

Enhancing student skills through culinary competitions: Developing grounded theory from the bachelor of home economics program

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ABSTRACT

This study aims to evaluate the proficiency of undergraduate students in a Home Economics curriculum. The study analyzed a group of 17 students majoring in food nutrition and 4 students majoring in food business who participated in a cooking competition. Data were examined from 2022 to 2024, which employed semi-structured, in-depth interviews. Data analysis employed triangulation. The results showed that students could classify their innate skills into four distinct groups. Self-development refers to students' active pursuit of personal improvement, aimed at enhancing their capacity-building. Self-efficacy has increased their potential to identify and acknowledge their proficiencies across many domains of expertise. They demonstrated self-awareness by thoroughly understanding their capabilities, acknowledging their societal viewpoints, and maintaining a heightened level of self-awareness even when faced with challenges. Self-esteem is defined as an individual's ability to acquire understanding and abilities by cultivating confidence. Educational procedures described here promote the acquisition of knowledge. The brain's physiological systems control intricate neural processes that underpin brain-based learning. It is responsible for the cognitive processing of the five senses. The cognitive growth and maturity of pupils greatly relied on the cultivation of abilities and understanding of knowledge through intellectual processes. The influence of the body on the mind affects students' desires to achieve positive outcomes, which enhances their mental processes.

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1. INTRODUCTION

The development of human capital is the central objective of Thailand's strategic strategy. The Thai people exhibit exceptional levels of physical, mental, and cognitive abilities, along with the necessary abilities to adapt to the demands of 21st-century labor (Serirak et al., 2021). The food sector, which includes restaurants, caterers, and hotel food services, is critical to the economy because it is a major employment generator and the foundation for production and consumption in all civilizations. Establishing a strong emphasis on human capital is a crucial determinant of an organization's capacity to innovate and achieve exceptional performance (Thatrak, 2021). However, two significant factors can influence the labor markets in the sector: rapid technological advancements and changes in global production networks (Lekfuangfu & Nakavachara, 2021). Individually, each of these factors can independently impact the functioning of employment, both at a national and global level. Consequently, persons in the sector may lack the requisite knowledge or skills to adjust to changes in technology, industry, and the economy.

Among the notable departments responsible for generating graduates into employment opportunities is the Rajamangala University of Technology Krungthep, which provides a Bachelor of Home Economics program. Furthermore, it is imperative to encourage students' education in both theoretical and practical domains, as this will facilitate the cultivation of professional culinary skills and empower them to pursue multifaceted careers in diverse industries. The Food Nutrition and Food Business concentration within the Bachelor of Home Economics program provides students with the necessary cognitive abilities, knowledge, ethics and morals, interpersonal skills, responsibility, communication, and IT skills to meet the National Higher Education Qualifications Standards Framework (Polyiem & Nuangchalerm, 2022). Thailand attempts to improve STEM education in science and technology by encouraging people to educate themselves satisfactorily. Educators inspire students to learn new skills, solve issues, and think creatively (Pitipornatapin et al., 2018). The goal was to improve Home Economics learners' acquisition of essential knowledge and skills by incorporating STEM education. Learners have gained proficiency in problem-solving, particularly analytical thinking and the application of technology in professional settings, and bring 21st-century skills (Saratapan et al., 2019). It provides an optimal opportunity to educate the upcoming generations of Thailand's skilled workers in various industries (Pitipornatapin et al., 2018).

The Bachelor of Home Economics program aims to cultivate creative thinking and problem-solving skills among higher education students. Students from all academic levels can participate in group and individual culinary competitions, as well as initiatives by universities, governments, and commercial organizations. Universities, governments, and commercial organizations conduct competitions both within a country and internationally. The major in food nutrition and food business aimed to improve the cognitive development of students in many areas, thereby strengthening their self-confidence and promoting the general physical and mental health of adolescents. Therefore, it was imperative to acknowledge that self-efficacy exerts a substantial influence on mental well-being (Andretta & McKay, 2020). The students exhibit interest in their performance settings and perceive challenges, they concurrently change the task to establish a connection with the task at hand. These findings enhance awareness and highlight the complementary significance of student engagement in academic work and performance, which extends beyond mere recognition to encompass the development of tangible abilities (Nuutila et al., 2021). Students are members of the Generation Z demographic who possess the capacity to demonstrate leadership qualities independently. The cultivation of self-awareness and autonomy can be accomplished by applying self-improvement techniques, including the establishment of objectives and engagement in self-leadership activities (Nantharajphong & Siriwong, 2018). When students engage in practical activities, they acquire knowledge, develop positive attitudes, and appreciate the significance of genuine skills. Simultaneously, students engage in the acquisition and application of essential life skills. Furthermore, it enhances students' capacity to address the needs of society as a whole effectively (Caingcoy et al., 2021). Previous studies have demonstrated that teenagers who participate in physical exercise experience improvements in their mental well-being. Self-esteem is closely linked to and has an impact on the cognitive processes involved in information perception and decision-making within the brain. Enhanced cognitive functioning (Biddle et al., 2019).

