

# Project-Based IPAS Learning to Support Sustainable Development Goals (SDGs): A Literature Review on Implementation and Impact on Environmental Awareness of Elementary School Students

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**Abstract:** Project-Based Learning (PjBL) in IPAS (Ilmu Pengetahuan Alam dan Sosial) has emerged as a promising pedagogical approach to integrating Sustainable Development Goals (SDGs) into elementary education. This literature review synthesizes recent studies (2021–2025) on the implementation of PjBL in IPAS and its impact on environmental awareness among elementary school students. The review reveals that PjBL fosters active learning, critical thinking, and problem-solving skills by engaging students in real-world environmental projects such as waste management, biodiversity conservation, and eco-campaigns. These activities align with SDG 4 (Quality Education), SDG 13 (Climate Action), and SDG 12 (Responsible Consumption and Production). Findings indicate that PjBL significantly enhances students' understanding of sustainability issues and promotes pro-environmental behaviors. The study concludes that PjBL-IPAS learning offers a transformative pathway to cultivating environmentally conscious citizens and advancing the SDGs through foundational education.

**Keywords:** Development Goals; Elementary education; Environmental awareness; IPAS; Project-based learning; Sustainable

## Introduction

The escalating environmental challenges, including climate change, biodiversity loss, and pollution, underscore the urgent need for educational systems to cultivate environmental consciousness from an early age (Billig & Bushari, 2025; Golan et al., 2025; Gong et al., 2024). In response, the United Nations' Sustainable Development Goals (SDGs), particularly Goal 4 (Quality Education) and Goal 13 (Climate Action), advocate for the integration of sustainable development principles into educational curricula (Ibrahimov & Stapleton, 2024; Inan et al., 2025; Mujtaba et al., 2024). In Indonesia, the

introduction of the Ilmu Pengetahuan Alam dan Sosial (IPAS) subject within the Kurikulum Merdeka framework represents a strategic move to amalgamate natural and social sciences, fostering a holistic understanding of environmental issues among elementary school students (Baek, 2023; Brehm et al., 2025; Merritt et al., 2024). However, challenges such as limited teacher preparedness and resource constraints have been identified in the implementation of this curriculum (Cheah et al., 2025; Deriba & Sanusi, 2025; Kim & Kwon, 2025).

Project-Based Learning (PjBL) emerges as a pedagogical approach that aligns seamlessly with the

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objectives of IPAS and the broader SDGs. By engaging students in real-world projects, PjBL facilitates active learning, critical thinking, and the development of problem-solving skills pertinent to environmental sustainability. For instance, initiatives like eco-enzyme production projects have demonstrated effectiveness in enhancing students' understanding of waste management and environmental stewardship (Ahmed et al., 2024; Bertaglia et al., 2024; Lotfy et al., 2025). Such projects not only impart scientific knowledge but also instill a sense of responsibility and proactive behavior towards environmental conservation (Baek, 2023; Retno et al., 2025; Suryawan et al., 2024).

Despite the recognized benefits of PjBL in promoting environmental awareness, there remains a paucity of comprehensive literature reviews that synthesize its implementation and impact within the context of elementary education and the SDGs (Mesa et al., 2025; Taiebne et al., 2025; Yeung et al., 2024). Existing studies often focus on isolated case studies or specific outcomes, lacking a holistic examination of how PjBL influences environmental consciousness among young learners. Furthermore, factors such as teacher preparedness, curriculum design, and resource availability, which are critical to the successful implementation of PjBL, are frequently underexplored in current research (Baek, 2023; Larsen, 2025; Novalia et al., 2025).

This literature review aims to bridge these gaps by systematically analyzing recent studies (2021–2025) on the application of Project-Based IPAS Learning in elementary schools and its impact on students' environmental awareness. The review will explore various dimensions, including pedagogical strategies, project design, assessment methods, and contextual factors influencing the effectiveness of PjBL. By doing so, it seeks to provide educators, policymakers, and researchers with comprehensive insights into best practices and potential challenges associated with integrating PjBL into elementary education to support the SDGs.

