

อิทธิพลของความรู้และความเข้าใจเกี่ยวกับเป้าหมายการพัฒนาที่ยั่งยืนต่อการบูรณาการ
เป้าหมายการพัฒนาที่ยั่งยืนในการปฏิบัติงานวิชาชีพของบุคลากรทางการศึกษาใน
สถาบันอุดมศึกษาเอกชนในกรุงเทพมหานคร

The Influence of SDG Knowledge and Understanding on SDG Integration in Professional
Practice Among Educational Personnel in Private Higher Education Institutions in Bangkok

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บทคัดย่อ

บทความวิจัยนี้มีวัตถุประสงค์เพื่อ (1) ศึกษาระดับความรู้ ความเข้าใจและการบูรณาการเป้าหมายการพัฒนาที่ยั่งยืน (SDGs) ของบุคลากรทางการศึกษา (2) เปรียบเทียบความรู้ ความเข้าใจและการบูรณาการ SDGs จำแนกตามลักษณะประชากรศาสตร์ และ (3) วิเคราะห์อิทธิพลของความรู้ ความเข้าใจที่มีต่อการบูรณาการ SDGs ในการปฏิบัติงานวิชาชีพ เครื่องมือที่ใช้ คือ แบบสอบถาม กลุ่มตัวอย่าง ได้แก่ บุคลากรทางการศึกษาจำนวน 400 คน จากสถาบันอุดมศึกษาเอกชนที่ได้รับการคัดเลือกในกรุงเทพมหานคร โดยใช้วิธีการสุ่มตัวอย่างแบบหลายขั้นตอน วิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณนา การทดสอบทีสำหรับกลุ่มตัวอย่างที่เป็นอิสระต่อกัน การวิเคราะห์ความแปรปรวนทางเดียว และการวิเคราะห์ถดถอยพหุคูณ

ผลการวิจัย พบว่า กลุ่มตัวอย่างมีความรู้และความเข้าใจเกี่ยวกับ SDGs อยู่ในระดับมาก มีการบูรณาการ SDGs ในการปฏิบัติงานวิชาชีพอยู่ในระดับมาก และเมื่อเปรียบเทียบตามลักษณะทางประชากรศาสตร์ ไม่พบความแตกต่างอย่างมีนัยสำคัญทางสถิติ ($p > .05$) ผลการวิเคราะห์ถดถอยพหุคูณ พบว่า ความรู้เกี่ยวกับ SDGs ($\beta = .130, p < .001$) และความเข้าใจเกี่ยวกับ SDGs ($\beta = .160, p < .001$) สามารถร่วมกันพยากรณ์การบูรณาการ SDGs ในการปฏิบัติงานวิชาชีพได้อย่างมีนัยสำคัญทางสถิติในทิศทางบวก โดยสามารถอธิบายความแปรปรวนได้ร้อยละ 28.1 ($R^2 = .281$) ดังนั้น การส่งเสริมความรู้และความเข้าใจเกี่ยวกับ SDGs ผ่านการพัฒนาวิชาชีพอย่างต่อเนื่องและการสนับสนุนจากสถาบัน อาจช่วยเพิ่มประสิทธิผลในการนำแนวทางการพัฒนาที่ยั่งยืนไปประยุกต์ใช้ในการปฏิบัติงาน

คำสำคัญ: เป้าหมายการพัฒนาที่ยั่งยืน (SDGs); ความรู้เกี่ยวกับ SDGs; ความเข้าใจเกี่ยวกับ SDGs;

การบูรณาการ SDGs; บุคลากรในสถาบันอุดมศึกษา

ประเภทบทความ: บทความวิจัย

Abstract

This research article aims to examine the levels of SDG knowledge, understanding, and integration among educational personnel; to compare these variables across demographic characteristics; and to investigate the influence of knowledge and understanding on SDG integration in professional practice. A questionnaire was employed as the research instrument. Data were collected from a sample of 400 educational personnel in selected private higher education institutions in Bangkok using a multi-stage sampling technique. Descriptive statistics, independent-samples t-tests, one-way ANOVA, and multiple regression analysis were used for data analysis.