Enhancing skill development for Bachelor of Home Economics Programed in Food Nutrition and Food Business students who passed the cooking competition until they can reach their goals. Thus, we want to explore the meaningful learning potential of student cooking competition abilities and how to enhance learning using them. Data is crucial. Construct theories, conceptions, theories of foundations, and access to knowledge or facts with differences to explain phenomena and reach abstract, data-driven theoretical conclusions (Glaser & Strauss, 2017).

This leads to instructions for building a Bachelor of Home Economics Program for students to pursue skilled careers and support current and future.

2. METHOD

This study utilizes the grounded theory technique to develop the main hypotheses derived from precise and dependable data. We aimed to generate creative theories by applying the interpretative and creative phenomenon processes from the main informant's viewpoint. The research procedure is outlined as follows:

2.1 Participant

The researchers gathered data from 2022 to 2024. The critical informants are students from the Rajamangala University of Technology, Bangkok, and the faculty of Home Economics Technology. The Bachelor of Home Economics Program was divided into two categories: 17 in food and nutrition and 4 in food business. The primary informant has participated in cooking competitions in Thailand and internationally.

2.2 Sampling procedure

The researchers employed theoretical sampling procedures to fulfil their goals and ensure the theoretical integrity of their study (Ligita et al., 2020).

2.3 Research instruments

The researchers play an essential role in the study process by identifying and choosing important informants and collecting data through interviews. The study utilized an in-depth interview approach using a semi-structured interview format. The interview questions were classified into three distinct categories. The initial one is the essential specifics of the master data suppliers. The second refers to gaining significant insights from sources about the results of culinary competitions. Enhancing educational achievements through competitive skills involves acquiring and mastering culinary expertise in cooking competitions, as individuals with valuable personal experiences explain.

2.4 Data collection

Our study focuses on the classification of data into two specific segments (Busetto et al., 2020). Researchers obtain primary data using methods such as conducting interviews and note-taking. Simultaneously, they gather data to establish a structure for implementing data collection procedures. Utilizing academic articles and research papers facilitated obtaining secondary data. The data collection process has been completed. Data collection has been completed. Once the data has reached saturation, the interview data does not reveal new issues.

2.5 Data analysis

The raw data was subjected to triangulation for summarizing and analyzing material data. The reliability of the data was ensured, and the research was categorized into four distinct groups based on the observed data.

Data triangulation: The practice of data triangulation involves the integration of data from multiple sources across time. This practice guarantees the reliability and accuracy of the gathered information.

Investigator triangulation: The technique of investigator triangulation was applied to analyze both the procedures and outcomes of the study, to mitigate potential biases, and to enhance the overall credibility of the research.

Theory triangulation: The theory triangulation method entails using relevant theoretical concepts to examine factual information. The process of analyzing and deriving conclusions in research is crucial to prevent limiting findings to a single theoretical viewpoint.

Methodological triangulation: The research methodology employed employed a combination of diverse methods or data sources to augment the credibility and dependability of conclusions. Utilizing a variety of data collection methods is essential for improving the thoroughness and precision of the acquired information.

3. RESULT AND DISCUSSION

The research findings confirmed the study's aim to elucidate the learning capacities associated with culinary competition skills in Bachelor of Home Economics Programme students. Students identify their innate talents, which can be classified into four specific areas.