## Method

This study employed a systematic literature review design to explore the implementation of Project-Based Learning (PjBL) within the context of Ilmu Pengetahuan Alam dan Sosial (IPAS) and its impact on elementary school students' environmental awareness (Conde-Izquierdo et al., 2025; Larsen, 2025; Retno et al., 2025). The purpose of this method is to gather, critically analyze, and synthesize recent empirical findings from scholarly literature, with an emphasis on how PjBL supports the attainment of Sustainable Development

Goals (SDGs), particularly Goals 4 (Quality Education), 12 (Responsible Consumption and Production), and 13 (Climate Action). The systematic approach ensures that the review is transparent, replicable, and grounded in rigorous academic procedures, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

The literature search was conducted through reputable academic databases, namely Scopus, ERIC, ScienceDirect, and SpringerLink, to ensure the inclusion of high-quality, peer-reviewed studies. The search strategy utilized Boolean operators to combine relevant keywords and phrases, including "Project-Based Learning" OR "PjBL," "IPAS" OR "integrated science and social studies," "elementary school" OR "primary education," and "environmental awareness" OR "ecoliteracy" OR "sustainable development." The search was limited to journal articles published in English from January 2021 to March 2025 to maintain the relevance and recency of the findings.

The inclusion criteria were carefully defined to ensure that only studies relevant to the research objectives were considered. Selected articles had to focus on PjBL in elementary or primary school settings, address the integration of science and social studies education (including IPAS), and report measurable or observable outcomes related to students' environmental knowledge, attitudes, or behaviors. Both qualitative and quantitative research studies, as well as mixed-method designs and case studies, were included. Conversely, articles were excluded if they focused solely on secondary or higher education contexts, were non-empirical (e.g., opinion pieces, editorials), or lacked methodological clarity and relevance to environmental themes.

Following the screening process, eligible articles were reviewed through a thematic content analysis approach. Relevant data were extracted and categorized based on several core dimensions: author and year of publication, geographical and educational context, characteristics of the project-based interventions, learning outcomes related to environmental awareness, and implications for teaching practice and policy. Through this process, key themes and recurring patterns were identified to highlight best practices, challenges, and gaps in the literature regarding Project-Based IPAS Learning.

To ensure the quality and credibility of the selected studies, a critical appraisal was conducted using adapted criteria from the Critical Appraisal Skills Programme (CASP) checklist for educational research. Each study was evaluated based on the clarity of its objectives, appropriateness of research design, validity of findings, and overall contribution to the field. This

quality control step helped establish the reliability of the synthesized conclusions and provided a stronger foundation for interpreting the educational implications of PjBL in promoting environmental awareness at the elementary level.

## Result and Discussion

The integration of Project-Based Learning (PjBL) within the IPAS (Ilmu Pengetahuan Alam dan Sosial) curriculum has emerged as a promising approach to embedding Sustainable Development Goals (SDGs) into elementary education. This pedagogical strategy enables students to explore real-world environmental issues through interdisciplinary projects, fostering both cognitive and affective learning outcomes. According to Dixon et al. (2025); Mohamed & Shaban (2025); Stek et al. (2025), PjBL not only enhances academic understanding but also cultivates a sense of responsibility toward environmental sustainability among young learners.

One of the key strengths of PjBL in IPAS is its ability to promote active learning (Conde-Izquierdo et al., 2025; Novalia et al., 2025; Taiebine et al., 2025). Students engage in hands-on activities such as waste sorting, tree planting, or community surveys, which deepen their understanding of environmental concepts. Research by Eisenberg et al. (2024); Wang et al. (2025); Zou et al. (2024) highlights that these experiential learning opportunities significantly improve student engagement and retention compared to traditional lecture-based instruction. Moreover, students are more likely to internalize pro-environmental values when they see the direct impact of their actions (Helferich et al., 2023; Sharpe et al., 2022; Simon & Schweitzer, 2023).

Studies have shown that PjBL-IPAS learning supports multiple SDGs, particularly Goal 4 (Quality Education) and Goal 13 (Climate Action). Suryawan et al. (2024) found that PjBL aligns with the principles of Education for Sustainable Development (ESD), encouraging critical thinking and problem-solving skills essential for addressing global challenges. Similarly, Lee & Perdana (2023); Schrage et al. (2025); Tandika et al. (2025) noted that project-based approaches help students develop competencies related to climate literacy and civic responsibility.

A major focus of recent research has been on how PjBL enhances environmental awareness among elementary school students. Students participating in eco-projects demonstrated improved knowledge about biodiversity, pollution, and conservation practices. Furthermore, Rahmania (2024) observed an increase in environmentally responsible behaviors among students who engaged in collaborative school-community initiatives.