Findings are as follows : the sample demonstrated high levels of SDG knowledge and understanding, and their SDG integration in professional practice was also at a high level. No statistically significant differences were found across different demographic characteristics ($p > .05$). Furthermore, multiple regression analysis indicated that SDG knowledge ($\beta = .130$, $p < .001$) and SDG understanding ($\beta = .160$, $p < .001$) significantly and positively predicted SDG integration, jointly explaining 28.1% of the variance ($R^2 = .281$). Therefore, strengthening these cognitive dimensions through continuous professional development and institutional support may enhance the implementation of sustainable development practices.

Keywords: Sustainable Development Goals (SDGs); SDG Knowledge; SDG Understanding; SDG Integration; Higher Education Personnel

Type of Article: Research Article

Introduction

Achieving the Sustainable Development Goals (SDGs) has become a global priority, with higher education institutions (HEIs) recognized as key drivers in advancing sustainable development through education, research, institutional governance, and community engagement (UNESCO, 2023; Avelar et al., 2025). Recent international studies indicate that although many universities have incorporated the SDGs into institutional strategies and sustainability policies, effective implementation at the operational level remains inconsistent because educational personnel often lack sufficient competencies to translate sustainability principles into everyday professional practice (Pais et al., 2023; Sarkis & Ibrahim, 2022). Previous research has demonstrated that sustainability knowledge positively influences awareness and attitudes toward sustainable development; however, evidence also confirms the existence of

a persistent knowledge–action gap, whereby possessing knowledge alone does not necessarily result in successful implementation without adequate understanding, institutional support, and practical competencies (Leal Filho et al., 2019; Omisore et al., 2017; Petrushenko & Vorontsova, 2020). Despite increasing scholarly attention to Education for Sustainable Development (ESD), recent studies have predominantly examined students' sustainability competencies, whereas empirical evidence concerning educational personnel remains limited, particularly regarding how knowledge and understanding jointly contribute to the integration of SDGs into professional practice. This represents an important research gap requiring further empirical investigation.

In Thailand, both public and private higher education institutions have increasingly aligned their strategic plans with the Sustainable Development Goals in response to national development policies and international sustainability agendas. Nevertheless, successful implementation depends largely on educational personnel, including academic staff, administrators, and support personnel, who are responsible for integrating sustainability into teaching, institutional management, and organizational operations (Worapongpat, 2026a; Worapongpat, 2026b). Private higher education institutions in Bangkok represent an appropriate research setting because they operate under highly competitive educational environments while simultaneously responding to quality assurance requirements, stakeholder expectations, and sustainable development policies. Although several studies have investigated sustainability awareness, environmental attitudes, or SDG-related competencies among university students, relatively few empirical studies have examined educational personnel as the principal actors responsible for institutional implementation. Consequently, there remains insufficient evidence explaining whether SDG knowledge and understanding significantly influence the practical integration of sustainability into professional responsibilities within private higher education institutions in Bangkok.

To address this research gap, this study aims to examine the influence of Sustainable Development Goals (SDG) knowledge and SDG understanding on the integration of SDGs into professional practice among educational personnel in private higher education institutions in Bangkok, Thailand. A quantitative research approach employing survey methodology and multiple regression analysis was adopted to investigate the relationships among these variables. The findings are expected to provide empirical evidence supporting the development of professional training programmes, institutional sustainability policies, and

organizational strategies that strengthen Education for Sustainable Development (ESD) implementation within higher education institutions. Furthermore, the findings may contribute to both academic knowledge concerning sustainability competency development and practical guidance for university administrators, policymakers, and educational organizations seeking to promote sustainable institutional transformation.

This article is organized into five sections. Following this introduction, the literature review presents the theoretical foundations and relevant empirical studies. The methodology section describes the research design, participants, research instrument, and data analysis procedures. The results section reports the empirical findings, followed by the discussion, which interprets the findings in relation to previous studies and theoretical perspectives. Finally, the conclusion presents the key implications, practical recommendations, limitations, and directions for future research.

Objectives

1. To examine the level of Sustainable Development Goals (SDG) knowledge, SDG understanding, and the integration of SDGs into professional practice among educational personnel in private higher education institutions in Bangkok, Thailand.

2. To investigate the influence of Sustainable Development Goals (SDG) knowledge on the integration of SDGs into professional practice among educational personnel in private higher education institutions in Bangkok, Thailand.

