MENTORING FROM A SYNECOLOGICAL PERSPECTIVE: A RESEARCH PATH FOR SUSTAINABLE EDUCATION

MENTORING IN CHIAVE SINECOLOGICA: UN PERCORSO DI RICERCA PER L'EDUCAZIONE SOSTENIBILE

Guido Scarano
Pegaso Digital University
guido.scarano@unipegaso.it

Angelina Vivona
Pegaso Digital University
angela.vivona@unipegaso.it

Lucia Martiniello
Pegaso Digital University
lucia.martiniello@unipegaso.it

Double Blind Peer Review

Scarano, G., Vivona, A., Martiniello, L. (2025). Mentoring from a synecological perspective: a research path for sustainable education. Italian Journal of Health Education, Sports and Inclusive Didactics, 9(3).

Doi: https://doi.org/10.32043/gsd.v9i3.1591

gsdjournal.it
ISSN: 2532-3296
ISBN: 978-88-6022-522-1

ABSTRACT

How can the educational relationship integrate the "place" as a central actor in situated learning and, furthermore, how can a synecological approach to education in nature facilitate the integrated development of emotional, social and cognitive skills? The reflection proposed in this contribution identifies eco-mentoring as a promising avenue of research capable of enhancing a triadic configuration between mentor, mentee and place, aimed at bringing together situated knowledge, skills and responsibilities. By reworking educational mentoring and place-based education, we translate these principles into operational postures and gestures within a synecological framework; eco-mentoring guides experiments consistent with Agenda 2030, strengthening links between people, places and knowledge (Crisp & Cruz, 2009; Sobel, 2004; Paparella, 2023; United Nations, 2015).

Come può la relazione educativa integrare il "luogo" come attore centrale nell'apprendimento situato e, ancora, in che modo un approccio sinecologico all'educazione in natura può facilitare lo sviluppo integrato di competenze emotive, sociali e cognitive? La riflessione proposta nel presente contributo identifica nell'eco-mentoring una promettente pista di ricerca capace di valorizzare una configurazione triadica tra mentor, mentee e luogo, volta a mettere in dialogo conoscenze, competenze e responsabilità situate. Rielaborando mentoring educativo e place-based education, traduciamo tali principi in posture e gesti operativi entro una cornice sinecologica; l'eco-mentoring orienta sperimentazioni coerenti con l'Agenda 2030, rafforzando legami tra persone, luoghi e saperi (Crisp & Cruz, 2009; Sobel, 2004; Paparella, 2023; United Nations, 2015).

KEYWORDS
Eco-mentoring; Situated learning; place-based education;
Eco-mentoring; Apprendimento situate; Educazione place-based

Received 28/10/2025
Accepted 28/10/2025
Published 07/11/2025

Introduction

If it is true that every educational proposal must be evaluated in light of the conditions that determine its effectiveness, it is certainly necessary to precisely define the educational objectives, make the stages of the process transparent, and systematically document the evidence of progress and results. From this perspective, mentoring – understood as an intentional relationship oriented towards personal and professional development – constitutes a conceptual framework capable of enhancing the posture of accompaniment, care and conscious responsibility towards learning contexts (Kram, 1985; Clutterbuck, 2014; Garvey, Stokes, & Megginson, 2018).

This need is a response to the educational challenges of the contemporary world, marked by processes of social acceleration and a progressive emptying of meaningful relational experiences with the world (Rosa, 2015). In this scenario, it becomes urgent to build formative relationships that foster authentic experiences, recognising the time and space necessary for them to be lived and internalised. There is an urgent need to reactivate resonant relationships with people and the environment in order to promote deep and lasting learning (Kolb, 1984; Wenger, 1998).

Starting from mentoring as an intentional developmental relationship and place-based education (Smith, 2002; Gruenewald, 2003), we explore a synecological perspective in which places act as true educational actors (Paparella, 2023). The eco-mentoring we propose brings together attention, autonomy and reciprocity through age-appropriate inquiry practices anchored in experience (Kolb, 1984), with the mentor–mentee–place triad underpinning the coherence of the process. The centrality of authentic tasks and public feedback allows for the integration of psychosocial and professional dimensions, enhancing belonging and ecological responsibility (Louv, 2016; Clutterbuck, 2014). The article illustrates operational approaches and actions and discusses curricular implications for sustainable education in line with Agenda 2030 (United Nations, 2015).