3.1 Self-development

The students who play essential roles have identified the possibility of acquiring understanding through culinary competitions, where self-development efforts and skill enhancement attain personal growth. Instances occur when students are specifically singled out for attention or scrutiny. Knowledge acquisition through direct

experiential learning is facilitated by encountering and resolving obstacles. Self-development catalysis is acquiring knowledge and engaging in a pursuit of learning from diverse educational resources. It encompasses cultivating critical thinking skills in real-world contexts by employing various approaches or techniques, such as participating in networked learning to exchange knowledge with experts by actively engaging in the process of actively seeking and considering the perspectives and viewpoints of others, maintaining a receptive mindset towards acquiring novel knowledge and insights, and continuously cultivating one's abilities and competencies to address challenges and promote development successfully. The involvement of students as primary participants in culinary competitions has showcased their learning capacity. These competitions serve as a platform for self-development, as students actively try to enhance their skills. The individuals have acquired the skill of extracting valuable insights from encountered challenges and doing thorough investigations to identify practical solutions.

This discovery was consistent with prior studies showing that problem-based learning (PBL) is an educational method focused on investigating and addressing real value problems. This educator can promote directed learning and knowledge acquisition in students. Using diverse learning resources and real-world challenges can facilitate the self-development of analytical abilities and critical thinking for problem-solving (Polyiem & Nuangchalerm, 2022). The efficacy of learning and personal development through active engagement indicates success and fosters the acquisition of skills necessary for efficiently improving life skills (Caingcoy et al., 2021). Participating in cooking competitions allows students to consistently enhance their critical thinking skills in real-life economies and efficiently cooperate with other contestants, promoting ongoing personal development. When faced with obstacles, students can utilize scientific and artistic knowledge to produce creative ideas. Most students are motivated to try new things and are willing to work together, have fun, and be team members, as was discovered through STEAM education. The present national initiatives in Thailand are primarily centered on advancing STEM education, encompassing the disciplines of science, technology, engineering, and mathematics. The objective is to equip the forthcoming generation with enhanced skills and knowledge, enabling them to contribute effectively to society and the workforce (Pitipornatapin et al., 2018; Polmart & Nuangchalerm, 2023). Empirical evidence from prior research on human capital orientation has shown that it is a crucial determinant of creativity and organizational innovation performance (Thatrak, 2021).

3.2 Self-efficacy

The student's sources indicated that participating in a cooking competition could lead to the collection of knowledge. The student's belief that they can improve their skills in a variety of perceptual areas served as the foundation for the discovery. The term "expressive efficacy" refers to the ability to solve problems in a distinctive way. This study aims to investigate the relationship between situational attention, self-efficacy, perceived challenge difficulty, anticipated task changes, awareness of mental concerns, recognition of one's physical abilities, recognition of one's specific abilities, and recognition of abilities in various domains of oneself. This study aims to investigate the relationship between these factors. These individuals have completed the self-efficacy evaluation, which establishes a link between the identified outcomes and their future performance. It impacts specific functions that are responsible for achieving goals. Student self-efficacy is the confidence that students have in their ability to effectively fulfill their academic responsibilities, even in the face of distractions or challenges.

This aligns with the growing emphasis on developing problem-solving abilities in nursing students, as guided by social problem-solving frameworks. The topic of concern was social problem-solving. Resilience and self-efficacy contribute to individuals decreasing stress on their cognitive processes (Şenocak & Demirkıran, 2023). Furthermore, the perception of self-efficacy among adolescents is an essential consideration. This confers distinct capabilities that could enhance cognitive functioning across several domains, mitigating the risk of mental well-being impairments in adolescents (Andretta & McKay, 2020). The relationship between students enrolled in the Bachelor of Home Economics program engaging in rehearsing before a competition and its impact on their perception is noteworthy. Consistent with the research findings, a positive correlation was observed between those possessing self-efficacy and positive cooking attitudes and their cooking behaviour, specifically regarding cooking frequency (Oleschuk et al., 2023). Research has shown that university students who complete the STEAM Incorporating Creativity Training Course demonstrate a higher likelihood of effectively solving challenges across diverse contexts and experiencing an enhancement in their creative self-efficacy (Gu et al., 2023). A study of adolescents' English language learning achievements and their intention to make future choices. The study's

findings indicate that self-efficacy, and effort costs are crucial in enhancing students' educational motivation (Zhang et al., 2023).