3. To investigate the influence of Sustainable Development Goals (SDG) understanding on the integration of SDGs into professional practice among educational personnel in private higher education institutions in Bangkok, Thailand.

Literature Review

Sustainable Development Goals (SDGs) in Higher Education

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, comprise 17 interconnected goals designed to promote social equity, economic prosperity, and environmental sustainability. Within higher education, SDGs provide a strategic framework for integrating sustainability into teaching, research, institutional governance, and community engagement (United Nations, 2015; UNESCO, 2023). Universities are expected to contribute to multiple SDGs, particularly SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 17

(Partnerships for the Goals), through curriculum development, research activities, and institutional operations (UNESCO, 2020) , (UNESCO, 2023).

1. Knowledge of SDGs

Knowledge represents the foundation of sustainable development competencies and refers to individuals' familiarity with the concepts, objectives, and indicators of the SDGs. Educational personnel with adequate SDG knowledge are more likely to recognize sustainability challenges and understand the relevance of the 17 SDGs to higher education (UNESCO, 2023). Previous studies have consistently reported that sustainability knowledge positively influences awareness and readiness to engage in sustainable practices (United Nations, 2015). Nevertheless, knowledge alone may not be sufficient to promote behavioural change or organizational implementation because individuals often understand sustainability concepts only at a superficial level.(Worapongpat, 2025g).

2. Understanding of SDGs

Understanding extends beyond factual knowledge and reflects the ability to interpret, explain, and apply sustainability principles in professional contexts. According to Bloom's Taxonomy, understanding is an intermediate cognitive process that enables learners to connect theoretical knowledge with practical situations (United Nations, 2024). Education for Sustainable Development (ESD) further emphasizes that meaningful understanding promotes critical thinking, ethical decision-making, and responsible professional behaviour (SDSN, 2023). Consequently, educational personnel who possess deeper understanding are expected to integrate SDG principles more effectively into teaching, administration, and institutional development. (Smaniotto, et. al., 2020).

3. SDG Integration in Professional Practice

SDG integration refers to the incorporation of sustainability principles into routine professional activities, including curriculum design, research, institutional policies, resource management, and community engagement (Aleixo, 2018). In higher education institutions, successful SDG integration depends not only on institutional policies but also on the competencies and commitment of educational personnel (Leal Filho, W.,). Previous studies have confirmed that knowledge influences sustainability awareness; however, limited studies have examined whether knowledge can be translated into actual SDG implementation among university personnel. This knowledge–practice gap suggests that additional cognitive factors, particularly understanding, may be necessary for effective SDG integration (Lozano, R., 2015)

Research Gap and Conceptual Foundation

Although previous studies have investigated sustainability knowledge, awareness, or attitudes, most have focused on university students rather than educational personnel. Furthermore, existing research frequently examines knowledge and understanding as separate constructs, while limited empirical evidence explains how these cognitive dimensions jointly influence SDG integration in professional practice. (Omisoire, et. al., 2017). This limitation restricts understanding of how educational personnel transform sustainability knowledge into practical implementation within higher education institutions. (Worapongpat, 2025f).

To address these gaps, the present study adopts Bloom's Taxonomy and the Education for Sustainable Development (ESD) framework to examine the relationships among knowledge, understanding, and SDG integration. Knowledge is conceptualized as the foundational cognitive component, understanding represents higher-order cognitive processing, and SDG integration reflects the practical application of sustainability principles in professional contexts. By investigating these relationships among educational personnel in private higher education institutions in Bangkok, this study provides empirical evidence that contributes to the advancement of sustainable development in higher education.

Conceptual Framework

This study employs a quantitative research design to examine the influence of knowledge and understanding on the integration of the Sustainable Development Goals (SDGs) in professional practice. The conceptual framework is developed based on (Niyomthanawat, Worapongpat, 2025). (Chao, et. al., 2023). and the Education for Sustainable Development (ESD) framework, which emphasize the progression from knowledge acquisition to understanding and ultimately to application or integration.