1. Mentoring versus eco-mentoring

In the classical tradition, the term mentoring refers to psychosocial and career support functions carried out within dyads or networks, with a focus on shared expectations, communication and the promotion of autonomy (Kram, 1985).

The aim is not to reduce education in nature to a definition, but to grasp its dynamic fabric, in which the accompanying relationship, investigative practices and places are intertwined. In this perspective, inquiry represents the way in which the educational relationship takes concrete form: not a technical ritual confined to the

laboratory, but a cognitive posture that arises from the context itself, where questions emerge from experience, traces are collected and organised, data is processed in a manner appropriate to age and, finally, publicly reported. When tasks are authentic and leave room for personal responsibility (ownership), students' motivation and perseverance tend to increase, albeit with variations related to tools and contexts (Benware & Deci, 1984; Freeman et al., 2014). In this logic, place-based education shows its full relevance: neighbourhood parks, school playgrounds, riverbanks or green roofs do not act as mere backdrops, but as actors that root attention, make questions relevant and offer real recipients for feedback (Smith, 2002; Sobel, 2004).

According to Kram (1985), mentoring is a deliberate development framework—one-to-one or networked—that intertwines psychosocial and professional dimensions, focusing on the clarification of expectations, structured communication exchanges and the progressive self-determination of the mentee. In line with this perspective, the focus is not on reducing education in nature to a definition, but on understanding more precisely the link between the mentoring relationship and investigative practices and places, recognising that only an integrated reading of these dimensions can avoid simplified or causally reductive interpretations. At the same time, the synecological approach, based on the idea of learning as a dynamic process of interdependence and co-evolution between people, communities and environments (Tansley, 1935; Odum, 1969; Paparella, 2023), finds its operational realisation in place-based practices. In this perspective, places are not mere backdrops, but actors that guide the investigation, root the experience and give social relevance to educational outcomes.

Considering education as a true learning ecosystem means recognising that, just as in nature every organism exists in dynamic relationship with other organisms and with the environment, learning takes shape from the continuous interaction between people, practices and places. The synecological approach offers the theoretical framework for interpreting this interdependence as a process of co-evolution, in which subjects and contexts transform each other. The place-based paradigm, on the other hand, represents the operational implementation, as it shows how concrete contexts – school playgrounds, neighbourhoods, parks, urban spaces – become true educational actors capable of rooting the experience and amplifying its meaning (Paparella, 2023; Smith, 2002; Sobel, 2004).

Against this backdrop, mentoring can be understood in ecological terms, not as a rigid model, but as a relational and contextual configuration in which the typical functions of accompaniment are intertwined with practices of inquiry rooted in specific places. What we propose is therefore not a new classification, but rather a stance: when the educational relationship becomes transparent in terms of expectations, feedback and the promotion of autonomy, it becomes a device for mediating experience; when inquiry is situated and proportionate, it transforms

places into cognitive and civic partners; places, in turn, provide educational action with constraints and opportunities that give meaning to learning choices and trajectories.
The 2030 Agenda (in particular Target 4.7, in dialogue with Goals 13 and 15) should not be read as a promise of guaranteed outcomes, but as a compass of meaning that guides internal coherence, equity of access and responsibility towards contexts (UNESCO, 2017). In this perspective, the contribution moves cautiously around three questions that will guide the rest of the discussion: what relational conditions enable mentoring to support attention and autonomy; how can inquiry, anchored to specific places, transform observations into shared discursive elaborations capable of circulating in educational and community spaces; and finally, how can outdoor education foster belonging and responsibility, enhancing the conditions that make the experience meaningful, without assuming automatic links between exposure to nature and the quality of educational outcomes? Let us reflect on these aspects.