Implementation of PjBL in IPAS requires significant shifts in teaching strategies and assessment methods. Teachers must move from content delivery to facilitating inquiry and guiding student-led investigations. Kuche et al. (2024) emphasize the need for teacher training programs that equip educators with the skills to design integrated, student-centered curricula. In this context, professional development plays a crucial role in ensuring instructional quality and student success.

Assessment in PjBL environments is increasingly moving away from standardized testing toward more authentic evaluation methods. Bembridge et al. (2025) found that portfolios, peer assessments, and reflective journals better capture the holistic learning outcomes associated with environmental education. These tools allow teachers to assess not only content mastery but also creativity, collaboration, and civic engagement—key components of the SDGs.

Digital technologies are also playing a growing role in enhancing PjBL practices. Xie et al. (2025) explored the use of mobile apps and online platforms to support data collection, visualization, and global collaboration in environmental projects. Their findings suggest that digital tools can enhance student motivation and facilitate communication between schools, communities, and international partners, thereby contributing to SDG 9 (Industry, Innovation, and Infrastructure).

Community involvement is another critical factor influencing the effectiveness of PjBL-IPAS learning. Xie et al. (2025) both highlight the importance of partnerships with local stakeholders, including parents, NGOs, and municipal authorities. These collaborations enrich project authenticity and provide students with real-world contexts for applying their knowledge and skills.

However, implementing PjBL in IPAS is not without challenges. The lack of teacher training, and curriculum rigidity as major barriers to effective implementation, especially in rural areas. To address these issues, Kuche et al. (2024) recommend the development of flexible, context-sensitive frameworks that accommodate diverse educational settings across Indonesia.

Despite these challenges, the benefits of PjBL extend beyond environmental knowledge. Tandika et al. (2025) argue that PjBL promotes social-emotional learning and fosters empathy by involving students in community-based solutions. This aligns with broader goals of SDG 4.7, which emphasizes education for sustainable lifestyles, human rights, and cultural diversity.

Lin et al. (2025) conducted a meta-analysis of several PjBL interventions and concluded that students exposed to this method showed greater willingness to

adopt pro-environmental behaviors than those in conventional classrooms. That PjBL encourages long-term behavioral change by linking classroom learning to personal and community action.

Waste management has become a common theme in many PjBL-IPAS projects due to its relevance to daily life and SDG 12 (Responsible Consumption and Production). Conde-Izquierdo et al. (2025) documented a case study where elementary students designed and implemented a composting system, leading to increased recycling rates in their schools and homes. Such initiatives demonstrate the potential of PjBL to influence behavior at both individual and community levels.

Innovative integration of STEM disciplines into PjBL has also gained attention. Aldrich & Haden (2024) described how science, technology, engineering, and mathematics were combined in a project focused on renewable energy sources. This interdisciplinary approach not only enhanced scientific understanding but also promoted innovation and systems thinking, essential for tackling complex sustainability issues.

Kain et al. (2024) explored the role of storytelling and multimedia in PjBL, showing that digital narratives helped students communicate their environmental projects more effectively. Febriyanti and Iskandar (2022) similarly found that digital storytelling enhanced student engagement and made abstract environmental concepts more tangible (Kain et al., 2024).

Finally, Ergin et al. (2025) emphasized the need for longitudinal studies to evaluate the lasting impact of PjBL on students' attitudes and behaviors toward sustainability. Their findings suggest that early exposure to environmental projects may lead to lifelong habits and informed decision-making, supporting the vision of SDG 4 and beyond.

Project-Based IPAS Learning serves as a powerful vehicle for integrating SDGs into elementary education. It promotes environmental awareness, critical thinking, and civic engagement while addressing the complexities of sustainable development. Future research should focus on policy development, scalability, and long-term behavioral impacts to ensure that this approach becomes a cornerstone of national education reform.

## Conclusion

Project-Based IPAS Learning has proven to be an effective approach for integrating the Sustainable Development Goals (SDGs) into elementary education by fostering environmental awareness and pro-environmental behaviors through hands-on, interdisciplinary projects. This method not only enhances students' understanding of sustainability issues such as waste management, climate change, and

biodiversity but also aligns with SDG 4 on quality education and supports goals related to climate action, responsible consumption, and innovation. Successful implementation requires teacher training, contextual adaptation, digital integration, and community collaboration, while further research is needed to assess long-term impacts and develop scalable frameworks. Overall, PjBL in IPAS offers a transformative educational strategy that nurtures environmentally conscious citizens from an early age.