The conceptual framework consists of the following components:

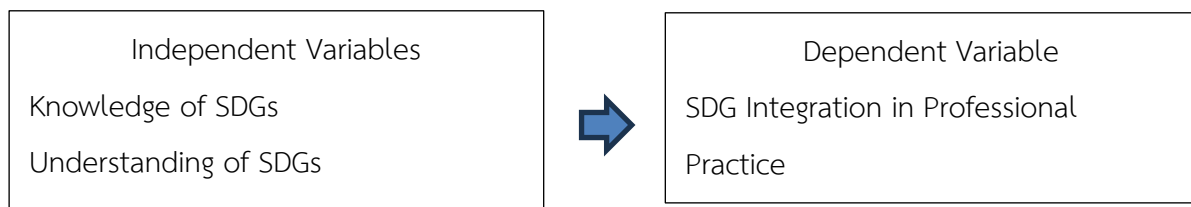


Figure 1 illustrates the conceptual framework of this study. Knowledge and understanding are hypothesized to have direct positive influences on SDG integration in professional practice. In addition, the institutional context is considered a supporting factor that may facilitate or constrain the integration process.

Research Hypotheses

H1: Sustainable Development Goals (SDG) knowledge has a significant positive influence on the integration of SDGs into professional practice among educational personnel in private higher education institutions in Bangkok, Thailand.

H2: Sustainable Development Goals (SDG) understanding has a significant positive influence on the integration of SDGs into professional practice among educational personnel in private higher education institutions in Bangkok, Thailand.

Methodology

This study employed a quantitative research design to investigate the influence of knowledge and understanding on the integration of the Sustainable Development Goals (SDGs) into professional practice among educational personnel in private higher education institutions in Bangkok.

Population and Sample

The target population comprised educational personnel, including academic staff, administrators, and support personnel, employed in selected private higher education institutions in Bangkok. The required sample size was determined using G*Power 3.1 for multiple linear regression analysis. Assuming a medium effect size ($f^2 = 0.15$), a significance level of $\alpha = .05$, statistical power ($1 - \beta$) = .95, and two predictor variables (knowledge and understanding), the minimum required sample size was 107 participants. To improve the precision of parameter estimates, increase statistical power, and compensate for potential incomplete or invalid responses, the sample size was increased to 400 participants.

A multi-stage sampling technique was employed. In the first stage, four private higher education institutions in Bangkok were purposively selected based on their accessibility and willingness to participate in the study. In the second stage, academic and administrative departments within each institution were identified. Finally, educational personnel were proportionally selected from each department.

Four institutions Dusit Thani College, Saint Louis College, Siam Technology College, and Thongsuk College were selected because they represent different types of private higher education institutions and had formally implemented sustainability- or SDG-related educational activities. In addition, each institution granted permission for data collection, ensuring accessibility and feasibility.

The required sample size was determined using Yamane's formula at a 95% confidence level and a 5% margin of error, resulting in a minimum sample size. To increase statistical power,

improve representativeness, and compensate for incomplete responses, the sample size was increased to 400 people.

A multi-stage sampling technique was employed. In the first stage, four private higher education institutions were purposively selected. In the second stage, academic and administrative departments were identified within each institution. Finally, respondents were proportionally selected from each department according to the number of educational personnel.

2. Research Instrument

The research instrument was a structured questionnaire developed from an extensive review of the Sustainable Development Goals (SDGs), the Education for Sustainable Development (ESD) framework, Bloom's Taxonomy, and related empirical studies.

The questionnaire consisted of four sections.

Section 1: Demographic characteristics, including gender, age, educational level, job position, work experience, and institutional affiliation.

Section 2: Knowledge of SDGs, consisting of 15 items designed to assess respondents' knowledge of the 17 Sustainable Development Goals and their relevance to higher education. Each correct response received one point, while incorrect or "don't know" responses received zero points. Total knowledge scores were converted into proportions ranging from 0 to 1 before statistical analysis.

Section 3: Understanding of SDGs, consisting of 10 items measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Section 4: SDG Integration in Professional Practice, consisting of 15 items measured using a five-point Likert scale.

Instrument Quality

Content validity was evaluated by three experts using the Index of Item–Objective Congruence (IOC). IOC values ranged from 0.67 to 1.00, exceeding the recommended criterion of 0.50.

A pilot study involving 30 educational personnel from a private higher education institution not included in the main sample was conducted to assess reliability.