2. Theoretical and interpretative framework: an ecological approach to mentoring

In this article, we consider mentoring as a developmental relationship in which a more experienced figure accompanies a less experienced one in clarifying objectives, exercising responsibility, reading contexts and finding one's own professional voice. The classics have described its dual nature. - personal support and operational guidance - and emphasised that it is not a transfer of content, but a sharing of attitudes, criteria and ethical considerations (Kram, 1985). Critical summaries of the literature show positive results on average, but these are conditioned by the quality of the relationship, the alignment of expectations and the context: mentoring works when it is intentional, transparent and situated (Jacobi, 1991; Eby et al., 2008; Crisp & Cruz, 2009). In this light, the socio-constructivist view broadens the horizon from the dyad to communities of practice, where learning advances as guided participation in shared practices (Wenger, McDermott, & Snyder, 2002). Shifting the focus to education in nature, a significant convergence immediately emerges: outdoor spaces do not merely offer settings to visit, but invite us to experience and inhabit them with awareness, as Schultz (2002) points out. This is where mentoring becomes a useful language for shaping experience: it helps to clarify goals, encourage courageous questioning, name what is observed and share what has been learned. In this intertwining, accompaniment is not reduced to external guidance, but becomes a dialogical practice that transforms contact with the environment into an opportunity for authentic and relational learning.

The literature on Significant Life Experiences highlights, within biographies, the recurrence of the co-presence of time spent outdoors and adult figures capable of directing attention as factors of ecological awareness. These are clues to be interpreted with caution, as they derive largely from retrospective and correlational studies (Chawla, 1998; Wells & Lekies, 2006; Stevenson et al., 2014). In this context, accompaniment does not coincide with forms of directive behaviour, but can be understood as a gesture of transition: the ability to support and guide without replacing, leaving room for initiative and autonomous growth of the subject. Alongside this biographical narrative, projects that explicitly promote mentoring as an educational method in urban contexts have become widespread in recent years. These initiatives are diverse: programmes that involve families and young people in guided exploration experiences (Hackett et al., 2021); near-peer models in which university students work alongside high school students in authentic research on green roofs, courtyards and parks (Aloisio et al., 2022); citizen science programmes that distribute guidance functions among researchers, educators, expert volunteers and peers (National Academies of Sciences, Engineering, and Medicine, 2018; Ballard, Dixon, & Harris, 2017; Ballard, Lindell, & Jadallah, 2024). Beyond the differences in design, one constant emerges: when people are supported in formulating meaningful questions, collecting data with accessible protocols, organising results and returning them to the community, the experience becomes richer and a sense of belonging to the place grows.

To understand how mentoring can be intertwined with inquiry, it is useful to imagine learning as a triadic movement: not only the relationship between mentor and mentee, but also the place that becomes an active part of the relationship.

Within this triad, the mentor assumes the role of guiding the gaze and weaving the conditions: they make expectations explicit, define boundaries, negotiate realistic goals, protect autonomy and value the plurality of languages (Kram, 1985).

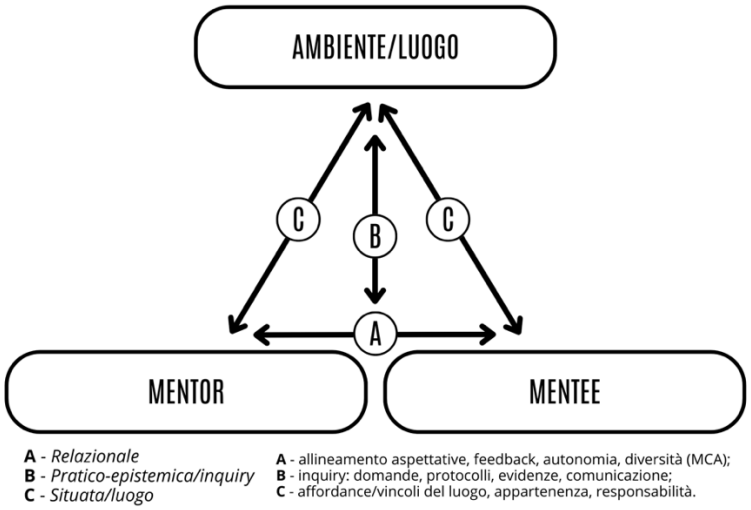

Figure 1. *Synecological diagram of eco-mentoring: the mentor–mentee–environment triad and the guidelines A) relational, B) practical-epistemic (inquiry), C) situated (place).*

Figure 1 schematically represents the triadic configuration of synecological mentoring, in which the educational relationship is not reduced to the dyadic mentor–mentee axis, but is expanded to include the environment/place as a third actor. The triangle connecting mentor, mentee and environment/place shows that learning is a dynamic, relational and situated process, in which mutual interactions generate conditions for growth and shared responsibility. The three guidelines specify the nature of these interactions:

• Guideline A, which we can define as Relational, connects mentor and mentee, emphasising the need for alignment of expectations, quality of feedback, promotion of autonomy and attention to diversity. These aspects can be assessed, for example, through tools such as the Mentoring Competency Assessment (MCA), which allows the quality of the educational relationship to be monitored and supported.