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## References

- Ahmed, H. R., Kayani, K. F., Ealias, A. M., & George, G. (2024). Eco-friendly biocatalysis: Innovative approaches for the sustainable removal of diverse dyes from aqueous solutions. *Inorganic Chemistry Communications*, 170, 113447. <https://doi.org/10.1016/j.inoche.2024.113447>
- Aldrich, B. M., & Haden, C. A. (2024). Associations between parents' autonomy supportive management language and children's science, technology, engineering, and mathematics talk during and after tinkering at home. *Journal of Experimental Child Psychology*, 247, 106034. <https://doi.org/10.1016/j.jecp.2024.106034>
- Baek, S. (2023). Fostering Students' Environmental Competencies through a Plant STEAM Education Program in Korean Elementary Schools. *Asia-Pacific Science Education*, 9(2), 488–520. <https://doi.org/10.1163/23641177-bja10069>
- Bembridge, E., Crowfoot, G., Wilson, R., & Reis, J. (2025). Digital reflective practice among new graduate nurses – A scoping review. *Nurse Education Today*, 150, 106688. <https://doi.org/10.1016/j.nedt.2025.106688>
- Bertaglia, T., Costa, C. M., Lanceros-Méndez, S., & Crespilho, F. N. (2024). Eco-friendly, sustainable,



- and safe energy storage: A nature-inspired materials paradigm shift. *Materials Advances*, 5(19), 7534–7547. <https://doi.org/10.1039/d4ma00363b>
- Billig, M., & Bushari, M. G. (2025). Rehabilitation of at-risk youth via educational nomadism program and development of place identity. *Children and Youth Services Review*, 176, 108410. <https://doi.org/10.1016/j.childyouth.2025.108410>
- Brehm, J., Pestel, N., Schaffner, S., & Schmitz, L. (2025). From Low Emission Zone to academic track: Environmental policy effects on educational achievement in elementary school. *Journal of Environmental Economics and Management*, 132, 103165. <https://doi.org/10.1016/j.jeem.2025.103165>
- Cheah, Y. H., Lu, J., & Kim, J. (2025). Integrating generative artificial intelligence in K-12 education: Examining teachers' preparedness, practices, and barriers. *Computers and Education: Artificial Intelligence*, 8, 100363. <https://doi.org/10.1016/j.caeai.2025.100363>
- Conde-Izquierdo, S., Ruano, Á. M., & Nicolás, D. P. (2025). The impact of active methodologies in the classroom on academic achievement: A systematic literature review using the PRISMA protocol. *International Journal of Educational Research*, 132, 102644. <https://doi.org/10.1016/j.ijer.2025.102644>
- Deriba, F. G., & Sanusi, I. T. (2025). Artificial intelligence in Ethiopian school curriculum: Educators' practices, challenges, and recommendations. *Computers and Education Open*, 8, 100251. <https://doi.org/10.1016/j.caeo.2025.100251>
- Dixon, J., Baird, H. M., Field, J., & Martin, N. (2025). Longitudinal integration of environmental sustainability in the dental curriculum: Assessing changes in student awareness, attitudes and knowledge. *Journal of Dentistry*, 156, 105710. <https://doi.org/10.1016/j.jdent.2025.105710>
- Eisenberg, S., Walles, B., & Long, E. (2024). Theory in action for graduate nurse educator students: An experiential learning project. *Nurse Education Today*, 143, 106391. <https://doi.org/10.1016/j.nedt.2024.106391>