Cronbach's alpha coefficients were as follows:

Construct	Number of items	Cronbach's α
Knowledge	15	0.81
Understanding	10	0.88
SDG Integration	15	0.91
Overall questionnaire	40	0.90

These values indicate satisfactory internal consistency.

Data Collection

Data were collected between Month–Month 2025 using both paper-based and online questionnaires. Approval for data collection was obtained from each participating institution before the survey commenced. Respondents received information regarding the objectives of the study, confidentiality of responses, voluntary participation, and their right to withdraw at any stage. Informed consent was obtained before questionnaire administration.

Data Analysis

Data were analyzed using SPSS Statistics Version. The analyses included: Descriptive statistics (frequency, percentage, mean, and standard deviation), Independent-samples *t*-tests, One-way Analysis of Variance (One-way ANOVA), Standard Multiple Regression Analysis (Enter Method)

The regression model was used to examine the influence of SDG knowledge and understanding on SDG integration in professional practice. Prior to regression analysis, assumptions regarding normality, multicollinearity, independence of errors, and homoscedasticity were examined and found to be satisfactory.

Interpretation Criteria For variables measured using the five-point Likert scale, the interpretation criteria were based

Mean	Interpretation
4.21–5.00	Very High
3.41–4.20	High
2.61–3.40	Moderate
1.81–2.60	Low
1.00–1.80	Very Low

For the knowledge variable, scores were interpreted according to the proportion of correct responses:

Score	Interpretation
0.80–1.00	High
0.60–0.79	Moderate
Below 0.60	Low

Results

Objective 1: To examine the levels of knowledge, understanding, and SDG integration

The results indicated that the overall level of SDG knowledge among educational personnel was at a high level. Among the five dimensions, the Planet dimension showed the highest mean score, followed by Peace, while People, Prosperity, and Partnership were at a moderate level.

The overall level of SDG understanding was at the highest level, with the Sufficiency Economy Philosophy dimension receiving the highest mean score, followed by national strategy.

Regarding SDG integration in professional practice, the overall level was high. Organizational responsibility showed the highest level, followed by local implementation and monitoring and evaluation.

Table 1 *presents the descriptive statistics of knowledge, understanding, and SDG integration.*

Dimension	Mean Proportion	SD	Interpretation
People	0.578	0.34	Moderate
Prosperity	0.539	0.32	Moderate
Planet	0.867	0.21	High
Peace	0.774	0.24	High
Partnership	0.481	0.27	Moderate
Overall	0.648	0.13	High

Objective 2: To compare differences across demographic characteristics

The results revealed that there were no statistically significant differences in knowledge, understanding, or SDG integration across demographic variables ($p > .05$). This indicates that SDG-related competencies were relatively consistent across different groups of educational personnel.

Table 2 presents the comparison of SDG variables by demographic characteristics.

Variable	Test	df	t/F	p
Gender	t-test	398	0.94	.962
Age	ANOVA	3,396	1.34	.262
Education	ANOVA	2,397	0.87	.420
Position	ANOVA	2,397	1.06	.348
Experience	ANOVA	4,395	0.91	.459

Objective 3: To analyze the influence of knowledge and understanding on SDG integration

The results of multiple regression analysis indicated that both knowledge and understanding had significant positive effects on SDG integration ($p < .001$).

Knowledge explained 18.2% of the variance in SDG integration ($R^2 = .182$), while understanding explained 11.0% ($R^2 = .110$). When combined, the two variables explained 28.1% of the variance ($R^2 = .281$).

The regression equation was: $\text{SDG Integration} = 4.111 + 0.240 (\text{Knowledge}) + 0.270 (\text{Understanding})$

These findings suggest that both knowledge and understanding are significant predictors of SDG integration among educational personnel.

