

Understanding Sustainability in the Context of Anchoring and Objectification: Insights From College Students

Özden Şengül, Boğaziçi University, Türkiye

The European Conference on Education 2026
Official Conference Proceedings

Abstract

Transition to a sustainable society requires transformative changes in people's sense of their role in the natural world rather than a mere technical process. Using anchoring and objectification as lenses, we analyzed student comments in a science education course. The dataset consisted of reflective writings and responses of 163 students from various fields. Using qualitative thematic analysis, this research explores how students consistently anchor sustainability to their lived experiences and enact this approach by translating abstract concepts into concrete behaviors and specific results. Seven major themes were developed as different ways to anchor and objectify the themes. For instance, concepts such as "Waste & Resource Management" link biodiversity, resource conservation, water/energy saving, and waste reduction, as evidenced by observable waste management systems. "Environmental Protection & Biodiversity" situated the preservation of the environment in the context of being a natural outtake of public behavior in shared space with people, invoking clear social norms surrounding what constitutes cleanliness in public space. Conservation of biological diversity was also seen as integral to the structure of education and socialization, as the era when the value was best articulated in "Education & Awareness." Abstract theories of biodiversity become objectified through recycling, waste segregation, and the use of locally sourced products. Lastly, learning nature through sustainability education would be integral to students' ability to construct their understanding of how knowledge is constructed, how values affect research priorities, and how scientific discoveries are told, debated, and re-emerge in public discourse.

Keywords: sustainability education, anchoring, objectification, epistemic reasoning, higher education

iafor

The International Academic Forum
www.iafor.org

Introduction

The 21st century brings challenges that require humanity to aim for a more sustainable society rather than a technical progress (Wals & Jickling, 2002). In this process, people begin to understand their role in the natural world through transformative experiences and imagining and enacting sustainable futures (Sterling, 2011). In college education, students' pre-conceptions about environment and sustainability based on their personal experiences, disciplinary training, social norms, and media (Corcoran & Osano, 2009) influence their understanding and use of sustainability curricula with concrete experiences. There has been less research in higher education regarding how students anchor abstract sustainability concepts into concrete experience, and how they translate or objectify those concepts into observable actions. It is important to understand student cognition to design sustainability education toward informed, evidence-based action.

The present study addresses this gap by examining sustainability awareness among college students through the complementary lenses of anchoring and objectification and epistemic reasoning framework (Kuhn et al., 2000). Through a qualitative study with 163 college students from a large public university in Türkiye, the study demonstrates dominant patterns of sustainability awareness and traces how epistemic reasoning levels shape the ways students connect sustainability to their lives and in their practices. This study was guided by the following questions: What are the dominant patterns of sustainability awareness among college students across thematic categories through anchoring and objectification? How are students' epistemic reasoning levels related to their sustainability awareness?

Theoretical Framework: Anchoring, Objectification, and Epistemic Reasoning

Anchoring addresses abstract concepts in concrete, lived experience (Hannerz, 2003). Sustainability is an abstract and multi-dimensional construct, and students make sense of it through personal experiences of nature. Anchoring helps students to express what they value about sustainability and capture the interpretive ground from which students reason. In this study, anchoring help use identify the dominant thematic categories about sustainability. It also helps instructors to focus on teaching and learning for professional identity for sustainability. Objectification is also described as a process by which abstract concepts are translated into observable behaviors, practices, and artifacts (Berger & Luckmann, 2016). Objectification is interested in the ways how students render the concept tangible through concrete actions such as recycling, conservation, curricular design, or policy engagement. Objectification is related to practical, action orientation to cultivate sustainability education (Jensen & Schnack, 1997).

This study also employs Kuhn's framework of epistemological reasoning in absolutist, multiplist, and evaluativist levels. This framework aims to define students' epistemic levels to understand how they anchor sustainability concepts and how they objectify them into action. Absolutist level approaches knowledge as objective and certain, multiplist level acknowledges multiple perspectives as equally valid, and evaluativist level supports the critical integration through evidence and argumentation.

Literature Review

Sustainability education should promote critical thinking and meaningful learning rather than an instrumental approach (Wals & Jickling, 2002). Sterling (2011) defines sustainability education as transformative learning; sustainability education drives learners to reexamine the

core assumptions underpinning their relationship with nature. Critical scholars suggest that mainstream education for sustainable development should move beyond superficial participation and shallower forms of engagement. Kopnina (2020) makes the distinction between rule-following environmental behaviors and deep systemic cognition: learners who lack reflection only implement surface-level practices such as recycling, turning off lights, and using reusable bags.

Students conceptualize sustainability in different ways. For example, Corcoran and Osano (2009) state that students articulate sustainability as a political vision to negotiate tensions between environmental protection, economic development, and social justice rather than a technical matter. The authors also argue that students should be empowered to discuss competing values rather than only internalizing predetermined positions. Although students generally argue for visible, ecological actions such as recycling, they focus less on governance, policy, or economic issues (Acosta Castellanos & Queiruga-Dios, 2022).

