080/10528008.2006.11488954>
- Reza, M. I. H. (2016). Sustainability in higher education: Perspectives of Malaysian higher education system. *Sage Open*, 6(3), 2158244016665890. <https://doi.org/10.1177/2158244016665890>
- Rüber, I. E., Rees, S. L., Schmidt-Hertha, B. (2018). Lifelong learning–lifelong returns? A new theoretical framework for the analysis of civic returns on adult learning. *International Review of Education*, 64(5), 543–562. <https://doi.org/10.1007/s11159-018-9738-6>
- Sáenz, O. (2019). Implementation of the Sustainable Development Goals (SDGs) in higher education institutions: Recommendations based on the experience of a Latin American University. *Implementing SDGs at Higher Education Institutions: Challenges and Responses*, 66-74.
- Senevirathna, L., Jin, X., & Ma, E. (2023). An examination of event Volunteer's motivation, self-efficacy and empowerment on volunteer outcomes. *Journal of Hospitality and Tourism Management*, 57, 1-12. <https://doi.org/10.1016/j.jhtm.2023.08.021>
- Seymour, J. (2018). The impact of public health awareness campaigns on the awareness and quality of palliative care. *Journal of Palliative Medicine*, 21(S1), S-30. <https://doi.org/10.1089/jpm.2017.0391>
- Utzschneider, A., & Pruneau, D. (2010). Students' decision-making process during a sustainable development project. *International Journal of Sustainable Development & World Ecology*, 17(1), 39-47. <https://doi.org/10.1080/13504500903492372>