African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper   Open Access

Developing a Model for Upgrading "Soft Skills" of Students Through "Social Engineering Process"

[1]Noppadol thumchuea, [2] Pengporn Benyapad, [3] Niparat Bunkul
[1] Faculty of Education MCRU, [2] Faculty of Education MCRU, [3] Public Health MCRU
[1] Tay_math@hotmail.com, [2] ws_sw99@outlook.com, [3] niparatboo@mcru.ac.th

Abstract— *This study aimed to: 1) investigate the factors influencing the development of students' soft skills through the Social Engineering Process, 2) develop a model to enhance students' soft skills through the Social Engineering Process, and 3) assess students' soft skills through the Social Engineering Process. The research sample comprised: 1) six deputy deans of student affairs and sixty students who participated in a workshop designed to develop students through the Social Engineering Process in the 2022 academic year, 2) twelve instructors teaching the Self-Development with SATI and Social Engineering Program in the first semester of 2023, and 3) sixty students enrolled in the Self-Development with SATI and Social Engineering Program in the second semester of 2023, divided into two groups. Research instruments included: 1) a PLC meeting minutes form for factor analysis, 2) a focus group meeting minutes form, and 3) a student soft skills assessment form based on the Social Engineering Process.*

The research findings were as follows: 1. Influencing Factors: These were categorized into three stages. The pre-activity stage included collaboratively designing learning activities aligned with specific learning outcomes, teacher training to understand learner development in relation to these outcomes, teacher meetings to review media for learning activities, and budget allocation. During activity implementation, influencing factors comprised teacher meetings to share knowledge on activity execution, the use of measurement tools and evaluation criteria, and coordinating/planning student field visits. Post-activity factors included reflective meetings on teaching and learning management outcomes and teacher upskilling/reskilling training. 2.Model Development: The process of developing a model to enhance students' soft skills through the Social Engineering Process was divided into three stages. The pre-activity phase involved designing teaching and learning management, personnel preparation, and budgeting. The activity implementation stage encompassed organizing teaching and learning activities, measurement and evaluation, and data management. Post-activity, the focus was on reviewing operational outcomes to inform process improvements for future iterations. 3. Student Soft Skills Evaluation: Results indicated a significant difference (p > 0.05) in students' social engineering skills between pre- and post-intervention, specifically in logical thinking, communication, teamwork, and community innovation skills.

Index Terms— *Social Engineer Soft Skills 21st Century Skills Social Engineer Tools*

I. INTRODUCTION

The educational policy of His Majesty King Rama X, which assigned the Privy Council to operate with the goal of students to develop students' skills to improve the quality of education and develop their local areas, create students to be "Social Engineers" with good and correct perspectives, have a solid and strong foundation in life, have a job, a career, and be good citizens. Developing "Soft Skills" with the "Social Engineering Process" to develop the skills that students must have for their lives and future work, including logical analysis, seeing problems as challenges, communicating knowledge to solve problems, and working with others without conflict, is consistent with 21st Century Skills. In the past, developing such skills for students was a teaching format that focused on lecturing as memorization of content but not in depth. The teacher would bring the content to teach students to listen to, causing students to lack practical experience in the area, organization, community, and village, which these things require communication skills, good problem-solving skills, and good human relations skills, as Wichai Wongyai and Marut Patphol (2019) stated that soft skills refer to skills in thinking, emotions, and communication that are required to work successfully and efficiently. And facilitate the creation of innovations. Soft skills will help promote the development of hard skills or specialized skills continuously. Consistent with what Thapakorn Uamsathit (2020) said, Soft Skills are emotional skills and social skills. These skills help promote intelligence, emotional abilities, interpersonal relationships, and working with others. This makes work more efficient. They are skills that help people live with others without problems. Therefore, teaching and learning must increase the competencies that students must have. The key to educational reform is "raising the Soft Skills of students through the social engineering process". Therefore, it is necessary to reform learning, which has many related and interrelated components, including teachers, teaching and learning formats, curriculum, measurement and evaluation. These components will support learners to learn with quality and develop important competencies that can be used in real life. And from the current social changes, affect the way of life, society, culture, economy, politics, and public health, and importantly, education must be organized to develop people to live in a society with a good quality of life. As Noppadol. T (2022) said, learning management to develop soft skills of higher education students should improve the curriculum that focuses on learner outcomes, emphasizes actual practice, and should have learner competencies as a guideline for designing learning activities. The promotion of learning activities to be applied in real life should be done so that learners can practice fluently or naturally and create knowledge by themselves. Based on the concept above, Muban Chom bueng Rajabhat University has an idea to develop students by applying the Social Engineering Process by the royal policy of His Majesty King Rama X by developing 4 skills through 5 tools: 1) Heaven-given: distinguish fact from feeling, accept different opinions and