3.3 Self-awareness

Self-awareness refers to the cognitive process in which students understand their capabilities, acknowledge their perception of themselves within the societal context, and maintain an ongoing awareness of their self-awareness when confronted with challenges. Furthermore, it entails recognizing the perspective through which they approach the difficulties encountered during persistent distress. This heightened self-awareness catalyzes acquiring effective problem-solving strategies, fostering skill development across various domains, and ultimately facilitating a constructive state of consciousness. Participating in cooking competitions helps pupils develop self-awareness and confidence. Demonstrating enthusiasm can enhance emotional intelligence.

The phenomena of human beings acting on something through self-awareness is a characteristic of the emotional subsystem. This status was characterized as its fundamental establishment whenever the body reacts under the influence of this cognitive awareness (Arai & Takeno, 2018). Strategies for teaching pupils how to develop problem-solving abilities to enhance the quality of education. To improve problem-solving and interpersonal skills effectively, it is crucial to develop learners' self-awareness. This is because self-awareness directly impacts cognitive learning and emotional abilities (Farashahi & Tajeddin, 2018). There is a continuous association when pupils feel overwhelmed by their self-awareness and eagerness to study. It fosters self-awareness that dramatically influences the choice to persist in constructive learning (Yao et al., 2022). Enhancing pupils' practical communication skills: Pupils must cultivate self-awareness. Quantitative and qualitative research demonstrate that enhancing collaborative behavior positively affects successful collaboration (Campbell et al., 2022). Engaging in practical tasks enables pharmacy students to develop self-awareness. Working with activities that promote introspective self-awareness, acceptance, and proactive enthusiasm can enhance emotional intelligence and interpersonal skills. These activities contribute to the self-awareness of learners (Mounce & Culhane, 2021).

3.4 Self-esteem

The conceptualization of students' potential for self-esteem refers to their capacity to acquire knowledge and understanding according to the construct of self-esteem. Self-esteem encompasses acceptance and belief in one's inherent value and the recognition and appreciation of one's actions and accomplishments. When engaging in an activity, it is essential to note that the desired outcomes may not be achieved. When adolescents possess a sense of self-satisfaction that they think is adequate, maintaining a growth mindset can be helped by acquiring momentum. The emotional state of students impacts their self-esteem. This fosters the development of a distinctly optimistic self-image in individuals. Developing a profound level of mastery in their knowledge and skills enables pupils to enhance their self-esteem.

They can cultivate success in various domains of life. The implementation of training methodologies and psychological interventions has advanced. Individuals do not need to focus exclusively on adolescents to increase their understanding of issues. This finding demonstrates that pupils can enhance their self-esteem levels without experiencing heightened levels of anxiety (Winarsunu et al., 2023). Students enhance their self-esteem and develop their meta-cognitive awareness by effectively exchanging questions with others during experiential learning, interaction, and activities that promote the development of skills such as organizing, judging, summarizing information, and focusing on the most critical parts of the learning materials (Rashwan et al., 2021). Participating in culinary competitions allows students to encounter various difficulties, complexities, and stress, which drives them to enhance their self-awareness constantly. Relates to the effectiveness of enhancing one's self-esteem. Studies indicate that implementing a strategy to enhance self-esteem is effective in addressing depressive symptoms among individuals with psychiatric disorders (Zabel et al., 2022). Though pupils possess a sense of self-esteem and confidence, it enhances their emotional intelligence, which is of utmost significance and worth in ensuring students' success (Alipour et al., 2024). Looking at the short-term link between momentary self-esteem, changes in self-esteem, and daily mental experiences suggests that self-esteem may be a critical mechanism that can be addressed by short-term interventions, resulting in observable emotional states in real life in order to lessen the intensity of mental phenomena and stop the progression of illnesses that arise from the intensity of mental phenomena in their early stages (Postma et al., 2021). Efforts to prevent emotional problems and enhance adolescent self-esteem can be achieved through multiple strategies, such as promoting leadership, engaging in extracurricular activities, and providing cognitive behavioral therapy. By offering emotional intelligence training,

adolescents can gain awareness of the impact and effectiveness of these interventions (Ramadani & Keliat, 2021). Experiments performed with students from the university's medical faculty demonstrate a clear beneficial relationship between better self-esteem and academic accomplishment, even if the overall average emotional intelligence score is not achieved. Therefore, the curriculum must provide support to students in developing their self-esteem (Alipour et al., 2024).