Sustainability education also aims to connect knowledge into action. For example, Jensen and Schnack (1997) state that sustainability education should aim to develop students' capacity to make informed, deliberate decisions about sustainability issues and their enactment rather than behavior modification. Therefore, research on transformative learning in environmental contexts suggests tentative and durable changes that can reframe assumptions and integrate new perspectives into identity and practice (Ballantyne & Packer, 2016). Students should justify their choices with evidence rather than counting actions.

Epistemic reasoning is particularly essential for sustainability as a complex and uncertain area. According to Kuhn et al. (2000), individuals may have absolutist conceptions to approach sustainability as a set of rules, multiplist beliefs with multiple equally valid ideas, and evaluativist ideas to evaluate evidence and justify action. This study aims to examine how epistemic levels address the ways students anchor sustainability concepts to lived experience and objectify them into action.

Methods

A qualitative study was employed during the 2024-2025 academic year. The data collected and analyzed separately and integrated during interpretation. The study was conducted in a science education course at a large public university in Türkiye. The qualitative data collected from 163 students enrolled in Education (ED), Science (SCIE), and Social Sciences (SOC) programs. These students provided reflective writings and open-ended survey responses. Participation was voluntary. Reflective writings invited students to describe how they could contribute to sustainability in their professional roles. Open-ended survey responses elicited students' conceptions of the relationships among science, society, and sustainability. The qualitative materials helped to analyze for anchoring and objectification. Qualitative analysis combined thematic analysis to determine sustainability categories and identify anchoring and objectification patterns. Responses were also coded for epistemic reasoning level using Kuhn et al.'s (2000) framework. Cross-tabulation of epistemic levels with sustainability categories allowed the analysis to trace how reasoning sophistication varied across thematic domains.

Results

The researchers coded qualitative data based on Kuhn et al.'s (2000) framework. Most students (48.3%) showed an evaluative approach focusing on evidence-based reasoning, critical

evaluation, and integration of diverse perspectives. Some students (33.8%) had multiplist perspectives, recognizing multiple viewpoints without evidence-based evaluation, and less students (17.9%) had absolutist approach and defined sustainability as a set of fixed facts and rules.

Across epistemic levels, “Education and Awareness” theme was the most common (27.6% of coded responses), students from all three departments and all three epistemic levels were interested in teaching as their primary sustainability strategy. On the other hand, Governance, Policy, and Collective Structures had the fewest responses (3.7%) that were predominantly absolutist with lack frameworks for connecting sustainability to governance.

Students with evaluativist perspectives anchored sustainability to systemic, interdisciplinary, and global contexts and objectified it through concrete, innovative actions with an explicit awareness. For example, a student from education major related her future professional identity to biodiversity conservation through curriculum design:

In the future, as a teacher, I can raise awareness about the importance of ecosystems, genetic diversity, and the interdependence of living organisms. I can contribute to biodiversity education through real-life examples, field trips, and interdisciplinary projects. I believe that I should encouraging critical thinking about human impact on the environment to emphasize students’ role in preserving biodiversity. (Education major, female, Education & Awareness theme)

In this quotation, anchoring operated through professional identity as an educator combined with disciplinary knowledge of curriculum design; objectification took the form of specific pedagogical actions, such as curriculum integration, field trips, and critical-thinking exercises, each tied to a reasoned account of how the action produces the intended outcome.

Another example of evaluativist reasoning anchored in disciplinary expertise in trade economics and extended into the governance domain to address a self-critical question about systemic tensions:

As a future trade expert, I think I can help conserve biodiversity by supporting fair and sustainable trade policies. For example, I would promote eco-friendly products and work with companies that respect environmental standards. Also, I believe international agreements should protect endangered species and reduce overexploitation of natural resources. Trade affects many ecosystems, so we must balance economy and nature. I want to raise awareness in business about how supply chains impact biodiversity. But I still ask myself, can global trade really be sustainable if profit always comes first? (Social Sciences major, male, Governance, Policy & Collective Structures theme)

The student’s question presented his evaluativist reasoning since the student proposed actions and interrogated the structural conditions under which those actions would succeed or fail.

Multiplist views referred to the complexity of sustainability and multiple viewpoints although they were equally valid without critically evaluating their validity and effectiveness. In this approach, anchoring was based on personal opinion, classroom learning, and social discourse. For example, in the following reflection, student states:

I realized that science is not just in labs, it is everywhere in society. I was surprised how much science connects with politics, economy and even ethics. I really enjoyed learning about how science can both help and harm. I still have a question about how we can make science more equal between rich and poor countries. (Education major, male, Conceptual & Theoretical Models theme)

This student explains interdisciplinary connections and concerns about global equity, addressing dual-use approach, help and harm, rich and poor, without an evaluative framework and a concrete plan for action.