find common ground for development; 2) Life clock: understand and respect the way of life of colleagues; 3) Development timeline: synthesize important events and results from events in all dimensions; 4) Process timeline: study the steps and separate the process for clarity. To develop potential in line with the goals and 5) the Modified-Improved-Created Model (M.I.C Model) to brainstorm in process development and determine social engineering students (Nongrat Isaro, 2019) to analyze, study, research, and develop from case studies. So that students can learn across disciplines with hands-on practice from local community development as a base (Social Lab Based) through coaching by lecturers from different faculties and fields and local philosophers. So that students from different faculties and fields participate in area problem-solving activities (Area-based) by themselves throughout the process. Aiming to create students to become graduates who are thinkers, communicators, coordinators, and community innovators. From the results of past operations, a study was conducted on the factors affecting the elevation of students' "Soft Skills" with the social engineering process. To lead to the development of better teaching and learning processes

II. PROCEDURE FOR PAPER SUBMISSION

A. Review Stage

1. Conduct a comprehensive analysis of PLC meeting minutes from Academic Year 2022 to identify factors influencing the development of students' soft skills through the Social Engineering Process. The target group for this analysis comprises six Deputy Deans of Student Affairs from each faculty responsible for the workshop project.
2. Employ simple random sampling to select a sample of 60 students who participated in the Social Engineering Process workshop during Academic Year 2022. Analyze their reflection data, as documented in PLC meeting minutes, to determine factors impacting the development of their soft skills.
3. Synthesize the findings from steps 1 and 2 to establish a comprehensive understanding of the factors influencing the development of students' soft skills through the Social Engineering Process.

Developing a Model for Upgrading Students' Soft Skills
1. Conduct a comprehensive analysis of factors influencing the development of students' soft skills through the Social Engineering Process. Utilize PLC meeting minutes and relevant data to identify key determinants.
2. Develop a preliminary model for upgrading students' soft skills based on the analysis conducted in Step 1. Incorporate theoretical frameworks and empirical evidence to support the model's construct.
3. Engage in a focus group with 12 teachers from the Self-Development with Mindfulness and Social Engineering Program to obtain feedback on the preliminary model. Employ a structured focus group guide and record the session for subsequent analysis.

4. Revise the model based on the feedback gathered from the focus group. Incorporate suggestions and insights to enhance the model's validity and applicability.

5. Finalize the model for upgrading students' soft skills. Document the model comprehensively, including its theoretical underpinnings, components, and implementation guidelines.

Evaluating Students' Soft Skills

1. Implement the developed model for upgrading students' soft skills in the Self-Development with Mindfulness and Social Engineering Program. Monitor the implementation process to ensure fidelity.

2. Select a sample of 60 students from the target program to assess the impact of the model on their soft skills. Utilize a standardized soft skills assessment tool.

3. Analyze the assessment data to evaluate the effectiveness of the model in enhancing students' soft skills. Employ appropriate statistical methods to determine the model's impact.

4. Share the evaluation results with the target group of teachers. Conduct a follow-up focus group to discuss the findings and implications for model refinement.

Pre-Activity Planning
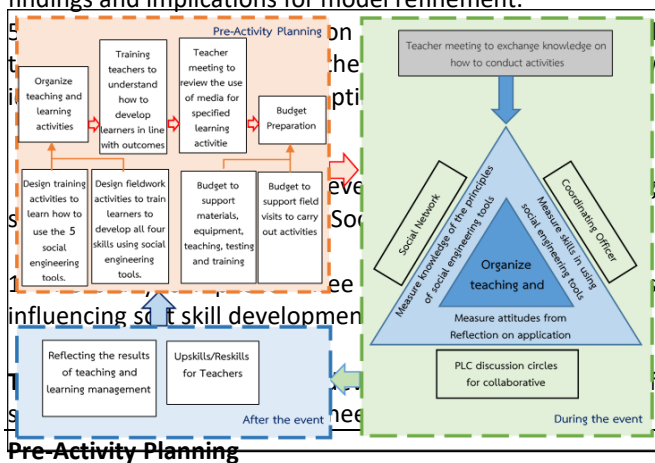
Curriculum Development

Collaborative design of learning activities aligned with specified learning outcomes, including: Development of training activities for practicing five social engineering tools.