Table 3 Multiple Regression Analysis of Knowledge and Understanding on SDG Integration

Predictor	B	SE	β	t	p	Tolerance	VIF
Constant	4.111	0.102	-	41.39	<.001	-	-
Knowledge	0.240	0.028	0.251	4.64	<.001	0.89	1.12
Understanding	0.270	0.034	0.264	4.71	<.001	0.89	1.12

$R=.530$ $R^2=.281$ Adjusted $R^2=.277$ $F(2,397)=77.50$ $p<.001$ Durbin-Watson=1.92

Discussion

The findings indicate that educational personnel in private higher education institutions demonstrated high levels of SDG knowledge, understanding, and professional integration. Rather than merely reflecting familiarity with sustainability concepts, these findings suggest that institutional environments play a significant role in developing sustainability competencies. (Worapongpat, 2025d). The widespread adoption of SDG-related policies, together with the integration of the Sufficiency Economy Philosophy and national development strategies into

higher education, may have contributed to creating shared learning experiences that strengthen both cognitive and practical competencies. (Worapongpat, 2025e). This interpretation is consistent with the Education for Sustainable Development (ESD) framework, which emphasizes that sustainability competencies are developed through continuous interaction between knowledge acquisition, institutional support, and practical application (UNESCO, 2023).

The findings also support Bloom's Taxonomy, which proposes that learning progresses from knowledge acquisition to understanding and ultimately to application (Worapongpat, 2025b). Educational personnel who possess higher levels of understanding are more likely to interpret sustainability concepts appropriately and apply them within teaching, administration, and institutional management. This explains why understanding demonstrated a meaningful relationship with SDG integration rather than functioning solely as an independent cognitive outcome.

The absence of statistically significant differences across demographic characteristics suggests that sustainability competencies are influenced more by organizational factors than by individual characteristics. Previous studies have reported that institutional commitment, organizational culture, and continuous professional development can reduce variations in sustainability competencies among educational personnel (Leal Filho et al., 2019). In contrast, some earlier studies found demographic differences in sustainability awareness, particularly regarding age and educational background (Aleixo et al., 2018). The discrepancy may be explained by the relatively standardized implementation of SDG-related policies and staff development programmes across the participating institutions, resulting in more homogeneous competencies regardless of demographic characteristics.

The regression analysis further demonstrated that SDG knowledge and understanding jointly predicted SDG integration in professional practice. These findings provide empirical support for the theoretical assumption that cognitive competencies constitute important antecedents of sustainable professional behaviour. (Worapongpat, 2025a). However, understanding appears to function as the mechanism through which knowledge is transformed into practice. This finding reinforces the widely discussed knowledge–action gap in sustainability research, indicating that possessing knowledge alone is insufficient to ensure behavioural change unless individuals are able to interpret, contextualize, and apply that knowledge effectively (Kanie, et. al., 2014).

Although the regression model was statistically significant, knowledge and understanding jointly explained only 28.1% of the variance in SDG integration. This finding indicates that approximately 71.9% of the variation remains unexplained by the present model, suggesting that

additional organizational and contextual factors may substantially influence SDG implementation. Variables such as organizational leadership, institutional policy, sustainability culture, administrative support, motivation, professional development opportunities, and resource availability may also contribute to successful SDG integration. Future research should therefore incorporate these variables to develop a more comprehensive explanatory model of sustainability practices within higher education institutions.

The present study contributes to the literature in several important ways. First, whereas previous research has predominantly examined SDG awareness and sustainability competencies among university students, this study focuses specifically on educational personnel, who play a central role in implementing sustainability within higher education institutions. (Worapongpat, 2025c) Second, the study integrates Bloom's Taxonomy and the Education for Sustainable Development framework into a single empirical model that explains how knowledge and understanding jointly influence SDG integration in professional practice. Third, the findings provide empirical evidence from private higher education institutions in Thailand, a context that has received relatively limited attention in previous sustainability research. These contributions extend current understanding of the cognitive mechanisms underlying SDG implementation and provide practical implications for strengthening institutional capacity-building programmes that promote sustainable development through education.

Knowledge Contribution

This study contributes to the field of Education for Sustainable Development (ESD) by providing an empirically supported framework that explains the role of cognitive factors in driving Sustainable Development Goals (SDG) integration among educational personnel in private higher education institutions.



Figure 2 illustrates this conceptual relationship, demonstrating how cognitive processes contribute to sustainability practices in higher education contexts.

The findings demonstrate that SDG integration is not the result of a single factor but emerges from a structured and sequential cognitive process involving knowledge and understanding. Specifically, knowledge serves as the foundational component that enables

individuals to recognize and acquire SDG-related concepts, while understanding represents a higher-order cognitive process that facilitates interpretation, contextualization, and application in professional practice.