• Guideline B, which we can consider Practical-Epistemic/Inquiry, connects the environment/place to the mentee and mentor as a shared field of research. Here, the emphasis is on inquiry[1] as an educational posture: formulating authentic questions, using appropriate protocols, collecting evidence, and publicly reporting

[1] Inquiry should not be understood, therefore, as a technique, but rather as a genuine cognitive approach: asking questions generated by the context, gathering the available evidence in an essential manner, developing analyses proportionate to the age of the students, and publicly presenting what has been learned in a concise and meaningful way (National Research Council, 2012).

results. The environment thus becomes a cognitive and civic space that guides and supports the processes of inquiry.

• Guideline C, which we can define as Location/Place: highlights how the physical environment is not a neutral backdrop, but a source of affordances and constraints. Concrete places (urban parks, school playgrounds, green roofs, etc.) influence the educational experience by generating a sense of belonging, responsibility and opportunities for ecologically rooted learning.

The literature on active learning confirms that when tasks are authentic and involve personal responsibility, motivation and perseverance tend to increase, albeit with inevitable variations depending on the conditions and tools available (Benware & Deci, 1984; Freeman et al., 2014). From this perspective, place-based approaches offer a further element of consolidation: rooting concepts and skills in recognisable places allows for the enhancement of observation, data collection and analysis, as well as their communication in meaningful learning contexts (Smith, 2002; Sobel, 2004).

Mentoring does not have a single form, but can take different configurations depending on the situation. Individual meetings between mentor and mentee allow a deep relationship to be built, provided that it does not become too directive. Near-peer pathways, thanks to the similarity in age and language, help young people to identify with others and feel part of a group, especially in times of change (Aloisio et al., 2022).

Finally, citizen science experiences show how responsibilities and feedback can be distributed within communities of practice, strengthening the bond with the community and the continuity of learning (Wenger et al., 2002; NASEM, 2018). The quality of mentoring does not lie in a predetermined form, but in the ability to modulate different configurations according to objectives and contexts, ensuring transparency in the relationship and authenticity in the learning experience.

The triadic perspective helps to restore a sense of coherence to the educational process. The quality of the relationship is not limited to supporting interpersonal bonds, but also guides the relevance of questions and the soundness of the protocols used. Places, with their intertwining constraints and possibilities, shape what becomes observable and investigable, helping to define the meaning of the experience. Public restitution is not only the conclusion of a journey, but also the moment when learning and responsibility come together, rooting knowledge in a communal and shared dimension.

A final consideration related to inclusivity. In cities, unequal access to quality spaces and truly usable times risks turning nature education into a privilege reserved for the few. This is why it is crucial to re-evaluate what we might call “proximity nature”, consisting of courtyards, flower beds, tree-lined avenues and green roofs, understood as legitimate places for observation and investigation. It is these spaces that allow opportunities to be expanded and sustainable experiences of continuity

to be built (Hackett et al., 2021). In this perspective, and in the delicate balance between inquiry and place, ecological mentoring defines its scope as a generative accompaniment practice, capable of recognising contexts not simply as backgrounds, but as true cognitive and civic partners in learning. It thus takes the form of a co-evolutionary process that not only contributes to the formation of skills, but also strengthens bonds of belonging and nurtures forms of shared responsibility. In this direction, ecological mentoring opens up avenues of research and experimentation that identify places and relationships as the generative conditions for sustainable and transformative learning.

3. From dyadic relationships to ecological triads: new trajectories for mentoring

Simply going outdoors is not enough to qualify as an educational experience. From a synecological perspective, mentoring is not a closed relationship between two individuals, but a triad of mentor–mentee–place, in which the environment, with its rhythms, opportunities and constraints, takes on the role of a third educational actor. Education in nature is not simply an external setting designed as a backdrop, but a generative space capable of guiding the gaze, gestures, language and timing of learning, in line with the idea of learning as a dynamic and relational process. In this context, the mentor does not merely provide information about the environment, but becomes a facilitator of interactions between people, practices and contexts, valuing shared expectations, mutual feedback, the promotion of autonomy and attention to diversity. Place-based inquiry[2], understood as the formulation of situated questions, the collection of traces, proportionate analysis and public feedback, constitutes in this framework the epistemic practice that allows the place to transform itself from a simple "theme" of study into a true educational method.

