COMMENTARY

Out-of-School Learning Environments: Expanding Classroom Boundaries and Diversifying Learning Practices

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"Every student can learn, just not on the same day or in the same way."
-George Evans

IN TRADITIONAL IN-SCHOOL LEARNING ENVIRONMENTS, educational activities are often constrained by factors like the fixed school schedule, unchanged teaching space, and established curriculum arrangements. While the classroom serves as the primary formal learning environment for knowledge acquisition, in-class teaching alone is far from adequate for cultivating diverse competences in students, particularly practical skills, interdisciplinary ability, and social adaptability. In contrast, out-of-school learning environments (OSLEs), such as natural environments, science and cultural venues, and virtual learning platforms, have the potential to create a wider variety of learning opportunities by transcending the physical and institutional boundaries of the school.

OSLEs, often referred to as non-formal educational environments, are those that exist outside the formal school systems, physically and virtually, but with substantial educational value (Eshach, 2007). Physical off-campus learning spaces encompass museums, science centers, zoos, botanical gardens, nature reserves, community organizations, corporate training bases, and more, while virtual ones include online courses, open educational resources, and various learning community platforms. Research demonstrates that OSLEs can positively affect students' academic performance, interest-curiosity, attitudes, motivation, research skills, and communication-social skills (Yıldırım, 2020). Compared to in-school settings, OSLEs are more natural, flexible, and engaging, enabling students to gain colorful experiences through off-campus educational activities (Yıldırım, 2018). As a result, OSLEs have become significant facilitators of the implementation of advanced learning approaches, and OSLE-based activities valuable complements to in-class learning.

For student inquiry-based learning, the OSLE can provide an authentic context. Due to the time and resource limitations of a classroom setting, student in-class inquiry is often conducted at the theoretical level or in a simulative form. Yet, in an out-of-school setting, students can observe and experiment in real-world contexts, engaging in genuine problem-solving processes. According to a case study by Berg et al. (2021), object-based inquiry learning could be fully realized in a natural history museum. The students were first given an introduction of basic concepts of biological evolution, and after that, observed varieties of animal specimens in a guided tour in the exhibition halls, reflecting on morphological differences between species and the underlying causes. In the ensuing hand-on experiment, they used mink skulls as research subjects, taking multiple measurements of them with calipers, comparing data obtained by different measurers, and calculating means and variances to understand the concept of "error" in scientific measurement. They also used gender-specific data of the skulls to discuss the causes of sexual dimorphism, linking these findings to environmental adaptation. Through hands-on manipulation, contemplation, and discussion, the students experienced the fundamental processes of scientific research, from observation to data analysis and scientific reasoning.

Also, the OSLE can significantly facilitate student interdisciplinary learning. Learning in an out-of-school setting typically surrounds a real-world issue, the solution of which invariably requires multidisciplinary knowledge. For instance, in their research into the "relationship between urban development and cultural change" in a historical museum or cultural heritage site, students may need to apply their historical, geographical, sociological, and artistic knowledge to understand the exhibits and their background. They may also need to review historical documents to compare architectural styles across different periods and even conduct interviews to get thorough comprehension of the relationship between societal change and cultural evolution. Learning processes like these help foster students' awareness of looking at an issue from multiple perspectives, as well as facilitating their integration and transfer of knowledge.

The Effect of STEM Activities in the *Out-of-School Learning Environment on Student Scientific Creativity: Application Example of Insect Hotel Design* in this issue investigates the effects of an OSLE-based STEM activity, pertaining to the subject of the "World of Living Things," on student scientific creativity by comparing its outcomes with those of in-class activities prescribed by the established curriculum program, using a quasi-experimental design with pre- and post-tests (Karsli Ertan & Ozay Kose, 2025). The study's findings reveal that the STEM activity in an OSLE is effective in enhancing students' scientific creativity by encouraging creative thinking, discussion, and hands-on design in them, highlighting the significant role of OSLEs in expanding classroom boundaries and facilitating the implementation of diverse approaches to learning.

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***Conflict of Interests**: None*

***Doi:** 10.15354/sief.25.co513*