Importantly, this study highlights that knowledge alone is insufficient to ensure effective SDG integration. Instead, understanding functions as a critical mechanism that transforms knowledge into actionable practices. This finding provides empirical support for the theoretical proposition derived from Bloom's Taxonomy, which emphasizes the progression from knowledge to understanding and ultimately to application.

Furthermore, the study extends existing literature by examining the combined influence of knowledge and understanding on SDG integration among educational personnel, a group that has received limited attention in prior research. By focusing on professional practice rather than student outcomes, this study offers a new perspective on how sustainability competencies are operationalized within institutional contexts.

In addition, the findings suggest that institutional factors, such as organizational policies, training programs, and work environments, may play a supportive role in facilitating or constraining the integration process. This highlights the importance of aligning individual cognitive development with institutional support mechanisms to achieve effective SDG implementation.

Recommendation

1. Suggestions for utilizing the research results

1.1 The results of research objective 1 found that educational personnel had a high level of knowledge and the highest level of understanding regarding SDGs, along with a high level of integration in professional practice.

Therefore, relevant agencies should promote continuous professional development programs, such as training workshops and curriculum integration, to further strengthen both knowledge and understanding of SDGs. In addition, institutions should embed SDGs into organizational policies and daily operations to sustain long-term implementation.

1.2 The results of research objective 2 found that there were no significant differences in knowledge, understanding, and SDG integration across demographic characteristics.

Therefore, relevant agencies should maintain and expand standardized SDG policies and practices across all departments and personnel groups. This includes creating shared learning platforms and institutional guidelines to ensure consistency and equal access to SDG-related resources.

1.3 The results of research objective 3 found that knowledge and understanding significantly influenced SDG integration. Therefore, relevant agencies should focus on enhancing both cognitive dimensions by designing learning systems that go beyond basic knowledge acquisition and emphasize critical thinking, interpretation, and practical application. This may include project-based learning, interdisciplinary collaboration, and experiential learning approaches.

2. Suggestions for future research

This research found that knowledge and understanding are key factors influencing SDG integration. However, the explanatory power of the model suggests that other variables may also play important roles. These may include attitudes, organizational support, leadership, and institutional culture.

For future research, studies should investigate additional variables that may influence SDG integration, such as behavioral factors and organizational context. Moreover, future studies should expand the sample to include public universities or institutions in other regions to enhance generalizability. Mixed-method research designs are also recommended to gain deeper insights into the mechanisms underlying SDG implementation.

References

- Aleixo, A., et al. (2018). *Implementation of sustainable development goals in Portuguese higher education institutions*.
- Avelar, A. B. A., Mitchell, S. F., & Sandes-Guimarães, L. V. (2025). Integrating sustainable development goals in management education: Impact on student knowledge, attitudes, and behaviors. *The International Journal of Management Education*, 23(2), 101116.
- Chao, H. Z., Wongkumchai, T., & Worapongpat, N. (2023). Rural digital model for upgrading rural areas to an efficient digital society: A case study of SMEs in Urumqi, China. *International Journal of Multidisciplinary in Educational and Cultures Studies*, 1(2), 35–55.
- Kanie, N., Abe, N., Iguchi, M., Yang, J., Kabiri, N., Kitamura, Y., ... Hayakawa, Y. (2014). Integration and diffusion in sustainable development goals: Learning from the past, looking into the future. *Sustainability*, 6(4), 1761–1775.
- Leal Filho, W., et al. (2019). *Sustainable Development Goals and sustainability teaching at universities*.
- Lozano, R., et al. (2015). *A review of commitment and implementation of sustainable development in higher education*.
- Niyomthanawat, J., & Worapongpat, N. (2025). Building tourist confidence and perceived value through social development and local engagement in Thai tourism. *SSRU International Journal of Management Science*, 12(2), 54–68.