Three guidelines orient the triad of ecological mentoring. The first, relational, concerns the need to align expectations, promote mutual feedback, support autonomy and include differences: dimensions that do not depend on personal charisma, but on trainable educational skills. The second, practical-epistemic (inquiry), encourages cultivating relevant questions, choosing essential protocols, valuing the evidence gathered and communicating in a comprehensible and responsible manner. The third, situated (place), emphasises how external micro-

[2] well-known aspects of the mentoring tradition that can be observed in a training context through essential tools such as the Mentoring Competency Assessment (Fleming et al., 2013)

environments offer constraints and possibilities that root the educational experience and nurture belonging and responsibility. The integration of these guidelines protects against deterministic simplifications: results do not depend solely on "being in nature", but on the quality of the relationship and the consistency of the tasks (Ardoin et al., 2018; Ardoin, Bowers, & Gaillard, 2020; van de Wetering, Hovdhaugen, & Vindenes, 2022).

Educational postures and gestures contribute to giving concrete form to the triad. Postures concern three fundamental attitudes: attention, which teaches us to name what often escapes us before we even explain it; reciprocity, because the environment educates only if it is respected and cared for; equity, which recognises the educational value of the "proximity of nature" in everyday life, without waiting for ideal scenarios (Hackett et al., 2021).

These actions, in turn, translate this approach into recurring practices: giving a name and a shared vocabulary, collecting a few but significant traces (counts, maps, graphs), publicly presenting the results through posters, notice boards or short presentations. In this process, the mentor acts as a facilitator of learning conditions: they open and close the paths with moments of shared reflection, protect the time, guarantee space for all voices and progressively reduce their intervention as the participants' confidence grows (Pfund et al., 2015).

Eco-mentoring time is divided into short but repeated micro-cycles, which allow participants to return to the same places at different times, nurturing their comparative skills and gradually enriching the quality of their questions and observations. This logic supports documentation, sets the pace of learning and makes small but significant signs of transformation visible: more relevant questions, more consistent protocols, clearer communication (Benware & Deci, 1984; Freeman et al., 2014). Public restitution thus becomes not simply a final outcome, but an act of cognitive/active citizenship, linking knowledge and responsibility to a real community and to the European framework for development outlined in the areas of sustainability, the environment and inclusion.

However, there are risks that must be carefully managed. The episodic nature of outings – isolated activities lacking continuity – can be overcome through short cycles and essential feedback. Superficial aestheticisation, which reduces the experience to the mere appreciation of "beauty", can easily be curbed by giving space to data and representations, even elementary ones. Hyper-directiveness can be prevented by providing support that gradually leaves room for initiative, restoring students' capacity for action and personal responsibility (Bandura, 2001). Finally, the risk of instrumental overload can be managed by selecting a few truly significant traces. Looking ahead, a rule of measurement emerges that guides

educational work: not the multiplicity of traces or the redundancy of languages, but their quality and relevance. Carefully selected evidence, carefully calibrated words and limited but formative interventions are in fact more effective than a dispersive accumulation of data and actions.

In this context, the civic dimension is not an optional addition but an intrinsic feature of knowledge. An overheated school environment, a poorly maintained green space or one depleted of biodiversity are not simply "objects of observation" but real issues of everyday life. Eco-mentoring addresses these situations within the school environment, transforming limited interventions — such as rethinking the layout of furniture, introducing plants or organising collective care activities — into educational practices of citizenship, rooted in the evidence gathered and shared experience. In this regard, the global action plan adopted by the UN remains a guiding principle, reminding us that educating for sustainability means intertwining knowledge, skills and responsibilities, knowing that results do not automatically follow from the adoption of normative declarations, but from concrete and verifiable processes (UNESCO, 2017).

Eco-mentoring constitutes a pedagogy of continuity and resonance: it does not promise immediate transformations, but builds conditions that make learning with places a stable practice in schools and communities. It is in this balance between relationship (A), investigation (B) and place (C) that ecological mentoring restores the educational relationship to its most authentic vocation: to generate lasting bonds between people and contexts, between knowledge and responsibility (Rosa, 2015). In our reflection, ecological mentoring restores the school's ability to turn places into educational partners rather than passive backdrops.