The research results demonstrated that the investigation aimed to improve students' academic performance in the Bachelor of Home Economics program by incorporating culinary competition skills. Knowledge acquisition will be promoted through educational processes as described as follows:

3.5 Brain-based learning processes

The human brain regulates physiological processes. The brain is the organ responsible for the development of learning. Body processes involve several techniques for preparing food, including cooking. Body processes are the systems that drive the process of learning. When students engage in cooking competitions, the brain, a complex organ, regulates the body's responses to environmental stimuli via the central nervous system. This technique involves using the five senses vision, touch, hearing, smell, and taste - to collect information and aid learning. Physical perception aids in transferring information to pupils' cognitive faculties, promoting comprehension and the development of physical skills. It is a phenomenon that enables the spontaneous learning of knowledge.

When students' brains control the actions of the sensory system for bodily functions such as eyes, ears, hands, nose, tongue, and mouth, tasting, smelling, and cooking, this results in skill development. This improves cognitive processes, as it is consistent with research that suggests that instructors who engage in practical activities such as baking, which include hands-on experience, can learn and apply life skills better (Caingcoy et al., 2021). Human learning develops when the brain integrates information with physiology. Furthermore, it exerts a beneficial influence on advanced levels of cognition (Tüfekçi & Demirel, 2009). The student's learning process is influenced by a beneficial environment that promotes optimal brain function, motivation, positive attitude, and academic achievement (Duman, 2010). Experiential learning was the outcome of the knowledge creation process, in which learners utilized their prior experiences to develop new learning. During this process, individuals with unique attributes search for significance by detecting patterns, employing many concurrent brain regions (Wilson et al., 2023).

3.6 Intellectual processes

Developing skills and knowledge comprehension was crucial in facilitating students' cognitive growth and maturation. The brain exhibits a systematic and strategic process of development. According to student feedback, engagement in experiential learning activities has been associated with various positive outcomes. These include enhanced creative thinking abilities, tangible progress in tasks, compelling expression of distinct viewpoints, improved emotional resilience, the capacity to devise viable solutions for complex problems, and the cultivation of perseverance, contributing to successful information management. Culinary competitions have incorporated intellectual processes that directly involve students or have evident implications of significance for them. The increase in interest in culinary competitions and the desire to encourage more competitions among students in the Bachelor of Home Economics program are the main reasons for this. Comprehension of complex and challenging circumstances can skillfully utilize their cognitive abilities to examine material via logical deduction. They meticulously assess the many elements of the data and employ problem-solving methodologies to reach solutions. There is precise and methodical labor that is well organized (Polyiem & Nuangchalerm, 2022). Examining an individual's beliefs about the attributes linked to implicit intelligence concepts. Studies indicate that cognitive characteristics are affected by age and gender, resulting in noteworthy consequences that must be understood concerning theoretical and practical results. There is a strong association between an individual's self-esteem and self-efficacy (Diseth et al., 2014). Whenever attaining an elevated stage of proficiency in perception, the learner develops a strong sense of self-awareness through cognitive processes, primarily utilizing concept memory. Integrating causal solutions and decision-making approaches (Parr, 2019). Emotional intelligence can be attributed to human understanding. Increased awareness fosters self-development and enhances interpersonal abilities (Mounce & Culhane, 2021).

3.7 Mental processes

Adolescents' anticipations of achieving favorable outcomes enhance and activate the body's preparedness to influence the mind. The concept mentioned above revolves around recognizing intrinsic worth, whereby individuals cultivate affirmative vitality to assume the role of knowledge generators. This entails fostering a

mindset imbued with self-assurance, comprehending the necessity of relinquishing encountered challenges and cultivating personal motivation to facilitate the augmentation of one's educational pursuits. A cognitive condition experienced by the student. The phenomenon under consideration significantly correlates with alterations in cognitive processes and emotional states, resulting in reduced stress experienced by students and facilitating the uninhibited manifestation of their cognitive tendencies in educational endeavors' that facilitate the acquisition of knowledge and skills.