- Omisore, A. G., Babarinde, G. M., Bakare, D. P., & Asekun-Olarinmoye, E. O. (2017). Awareness and knowledge of the sustainable development goals in a university community in Southwestern Nigeria. *Ethiopian Journal of Health Sciences*, 27(6), 669–676.
- Pais, L. E. O. N. O. R., Costa, D. A. N. I. E. L. A., & Ramos, P. N. (2023). The contributions of knowledge management to the sustainable development goals. *European Journal of Applied Business and Management*, 9(1), 74–91.
- Petrushenko, Y., & Vorontsova, A. (2020). Knowledge society: The evolution of the concept in the context of achieving sustainable development goals. In *Quality education* (pp. 511–525). Springer.
- Sarkis, J., & Ibrahim, S. (2022). Building knowledge beyond our experience: Integrating sustainable development goals into IJPR's research future. *International Journal of Production Research*, 60(24), 7301–7318.
- SDSN. (2023). *Sustainable Development Report 2023*.
- Smaniotto, C., Battistella, C., Brunelli, L., Ruscio, E., Agodi, A., Auxilia, F., ... Sisi, S. (2020). Sustainable development goals and 2030 agenda: Awareness, knowledge and attitudes in nine Italian universities. *International Journal of Environmental Research and Public Health*, 17(23), 8968.
- Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., ... O'Connell, D. (2017). Integration: The key to implementing the sustainable development goals. *Sustainability Science*, 12(6), 911–919.
- UNESCO. (2020). *Education for Sustainable Development: A Roadmap*.
- UNESCO. (2023). *Global Education Monitoring Report*.
- United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*.
- United Nations. (2024). *The Sustainable Development Goals Report 2024*.
- Worapongpat, N. (2025a). Integrating interdisciplinary workshop design to advance life skills and leadership among graduate students at private universities in Thailand. *Liberal Arts and Social Studies International Journal*, 1(2), 55–71.
- Worapongpat, N. (2025b). Development of life skills and cognitive competencies among private university educators through Buddhist practice in Thailand, India, and Nepal. *Buddhism in Mekong Region Journal*, 8(2), 1–23.
- Worapongpat, N. (2025c). Guidelines for developing the digital competency of local government personnel in Maha Sarakham Province. *Journal of Humanities and Social Sciences, Phranakhon Rajabhat University*, 9(2), 1–19. (in Thai)

- Worapongpat, N. (2025d). The application of the BCG model and competitive strategies to achieve sustainable development goals in the health and beauty supplement OEM industry in Samut Sakhon Province. *Wisdom Journal of Humanities and Social Sciences*, 2(12), 39–54.
- Worapongpat, N. (2025e). Guidelines for ESG management in comprehensive health and beauty supplement businesses with best practices for sustainability. *Modern Academic Development and Promotion Journal*, 3(2), 47–69.
- Worapongpat, N. (2025f). Best practices (ESG) for the comprehensive OEM business of dietary supplements, health, and beauty: SCG Grand Co., Ltd. and its affiliates. *Chiang Mai University Journal of Economics*, 29(1), 1–14.
- Worapongpat, N. (2025g). Impact of local administrators' behaviors on employee motivation in public local administrative organizations for realizing smart local governance: A case study of Maha Sarakham Province. *Public Administration in the Modern Era Journal*, 2(6), 288–302. (in Thai)
- Worapongpat, N. (2025h). Assessing essential needs for developing AI competencies among local administrative personnel toward smart local communities in Maha Sarakham Province. *Journal of Academic and Research in Social Sciences*, 1(4), 56–68.
- Worapongpat, N. (2026a). Creative strategic conflict management in Thai Rajabhat universities: A model for enhanced institutional harmony. *Asian Education and Learning Review*, 4(1), 2–12.
- Worapongpat, N. (2026b). The efficiency of work performance competencies of local government personnel in advancing toward a concrete smart locality: Evidence from Maha Sarakham Province. *Journal of Public Administration and Law, Shinawatra University*, 3(1), 1–21. (in Thai)
- Worapongpat, N. (2026c). Situational leadership of entrepreneurs influencing ESG and safety management: Employee perspectives in the health, beauty, and supplement manufacturing sector. *Community and Social Development Journal*, 27(1), 72–83.
- Yamane, T. (1973). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.
- Zeigermann, U. (2021). Scientific knowledge integration and the implementation of the SDGs: Comparing strategies of sustainability networks. *Politics and Governance*, 9(1), 164–175.