Conclusions

The current educational landscape is marked by profound tensions: the speed of social, cultural and technological change is producing a condition of acceleration and alienation that characterises contemporary society and, consequently, education (Rosa, 2015). In this context, one of the decisive critical issues is certainly the loss of contexts of experience and educational testimony, i.e. the living relationship between people, environments and practices that has historically been at the heart of education (Rivoltella, 2023). Adopting a synecological perspective means recognising that learning never takes place in isolation, but is the result of interdependencies between individuals, practices and environments, in a logic of co-evolution that fuels both individual growth and collective responsibility (Paparella, 2023). In this framework, eco-mentoring does not offer ready-made solutions, but on the one hand invites us to view the mentor-mentee-place triad –

place triad as a generative device in which the educational relationship becomes an opportunity to cultivate attention, autonomy and reciprocity, and on the other hand, it imagines a response capable of restoring continuity and resonance to the educational process, opening up spaces for situated and dialogical learning that put meaningful relationships between individuals and places back into circulation.

Empirical evidence confirms that direct experiences with nature promote the integrated development of social, emotional and cognitive skills, while stimulating a sense of connection and responsibility towards the environment (Friedman et al., 2022; Louv, 2016). When framed within an intentional and reflective relationship, typical of mentoring (Kram, 1985; Clutterbuck, 2014), such experiences can contribute not only to shaping conscious individuals, but also to generating forms of ecological citizenship capable of addressing the challenges of climate change and sustainability.

Eco-mentoring offers an original and promising perspective for research and training, capable of integrating the transformative potential of nature-based education with the relational dimension of mentoring. It is not a question of adding a new paradigm, but of reviving the most authentic educational vocation of mentoring: creating lasting bonds between people and places, between knowledge and responsibility. In this direction, it also contributes to the implementation of Target 4.7 of the 2030 Agenda (UNESCO, 2017), promoting skills and attitudes geared towards sustainable and inclusive citizenship.

References

Aloisio, J. M., Roberts, S.-J., Becker-Klein, R., Dunifon, S., Lewis, J. D., Clark, J. A., Munshi-South, J., & Tingley, K. (2022). Impacts of a near-peer urban ecology research mentoring program on undergraduate mentors. *Frontiers in Ecology and Evolution, 10*, 803210. https://doi.org/10.3389/fevo.2022.803210

Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). Environmental education outcomes for conservation: A systematic review. *Biological Conservation, 241*, 108224. https://doi.org/10.1016/j.biocon.2019.108224

Ardoin, N. M., Bowers, A. W., Roth, N. W., & Holthuis, N. (2018). Environmental education and K–12 student outcomes: A review and analysis of research. *The Journal of Environmental Education, 49*(1), 1–17. https://doi.org/10.1080/00958964.2017.1366155

Ballard, H. L., Dixon, C. G. H., & Harris, E. M. (2017). Youth-focused community and citizen science: Examining the role of evaluation and reflection to support learning. *Biological Conservation, 208*, 65–75. https://doi.org/10.1016/j.biocon.2016.05.024

Ballard, H. L., Lindell, A. J., & Jadallah, C. C. (2024). Environmental education outcomes of community and citizen science: A systematic review of empirical research. *Environmental Education Research, 30*(6), 1007–1040. https://doi.org/10.1080/13504622.2024.2348702

Bandura, A. (2001). Social cognitive theory: An agentic perspective. Annual review of psychology, 52(1), 1-26.

Benware, C. A., & Deci, E. L. (1984). Quality of learning with an active versus passive motivational set. *American Educational Research Journal, 21*(4), 755–765. https://doi.org/10.3102/00028312021004755

Chawla, L. (1998). Significant life experiences revisited: A review of research on sources of environmental sensitivity. *Environmental Education Research, 4*(4), 369–382. https://doi.org/10.1080/1350462980040402

Clutterbuck, D. (2014). Everyone needs a mentor. Kogan Page Publishers.