The mental method is associated with physiological function since it entails the activation of the brain and the senses through manual manipulation and visual perception. This stimulation might lead to either an augmentation or a diminution in response to activities (Pamplona et al., 2022). Individuals with a deep understanding of the learning process require mental growth that includes the motivation to continue acquiring knowledge, a specific inclination towards understanding revolutionary ideas, and the establishment of fundamental behavioral patterns to achieve goals within the learner's mind (Engeness, 2020). Adolescents' mental well-being can be impacted by psychological capital and self-esteem. This study aimed to assess the correlation between self-esteem issues and self-esteem problems. Furthermore, self-esteem is a reliable indicator of the fluctuating levels of emotional and behavioral issues in teenagers. Evaluating self-esteem is a crucial factor in predicting emotional and behavioral issues among adolescents. It is strongly linked to self-esteem, which in turn can improve the mental well-being of adolescents (Gujar & Ali, 2019).

3.8 Theoretical conclusions based on findings

The researchers derived theoretical implications from the experimental data by examining the concept of potential and the method of improving learning via culinary contests to equip students with skills. The findings reiterated the importance of experiential learning in education and illustrated how competitive settings may cultivate collaboration, innovation, and analytical skills among students. Ultimately, the data indicate that including culinary contests in the curriculum may substantially improve student involvement (Figure 1).

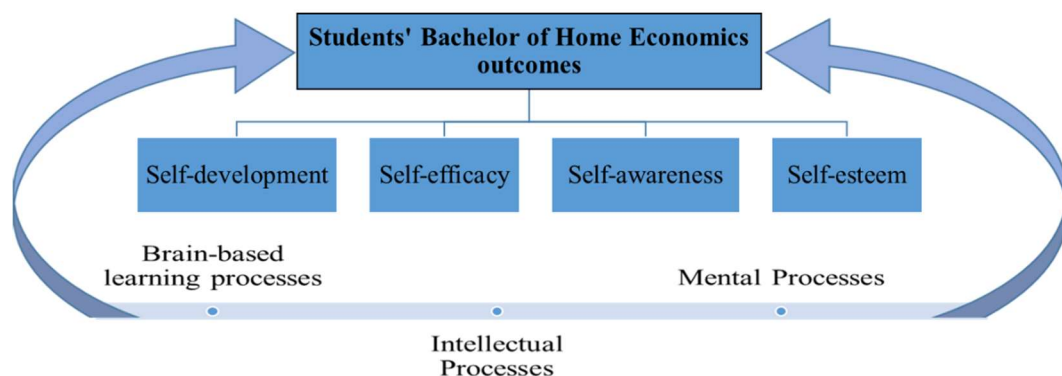


Figure 1 The discoveries and conclusions of theory by bachelor of Home Economics students

1. Individuals who generate knowledge through self-development and advancement utilize cognitive abilities to pursue knowledge actively with assurance and persistent dedication, employing a systematic approach incorporating personal ideas and experiential insights.

2. The students showed an overwhelming feeling of self-efficacy, which is the belief in one's capability to effectively complete a task. When acquiring knowledge is associated with the sensory faculties, it traverses the essential physiological organs of the human body, encompassing the visual system, the tactile system, the auditory system, the olfactory system, and the gustatory system, facilitates pupils' complete understanding of the material, leading to their acquisition of the capacity to apply knowledge until it becomes a distinctive skill.

3. The driving factor that motivates students to strive for success is using learner-generated strategies to cultivate self-awareness and develop a comprehensive understanding of many subjects, enabling students to effectively identify and employ learning techniques and skills, from culinary expertise to physical and mental reinforcement.

4. When students cultivate self-esteem, they experience a sense of inspiration, inner joy within their psyche, and a typical physiological response, promotes motivation, facilitates conflict resolution, and facilitates task completion in the face of impediments.

4. CONCLUSION

The study established the principles of enhancing skills and knowledge through culinary competitions among students enrolled in a Bachelor of Home Economics program. These contributions showcase the potential of fundamental theory by utilizing four distinct categories of concepts. Self-development is essential to education because it allows students to cultivate a sense of esteem before acquiring new knowledge and skills. This facilitates the motivation to engage in intentional actions and cultivate a sense of self-efficacy. To foster self-awareness in a meaningful manner, pupils must possess a clear comprehension and understanding of their actions. Developing a sense of self-esteem and confidence enables individuals to effectively engage in the process of acquiring knowledge and addressing complex challenges. Cognitive processes and reinforcement mechanisms aid in knowledge acquisition and skill development. The reinforcing process facilitates the acquisition and development of knowledge and abilities. After participating in cooking competition activities, we can examine the learning process from three distinct perspectives: the brain-based learning process, which involves physical actions; the intellectual process, which involves intellectual capabilities; and the mental process, which facilitates learning.