Creation of fieldwork experiences to cultivate four essential skills through social engineering applications.

Teacher Preparation

Facilitation of teacher training to enhance their capacity for student development in accordance with learning outcomes.

Resource Allocation

Convening teacher meetings to evaluate media suitability for learning activities.

Budgetary planning for: Acquisition of materials, equipment, and resources for teaching and assessment. Financial provisions for fieldwork implementation.

Activity Implementation

1.Collaborative Knowledge Sharing: Regular teacher meetings to exchange insights and experiences regarding activity implementation.

2.Student Assessment: Employ a comprehensive assessment approach encompassing: Knowledge evaluation of social engineering principles. Skill observation in applying social engineering tools. Attitude assessment through reflective practices.

3. Fieldwork Coordination and Support: Facilitate collaborative learning and reflection through PLC discussion groups. Leverage social network platforms for knowledge sharing and data collection. Designate a coordinating officer for efficient management and support.

After the event

1. Meeting to reflect on the results of teaching management

2. Training to Upskill/Reskill for teachers

2. The analysis of factors influencing the development of students' soft skills through the Social Engineering Process resulted in a model for enhancing these skills. This model was subsequently presented to a subgroup for critique. The refined model is proposed for implementation in the second semester of 2023.

Figure 1. Model for upgrading students' "Soft Skills" through "Social Engineering Process".

An evaluation of students' soft skills was conducted before and after the implementation of a self-development course incorporating mindfulness and social engineering principles in the second semester of 2023. This evaluation aligned with the previously developed soft skills enhancement model.

Table 2 Details of the assessment of "Soft Skills" of students through "Social Engineering Process"

Social Engineering Skills	Details
Rational Thinking Skills (Thinker)	Think logically, see problems as challenges that can be applied in daily life and future work.
Communication Skills (Communicator)	Can communicate clearly and directly, making it easy for listeners to understand. Be an attentive listener. Use questions to clarify what you want to know. Express opinions and give appropriate reasons. Have a positive attitude.
Cooperation	Create working relationships for all parties with

Social Engineering Skills	Details
Skills (Coordinator)	mutual understanding or agreement. Perform each person's roles, duties or responsibilities according to the same schedule. To reach the same goal according to the objectives of the work.
Community Innovation Skills (Innovator)	Can connect questions, problems or ideas. Can ask questions that challenge common knowledge. Consider common phenomena, behaviors with care, intention and consistency. Try to find new ideas to create prototypes and devote energy to finding and testing ideas through various networks to expand the scope of their own knowledge.

A comparative analysis of pre- and post-intervention average soft skill scores for students engaged in the Social Engineering Process is presented in the following table.

Table 3 Comparison of mean differences of social engineering skill levels (rational thinking skills)

Rational thinking skills	n	$\bar{x}$	S.D.	Mean Difference	t	95 % CI	p–value
Pre-study	60	2.26	0.69			2.12	0.021
				0.03	1.7		
Post-Study	60	3.29	0.67			2.15	0.024

As indicated in Table 3, there was a statistically significant difference in logical thinking skills between pre- and post-intervention assessments (Mpre = 2.26, SD = 0.69; Mpost = 3.29, SD = 0.67; p > 0.05).

Table 4 Comparison of mean differences of social engineering skill levels (communication skills)

Communication skills	n	$\bar{x}$	S.D.	Mean Difference	t	95 % CI	p–value
Pre-study	60	2.33	0.69			2.19	0.028
				0.04	1.6		
Post-Study	60	4.37	0.66			2.23	0.031

As indicated in Table 4, there was a statistically significant difference in communication skills between pre- and post-intervention assessments (Mpre = 2.33, SD = 0.69; Mpost = 4.37, SD = 0.66; p > 0.05).

Table 5 Comparison of mean differences in social engineering skill levels (teamwork skills)

teamwork skills	n	$\bar{x}$	S.D.	Mean Difference	t	95 % CI	p–value
Pre-study	60	2.20	0.79			2.0	0.032
				0.04	2.15		
Post-study	60	3.26	0.74			2.1	0.022

As indicated in Table 5, there was a statistically significant difference in collaborative skills between pre- and post-intervention assessments (Mpre = 2.20, SD = 0.79; Mpost = 3.29, SD = 0.74; p > 0.05).