Absolutist views defined knowledge as objective, certain, and non-negotiable and presented sustainability as a set of fixed facts and rules. In this view, anchoring defined sustainability as concrete, direct experiences and authority-based knowledge. Objectification included rule-based actions without awareness of complexity. One example illustrated this view:

I can try to use electricity and water efficiently. I can use reusable packets and bags and containers to decrease amount of plastic usage. I can also be away from giving harm to nature and animals when I am in the outdoors. (Science major, female, Waste & Resource Management category)

This reflection provided objectification of sustainability as rule-following such as delivering information, saving electricity and water, using reusable bags, anchored in basic environmental rules learned through socialization. The actions are unexamined since there is no consideration of effectiveness, or systemic context.

Discussion and Conclusion

This study showed that students had highest awareness for climate and biodiversity and lowest awareness for governance and individual lifestyle. This indicated that students acknowledged the sustainability as an environmental approach rather than focusing on institutional and economic structures (Acosta Castellanos & Queiruga-Dios, 2022). This approach contradicted with Corcoran and Osano's (2009) explanation that sustainability had political vision for young people since current education needed to cultivate political dimension.

In this study, students anchored sustainability as a pedagogical priority in terms of lived experiences and professional identities (Acosta Castellanos & Queiruga-Dios, 2022). Students focused on informal and formal teaching experiences as a transformative learning opportunity (Sterling, 2011). However, this tendency showed students' overlooking of the policy and economy aspect of sustainability. In terms of objectification, students listed sustainability actions at different epistemic levels. They had multiplist beliefs to recognize the complexity of sustainability without evaluative frameworks (Bendixen & Rule, 2004). Absolutist beliefs aligned with shallower or rule-following understanding. These results suggested that education for sustainable development should target epistemic development alongside content knowledge. As Kopnina (2020) suggested, teachers should teach about sustainability to evaluate sustainability claims, otherwise, it would become rule-following environmentalism.

There were also differences within the departmental level. For example, science students were stronger on environmental categories, social science students were stronger on individual action. Therefore, disciplinary training shaped both content and the sophistication of

sustainability awareness. This finding makes suggestions bridge science and social science perspectives on sustainability to address the government and institutional issues.

This study has implications for future research to track epistemic development over students' academic careers and establish epistemic reasoning shifts. Further research should also compare anchoring patterns across different cultures to understand cultural-specific and cultural-general conceptions. Curriculum design should also focus on preparing governance-oriented sustainability curricula to emphasize policy requirements. This study also has several limitations in terms of single institution sample that limits generalizability to other cultural and institutional contexts. Students in this study enrolled in a science education course: this sample was a convenience sampling within a single course and may introduce self-election bias. In conclusion, these results showed that students who evaluated knowledge claims anchor sustainability more richly and objectify it more responsibly. Sustainability education scaffolded epistemic development and contributed to the transformative change to have transition to a sustainable society.

References

- Acosta Castellanos, P. M., & Queiruga-Dios, A. (2022). From environmental education to education for sustainable development in higher education: a systematic review. *International Journal of Sustainability in Higher Education*, 23(3), 622–644.
- Ballantyne, R., & Packer, J. (2016). Visitors' perceptions of the conservation education role of zoos and aquariums: Implications for the provision of learning experiences. *Visitor Studies*, 19(2), 193–210.
- Bendixen, L. D., & Rule, D. C. (2004). An integrative approach to personal epistemology: A guiding model. *Educational Psychologist*, 39(1), 69–80.
- Berger, P., & Luckmann, T. (2016). The social construction of reality. In W. Longhofer & D. Winchester (Eds.), *Social theory re-wired* (pp. 110–122). Routledge.
- Corcoran, P. B., & Osano, P. M. (Eds.). (2009). *Young people, education, and sustainable development: Exploring principles, perspectives, and praxis*. Wageningen Academic Publishers.
- Hannerz, U. (2003). Macro-scenarios. Anthropology and the debate over contemporary and future worlds. *Social Anthropology*, 11(2), 169–187.
- Jensen, B. B., & Schnack, K. (1997). The action competence approach in environmental education. *Environmental Education Research*, 3(2), 163–178.
- Kopnina, H. (2020). Education for the future? Critical evaluation of education for sustainable development goals. *The Journal of Environmental Education*, 51(4), 280–291.
- Kuhn, D., Cheney, R., & Weinstock, M. (2000). The development of epistemological understanding. *Cognitive Development*, 15(3), 309–328.
- Sterling, S. (2011). Transformative learning and sustainability: Sketching the conceptual ground. *Learning and Teaching in Higher Education*, 5(11), 17–33.
- Wals, A. E., & Jickling, B. (2002). “Sustainability” in higher education: From doublethink and newspeak to critical thinking and meaningful learning. *Higher Education Policy*, 15(2), 121–131.