REFERENCES

- Alipour, N., Sangi, S., Babamiri, M., & Arman, P. (2024). Investigating the relationship between emotional intelligence and self-esteem with educational performance in paramedical students. *Medicina Clinica Practica*, 7(1), 100398.
- Andretta, J. R., & McKay, M. T. (2020). Self-efficacy and well-being in adolescents: A comparative study using variable and person-centered analyses. *Children and Youth Services Review*, 118, 105374.
- Arai, S., & Takeno, J. (2018). Discussion on explicit consciousness, sub-consciousness, and self-awareness in a conscious system. *Procedia Computer Science*, 123, 35-40.
- Biddle, S. J. H., Ciaccioni, S., Thomas, G., & Vergeer, I. (2019). Physical activity and mental health in children and adolescents: An updated review of reviews and an analysis of causality. *Psychology of Sport and Exercise*, 42, 146-155.
- Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, 2(1), 14.
- Caingcoy, M. E., Pacursa, J. L., & Adajar, M. I. W. (2021). Effectiveness of the alternative learning system informal education project and the transfer of life skills among ALS teachers: A case study. *International Journal of Community Service & Engagement*, 1(3), 88-98.
- Campbell, T., Gooden, C., Smith, F., & Yeo, S. (2022). Supporting college students to communicate productively in groups: A self-awareness intervention. *International Journal of Educational Research Open*, 3, 100213.
- Diseth, Å., Meland, E., & Bredablik, H. J. (2014). Self-beliefs among students: Grade level and gender differences in self-esteem, self-efficacy and implicit theories of intelligence. *Learning and Individual Differences*, 35, 1-8.
- Duman, B. (2010). The effects of brain-based learning on the academic achievement of students with different learning styles. *Educational Sciences: Theory & Practice*, 10(4), 2077-2103.
- Engeness, I. (2020). Lecture 13. The process of internalisation. Theoretical and practical implications of the study on the phases of the development of mental actions. *Learning, Culture and Social Interaction*, 27, 100433.
- Farashahi, M., & Tajeddin, M. (2018). Effectiveness of teaching methods in business education: A comparison study on the learning outcomes of lectures, case studies and simulations. *International Journal of Management Education*, 16(1), 131-142.
- Glaser, B., & Strauss, A. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge.
- Gu, X., Tong, D., Shi, P., Zou, Y., Yuan, H., Chen, C., & Zhao, G. (2023). Incorporating STEAM activities into creativity training in higher education. *Thinking Skills and Creativity*, 50, 101395.
- Gujar, N., & Ali, A. (2019). Effects of psychological capital and self-esteem on emotional and behavioral problems among adolescents. *Journal of Mental Health and Human Behaviour*, 24(2), 85-90.
- Lekfuangfu, W. N., & Nakavachara, V. (2021). Reshaping Thailand's labor market: The intertwined forces of