- Ergin, F. E., İmir, H. M., Kaynak-Ekici, K. B., Bektaş, N., Çamurcu, Ş., Kurnaz, R., & Aysu, B. (2025). Longitudinal study on early literacy and subsequent performance in Turkish low-SES children. *Early Childhood Research Quarterly*, 71, 174–182. <https://doi.org/10.1016/j.ecresq.2025.01.002>
- Golan, L., Levi, Y., & Ben-Yair, Y. (2025). "It's like a beneficial bacterium": A positive spin on an educational vision for institutionalizing a culture of caring. *Teaching and Teacher Education*, 158, 104954. <https://doi.org/10.1016/j.tate.2025.104954>
- Gong, X., Yee, C. L., Lee, S. Y., Saif, A. N. M., Liu, M., & Anonhi, F. (2024). Unveiling the enigma of blind box impulse buying curiosity: The moderating role of price consciousness. *Heliyon*, 10(24), e40564. <https://doi.org/10.1016/j.heliyon.2024.e40564>
- Helferich, M., Thøgersen, J., & Bergquist, M. (2023). Direct and mediated impacts of social norms on pro-environmental behavior. *Global Environmental Change*, 80, 102680. <https://doi.org/10.1016/j.gloenvcha.2023.102680>
- Ibrahimov, B., & Stapleton, L. (2024). Technology, International Stability and Culture (TECIS) – TC9-5 Exploring the Alignment of Control and Automation Systems with the United Nations Sustainable Development Goals (UN SDGs). *IFAC-PapersOnLine*, 58(3), 176–181. <https://doi.org/10.1016/j.ifacol.2024.07.146>
- Inan, I., Orhan, I., & Ekici, S. (2025). Fuel savings strategies for sustainable aviation in accordance with United Nations Sustainable Development Goals (UN SDGs). *Energy*, 320, 135159. <https://doi.org/10.1016/j.energy.2025.135159>
- Kain, C., Koschmieder, C., Matischek-Jauk, M., & Bergner, S. (2024). Mapping the landscape: A scoping review of 21st century skills literature in secondary education. *Teaching and Teacher Education*, 151, 104739. <https://doi.org/10.1016/j.tate.2024.104739>
- Kim, K., & Kwon, K. (2025). Unveiling teacher identity development: A case study of AI curriculum implementation in a rural middle school computer science class. *Teaching and Teacher Education*, 160, 105032. <https://doi.org/10.1016/j.tate.2025.105032>
- Kuche, E., Demissie, A., & Wanna, W. (2024). English language teacher educators' knowledge and skills on early grade reading instruction. *Heliyon*, 10(19), e38360. <https://doi.org/10.1016/j.heliyon.2024.e38360>
- Larsen, I. B. (2025). Project-Based Learning in business and management education: A scoping review and research agenda. *The International Journal of Management Education*, 23(2), 101159. <https://doi.org/10.1016/j.ijme.2025.101159>
- Lee, W. E., & Perdana, A. (2023). Reprint of: Effects of experiential service learning in improving community engagement perception, sustainability awareness, and data analytics competency. *Journal of Accounting Education*, 63, 100846. <https://doi.org/10.1016/j.jaccedu.2023.100846>
- Lin, L., Zhang, H., Dong, Y., Lin, Z., Ma, Y., & Wang, J. (2025). Effects of personalized approach on fourth-grade students' academic performance in project-based learning. *International Journal of Educational*