Crisp, G., & Cruz, I. (2009). Mentoring college students: A critical review of the literature between 1990 and 2007. *Research in Higher Education, 50*(6), 525–545. https://doi.org/10.1007/s11162-009-9130-2

Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. L. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior, 72*(2), 254–267. https://doi.org/10.1016/j.jvb.2007.04.005

Fleming, M., House, S., Hanson, V. S., Yu, L., Garbutt, J., McGee, R., Kroenke, K., Abedin, Z., & Rubio, D. M. (2013). The Mentoring Competency Assessment: Validation of a new instrument to evaluate skills of research mentors. *Academic Medicine, 88*(7), 1002–1008. https://doi.org/10.1097/ACM.0b013e318295e298

Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences, 111*(23), 8410–8415. https://doi.org/10.1073/pnas.1319030111

Friedman, S., Imrie, S., Fink, E., Gedikoglu, M., & Hughes, C. (2022). Understanding changes to children's connection to nature during the COVID-19 pandemic and implications for child well-being. People and Nature, 4(1), 155–165.

Garvey, B., Stokes, P., & Megginson, D. (2018). *Coaching and mentoring: Theory and practice* (3rd ed.). SAGE Publications.

Hackett, K. A., Ziegler, M. C., Olson, J. A., Bizub, J., Stolley, M., Szabo, A., Heller, E., & Beyer, K. M. M. (2021). Nature Mentors: A program to encourage outdoor activity and nature engagement among urban youth and families. *Journal of Adventure Education and Outdoor Learning, 21*(1), 35–52. https://doi.org/10.1080/14729679.2020.1730203

Jacobi, M. (1991). Mentoring and undergraduate academic success: A literature review. *Review of Educational Research, 61*(4), 505–532. https://doi.org/10.3102/00346543061004505

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.

Kram, K. E. (1985). *Mentoring at work: Developmental relationships in organizational life*. Glenview, IL: Scott Foresman.

Louv, R. (2016). Vitamin N: The essential guide to a nature-rich life. Algonquin Books.

National Academies of Sciences, Engineering, and Medicine. (2018). *Learning through citizen science: Enhancing opportunities by design*. Washington, DC: National Academies Press. https://doi.org/10.17226/25183

National Research Council. (2012). *A framework for K–12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: National Academies Press. https://doi.org/10.17226/13165

Odum, E. P. (1969). The Strategy of Ecosystem Development: An understanding of ecological succession provides a basis for resolving man's conflict with nature. *science*, *164*(3877), 262-270.

Paparella, N., & Del Gottardo, E. (2023). Bambini intraprendenti. La scuola in campagna. Franco Angeli.

Pfund, C., Spencer, K. C., Asquith, P., House, S. C., Miller, S., & Sorkness, C. A. (2015). Building national capacity for research mentor training: an evidence-based approach to training the trainers. *CBE—Life Sciences Education*, *14*(2), ar24.. https://doi.org/10.1187/cbe.14-10-0184

Rosa, H. (2015). *Accelerazione e alienazione*. Giulio Einaudi Editore.

Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In *Psychology of sustainable development* (pp. 61-78). Boston, MA: Springer US.

Smith, G. A. (2002). Place-based education: Learning to be where we are. *Phi Delta Kappan, 83*(8), 584–594. https://doi.org/10.1177/003172170208300806

Sobel, D. (2004). Place-based education: Connecting classrooms and communities. *Education for meaning and social justice*, *17*(3), 63-64.

Stevenson, K. T., Peterson, M. N., Carrier, S. J., Strnad, R. L., Bondell, H. D., Kirby-Hathaway, T., & Moore, S. E. (2014). Role of significant life experiences in building environmental knowledge and behavior among middle school students. *The Journal of Environmental Education, 45*(3), 163–177. https://doi.org/10.1080/00958964.2014.901935

Tansley, A. G. (1935). The use and abuse of vegetational concepts and terms. Ecology, 16(3), 284-307.

UNESCO. (2017). *Education for Sustainable Development Goals: Learning objectives*. Paris: UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000247444

United Nations. (2015). Transforming our world: The 2030 Agenda for Sustainable Development (A/RES/70/1). United Nations. https://sdgs.un.org/2030agenda

van de Wetering, J., Hovdhaugen, E., & Vindenes, M. (2022). Does environmental education benefit environmental behaviour? *Studies in Educational Evaluation, 74*, 101121. https://doi.org/10.1016/j.jenvp.2022.101782

Wells, N. M., & Lekies, K. S. (2006). Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children, Youth and Environments, 16*(1), 1–24.

Wenger, E. (1998). Communities of practice: Learning as a social system. Systems thinker, 9(5), 2-3.

Wenger, E., McDermott, R., & Snyder, W. M. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Harvard Business Press.