Table 6 Comparison of mean differences of social engineering skill levels (community innovation skills)

community innovation skills	n	$\bar{x}$	S.D.	Mean Difference	t	95 % CI	p–value
Pre-study	60	2.40	0.51			2.29	0.012
				0.08	2.1		
Post-study	60	3.32	0.66			2.18	0.021

As indicated in Table 6, there was a statistically significant difference in community innovation skills between pre- and post-intervention assessments (Mpre = 2.40, SD = 0.51; Mpost = 3.32, SD = 0.66; p > 0.05).

Summary and Discussion of Research Results
Research Summary
This research aimed to develop and evaluate a model for enhancing students' soft skills through a Social Engineering Process. The study comprised three primary phases: (1) model development, (2) model implementation, and (3) model evaluation.
1. Model Development: Factors influencing soft skill development were identified through an analysis of pre-activity planning, activity implementation, and post-activity reflection. These factors informed the creation of a model designed to enhance students' soft skills.
2. Model Implementation: The developed model was implemented through a structured process involving curriculum design, teacher training, and resource allocation.
3. Model Evaluation: The impact of the model on students' soft skills was assessed by comparing pre- and post-intervention scores on logical thinking, communication, teamwork, and community innovation skills.
Discussion of Findings
The findings indicate that the Social Engineering Process had a positive impact on students' soft skills, as evidenced by significant improvements in all measured skill areas. These results align with [cite relevant literature] suggesting that experiential learning approaches can effectively enhance soft skill development.
However, it is essential to consider the limitations of the study, such as [identify limitations, e.g., sample size, research design]. Future research could explore the long-term impact of the model, investigate the role of individual differences in student outcomes, and examine the transferability of the model to other contexts.
Implications
The findings of this study have significant implications for higher education. The developed model offers a promising approach to enhancing students' soft skills, which are increasingly valued by employers and society. Further research and implementation of the model are encouraged to maximize its potential benefits.

Discussion of Research Results
The findings of this study demonstrate the effectiveness of the Social Engineering Process in enhancing students' soft skills. The model developed through this research offers a structured approach to integrating soft skill development into the curriculum.

Key findings include:

1. A statistically significant increase in logical thinking, communication, teamwork, and community innovation skills among students who participated in the Social Engineering Process.
2. The importance of collaborative learning and teacher training in facilitating effective implementation of the model.
3. The positive impact of fieldwork experiences on students' skill development.

These results align with previous research by Noppadol T. (2022) and Linda Kengma (2021), which emphasized the role of experiential learning and real-world application in enhancing soft skills. However, the current study extends these findings by providing a specific model and demonstrating its effectiveness through rigorous evaluation. While the model proved effective, further research is needed to explore its long-term impact on students' career outcomes and to examine its applicability in different academic contexts. Additionally, investigating the optimal dosage of social engineering activities for maximum soft skill development would be beneficial.

Suggestions
1. Pre-implementation Planning and Communication: Implement a comprehensive planning phase to inform all relevant stakeholders about the model and its implementation process.
2. Model Evaluation and Refinement: Conduct ongoing evaluations to assess the model's effectiveness and make necessary adjustments to ensure its reliability and sustainability.
3. Stakeholder Satisfaction Assessment: Regularly assess the satisfaction levels of all individuals involved in the model implementation process to identify areas for improvement.

REFERENCES
[1] Eiew-Yisun, P. (2021). Psychomotor domain assessment learning assessment. Journal of Graduate Studies, 1(2),18-32.
[2] Isaro, N. (2021). Student development manual for national development: Essential soft skills exercises in the 21st century: University edition. Amarin Book Center Company.
[3] Kengma, L. (2022). Newsletter of the Office of the Council of Rajabhat Bansomdejchaopraya University [Year 7, Issue 8, April 2022]. Retrieved from year -7-4-pdf
[4] Noppadol, T. (2022). Developing guidelines for upgrading general education courses on applying the sufficiency economy philosophy in real life. Docens Series in Education, 4, 32-43.
[5] Phiwpaen, K. (2022). Social Engineers Incubation Project to develop innovations to increase the potential of spatial development in Khao Kho District. MCU Journal. Social Development, 7(3), 148-164.
[6] Rattanaprom, W. (2021, June 20). Social Engineer [Online]. Retrieved from https://today.line.me/th/v2/article/qgOE1w
[7] Uamsathit, T. (2021). Soft skill development through volunteer projects based on the approach to cognitive studies.Rajamangala University of Technology Suvarnabhumi Journal of Liberal Arts, 3(1), 37-50.
[8] Wongyai, W., & Phatphon, M. (2019). Development of creative innovation skills. Bangkok: Center for Innovation in Curriculum and Learning.