- technology advancements and shifting supply chains. *Economic Modelling*, 102, 105561.
- Ligita, T., Harvey, N., Wicking, K., Nurjannah, I., & Francis, K. (2020). A practical example of using theoretical sampling throughout a grounded theory study: A methodological paper. *Qualitative Research Journal*, 20(1), 116-126.
- Mounce, M., & Culhane, N. (2021). Utilization of an emotional intelligence workshop to enhance student pharmacists' self-awareness. *Currents in Pharmacy Teaching and Learning*, 13(11), 1478-1483.
- Nantharajphong, K., & Siriwong, P. (2018). The social construction of meanings, source of meanings and self-leadership development process of generation Z: research for constructing grounded theory. *Journal of Education Studies*, 46(3), 1-28.
- Nuutila, K., Tapola, A., Tuominen, H., Molnár, G., & Niemivirta, M. (2021). Mutual relationships between the levels of and changes in interest, self-efficacy, and perceived difficulty during task engagement. *Learning and Individual Differences*, 92, 102090.
- Oleschuk, B. M., Choi, H. Y., Ellison, B., & Pflugh Prescott, M. (2023). Associations between cooking self-efficacy, attitude, and behaviors among people living alone: A cross-sectional survey analysis. *Appetite*, 189, 106999.
- Pamplona, G. S. P., Hardmeier, M., Younes, S., Goy, I., Fornari, E., & Ionta, S. (2022). Vision- and touch-dependent brain correlates of body-related mental processing. *Cortex*, 157, 30-52.
- Parr, W. V. (2019). Demystifying wine tasting: Cognitive psychology's contribution. *Food Research International*, 124, 230-233.
- Pitipornatapin, S., Chantara, P., Srikoorn, W., Nuangchalerm, P., & Hines, L. M. (2018). Enhancing Thai in-service teachers' perceptions of STEM education with tablet-based professional development. *Asian Social Science*, 14(10), 13-20.
- Polmart, P., & Nuangchalerm, P. (2023). Promoting productive thinking and physics learning achievement of high school students through STEAM education. *Journal of Green Learning*, 3(1), 27-35.
- Polyiem, T., & Nuangchalerm, P. (2022). Self-development of teacher students through problem-based learning. *Journal of Educational Issues*, 8(1), 747-756.
- Postma, M. R., van Amelsvoort, T., Myin-Germeys, I., Gayer-Anderson, C., Kempton, M. J., Valmaggia, L., McGuire, P., Murray, R. M., Garety, P., Wykes, T., Morgan, C., & Reininghaus, U. (2021). Across the continuum: Associations between (fluctuations in) momentary self-esteem and psychotic experiences. *Schizophrenia Research*, 238, 188-198.
- Ramadani, F. H. E., & Keliat, B. A. (2021). Relationship between emotional problems with self-esteem in adolescents. *Enfermeria Clinica*, 31, S190-S194.
- Rashwan, Z. I., Busebaia, T. J., AL-Sabbagh, A. S., & Eweida, R. S. (2021). Effect of guided reciprocal peer questioning strategy on pediatric nursing students' self-esteem and metacognitive awareness: Current approach and future directions. *Nurse Education Today*, 107, 105153.
- Saratapan, N., Pitipornatapin, S., & Hines, L. M. (2019). Enhancing pre-service teachers' integration of STEM education into home economics lessons through a professional development program. *International Education Studies*, 12(8), 11-20.
- Şenocak, S. Ü., & Demirkiran, F. (2023). Effects of problem-solving skills development training on resilience, perceived stress, and self-efficacy in nursing students: A randomised controlled trial. *Nurse Education in Practice*, 72, 103795.
- Serirak, C., Butakhiao, C., Rungruangsilp, R., Intarak, P., Intarak, S., Wongsamut, P., & Minister, P. (2021). Strategy map under Thailand's national strategy at the provincial level. *Journal of Humanities and Social Sciences Thonburi University Abstract*, 15(2), 33-43.
- Thatrak, D. (2021). Human capital orientation, employee creativity development, organizational innovation capabilities, and outstanding performance of SMEs businesses in Thailand. *International Journal of Economics and Business Administration*, 9(2), 126-142.
- Tüfekçi, S., & Demirel, M. (2009). The effect of brain based learning on achievement, retention, attitude and learning process. *Procedia - Social and Behavioral Sciences*, 1(1), 1782-1791.
- Wilson, A., Ramanair, J., & Rethinasamy, S. (2023). English as a second language (ESL) teacher brain-based learning classroom practices and perceptions in Malaysian schools. *Social Sciences & Humanities Open*, 8(1), 100682.

- Winarsunu, T., Iswari Azizaha, B. S., Fasikha, S. S., & Anwar, Z. (2023). Life skills training: Can it increase self-esteem and reduce student anxiety? *Heliyon*, *9*(4), e15232.
- Yao, Y., Wang, P., Jiang, Y. J., Li, Q., & Li, Y. (2022). Innovative online learning strategies for the successful construction of student self-awareness during the COVID-19 pandemic: Merging TAM with TPB. *Journal of Innovation and Knowledge*, *7*(4), 100252.
- Zabel, K., Goldbach, N., Fröhlich, U., Schneider, E., Görgülü, E., & Oertel, V. (2022). Enhancing self-esteem through cognitive behavioural group therapy - a randomized feasibility study of a transdiagnostic approach in psychiatric care. *Journal of Affective Disorders Reports*, *10*, 100414.
- Zhang, L., Jiang, Y., & Chen, S. (2023). Longitudinal interrelations among self-efficacy, interest value, and effort cost in adolescent students' English achievement and future choice intentions. *Contemporary Educational Psychology*, *73*, 102176.