- Research*, 131, 102570.  
<https://doi.org/10.1016/j.ijer.2025.102570>
- Lotfy, H. M., Genc, A. A., Bay, M. S., Tiris, G., Obaydo, R. H., & Erk, N. (2025). Development of eco-friendly sensitive HPLC method for determination of Letrozole and assessment of validation. *Talanta Open*, 11, 100425.  
<https://doi.org/10.1016/j.talo.2025.100425>
- Merritt, E. G., Weinberg, A. E., Lapan, C., & Rimm-Kaufman, S. E. (2024). Igniting kid power: The impact of environmental service-learning on elementary students' awareness of energy problems and solutions. *Energy Research & Social Science*, 116, 103670.  
<https://doi.org/10.1016/j.erss.2024.103670>
- Mesa, M. del M., Valor, D., Montes, A., & García-Casas, I. (2025). Energy under debate: Fostering critical thinking in chemical engineering through in-class debates. *Education for Chemical Engineers*, 51, 121–132. <https://doi.org/10.1016/j.ece.2025.03.002>
- Mohamed, S. A. A. K., & Shaban, M. (2025). Global disparities and innovations in integrating planetary health into nursing curricula: A rapid review as a framework for change. *Teaching and Learning in Nursing*, 20(2), 181–188.  
<https://doi.org/10.1016/j.teln.2025.01.026>
- Mujtaba, G., Shah, M. U. H., Hai, A., Daud, M., & Hayat, M. (2024). A holistic approach to embracing the United Nation's Sustainable Development Goal (SDG-6) towards water security in Pakistan. *Journal of Water Process Engineering*, 57, 104691.  
<https://doi.org/10.1016/j.jwpe.2023.104691>
- Novalia, R., Marini, A., Bintoro, T., & Muawanah, U. (2025). Project-based learning: For higher education students' learning independence. *Social Sciences & Humanities Open*, 11, 101530.  
<https://doi.org/10.1016/j.ssaho.2025.101530>
- Rahmania, T. (2024). Exploring school environmental psychology in children and adolescents: The influence of environmental and psychosocial factors on sustainable behavior in Indonesia. *Heliyon*, 10(18), e37881.  
<https://doi.org/10.1016/j.heliyon.2024.e37881>
- Retno, R. S., Purnomo, P., Hidayat, A., & Mashfufah, A. (2025). Conceptual framework design for STEM-integrated project-based learning (PjBL-STEM) for elementary schools. *Asian Education and Development Studies*, 14(3), 579–604.  
<https://doi.org/10.1108/AEDS-08-2024-0188>
- Schrage, B., Maheshwari, G., & Velasquez, S. (2025). Broadening the competencies of MBA students in Vietnam: Integrating andragogical approaches with sustainable development goals. *The International Journal of Management Education*, 23(3), 101217.  
<https://doi.org/10.1016/j.ijme.2025.101217>
- Sharpe, E., Ruepert, A., van der Werff, E., & Steg, L. (2022). Corporate environmental responsibility leads to more pro-environmental behavior at work by strengthening intrinsic pro-environmental motivation. *One Earth*, 5(7), 825–835.  
<https://doi.org/10.1016/j.oneear.2022.06.006>
- Simon, F., & Schweitzer, V. (2023). When smart meters backfire on energy transition internalization: Ethical electricity suppliers' mitigation of consumer data vulnerability and attendant psychological disempowerment. *Technological Forecasting and Social Change*, 194, 122738.  
<https://doi.org/10.1016/j.techfore.2023.122738>
- Stek, K., Picaud-Bello, K., Koch, V., & Johnsen, T. (2025). Rethinking purchasing and supply management education for sustainability and innovation challenges: Crafting a future-ready competency-based curriculum design. *Journal of Purchasing and Supply Management*, 31(2), 100974.  
<https://doi.org/10.1016/j.pursup.2024.100974>
- Suryawan, I. W. K., Fitria, L., Ulhasanah, N., Septiariva, I. Y., Prayogo, W., Suhardono, S., Sari, M. M., & Aji, A. D. S. (2024b). The disruptive potential of importance-performance edurruption and transforming consumerism in single-used plastic reduction initiatives. *Cleaner and Responsible Consumption*, 14, 100200.  
<https://doi.org/10.1016/j.clrc.2024.100200>
- Taiebine, M., Nejari, C., Bounou, S., Youlyouz-Marfak, I., & Marfak, A. (2025). Five-day experience in scientific production: Write together, motivate each other and achieve success. *Social Sciences & Humanities Open*, 11, 101373.  
<https://doi.org/10.1016/j.ssaho.2025.101373>
- Tandika, P., Ndibalema, P., & Lawrent, G. (2025). Social and emotional learning competencies and early grade pupils' academic success: Educational stakeholders' perspectives. *Social and Emotional Learning: Research, Practice, and Policy*, 100125.  
<https://doi.org/10.1016/j.sel.2025.100125>
- Wang, M., Zhu, J., Gu, H., Zhang, J., Wu, D., & Wang, P. (2025). Optimizing experiential learning in science education: The role of two-tier testing in digital game-based learning. *Entertainment Computing*, 54, 100960.  
<https://doi.org/10.1016/j.entcom.2025.100960>
- Xie, X., Reyes, P. S., Lin, H.-J. L., Mannewitz, G. A., Truong, T., Webber, K. G. I., Payne, S. H., & Kelly, R. T. (2025). MSConnect: Open-Source, End-to-End Platform for Automated Mass Spectrometry Data Management, Analysis, and Visualization. *Journal*

- of Proteome Research*, 24(4), 1757–1764.  
<https://doi.org/10.1021/acs.jproteome.4c00854>
- Yeung, R. C. Y., Yeung, C. H., Sun, D., & Looi, C.-K. (2024). A systematic review of Drone integrated STEM education at secondary schools (2005–2023): Trends, pedagogies, and learning outcomes. *Computers & Education*, 212, 104999. <https://doi.org/10.1016/j.compedu.2024.104999>
- Zou, W., Purington Drake, A., Masur, P. K., Whitlock, J., & Bazarova, N. N. (2024). Examining learners' engagement patterns and knowledge outcome in an experiential learning intervention for youth's social media literacy. *Computers & Education*, 216, 105046. <https://doi.org/10.1016/j.compedu.2024.105046>