OpenEvo

Progress & Futures Report

Celebrating five years of educational research and innovation

Comparative Cultural Psychology

FRIEDRICH-SCHILLER-UNIVERSITÄT JENA

BIENENHAUS
Friedrich-Schiller-Universität

Contents

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https://openevo.eva.mpg.de/literaturebase/openevo-progress-and-futures-report/

The Origins of OpenEvo

Inspirations in Madagascar

The general vision of OpenEvo evolved between 2011 and 2015, when OpenEvo cofounders Susan Hanisch and Dustin Eirdosh were working and living in South-Western Madagascar. Studying regional challenges of sustainable resource use and working with local university and school partners, we realized the need and potential of engaging stakeholders in understanding aspects of human behavior. Our Madagascar 2030 conference in 2015 helped solidify a vision of engaging diverse stakeholders in understanding cultural evolution as part of sustainable change.

Expanding our vision

In 2016, we moved to Leipzig - not least because we thought it might be interesting to be near an institute like the Max Planck Institute for Evolutionary Anthropology (MPI-EVA).

We also came to realize that our vision was relevant beyond Madagascar and had implications for how the emerging UNESCO led program of Education for Sustainable Development is conceptualized. We created a US-based non-profit organization, Global ESD. We developed a concept for a course that links the science of human evolution and behavior with education for sustainable development. In 2016, we began teaching this course to teacher education students at Leipzig University.

Global ESD

ZLS ZENTRUM FÜR LEHRERBILDUNG UND SCHULFORSCHUNG

UNIVERSITÄT LEIPZIG

The Origins of OpenEvo

Inspired by the science and education landscape in Leipzig

In Leipzig we started to collaborate with the project AncientAncestors.org which donated to us a set of 13 hominin fossil skull replicas and helped us explore inquiry-based learning methods for teaching human evolution. This created a great foundation for us to work with schools in Leipzig and to develop and try out a range of teaching approaches for exploring the evolution of human heavior in classrooms.

In 2017-2019, we were also greatly inspired by observing and studying the work of Dr. Axel Kästner of the Leipzig Zoo School. His educational approach exemplified to us that our vision of integrating the science of evolutionary anthropology into the curriculum - in biology and beyond - is possible, indeed, already happening!

The Origins of OpenEvo

In 2019 - Dustin became a PhD candidate at MPI-EVA, Department of Comparative Cultural Psychology, with Susi joining as a guest researcher.

In 2020 we renamed our educational initiative to OpenEvo and established an IT infrastructure at the MPI, including a website and Moodle learning platform. The MPI-EVA Multimedia Department quickly became an essential collaborator for developing our core set of resources.

https://openevo.eva.mpg.de/

In 2020-2024 we also got established at Leipzig University through the primary school science education group, allowing us to explore educational innovations in the context of primary school education.

Since 2021, the biology education group of Friedrich Schiller University Jena provided yet another important home for our work, allowing us to connect our educational innovation work more explicitly to biology education as well as to the history and philosophy of biology.

The OpenEvo Design Concept

Over the years, we developed an educational design concept with the aim to make the highly interdisciplinary and dynamic science of evolutionary anthropology tractable for curriculum development in the school context. The design concept continues to provide us with a generative model for turning a variety of research questions, methods, and insights of evolutionary anthropolgy into classroom materials.

Educational Innovation at MPI-EVA

Starting in 2019 we routinely open the doors of the MPI-EVA and the Wolfgang Köhler Primate Research Center to local classrooms. A wide range of tours have highlighted interdisciplinary research in evolutionary anthropology, while pioneering new directions in science education and Education for Sustainable Development.

We developed key strategies to extend the impact of on-site Zoo tours by training local teacher education students to support extension activities in local classrooms. We supervised more than 20 educational thesis research projects in these themes across universities in Jena, Leipzig, and Halle.

Dustin further offered a TEDx talk, and a Keynote talk at the MPG Alumni Association on our approach to educational innovation

Improving the Human Evolution exhibit in the entrance to Pongoland

In 2023 we collaborated with the Leipzig Zoo and research staff at the Wolfgang Köhler Primate Research Center to provide some updates and revisions to the human evolution education materials in the entrance to Pongoland, the great ape habitat. The new materials focus on *population thinking* and *human diversity* across evolutionary history while countering common misconceptions.

Projects and Collaborations

Community Science Labs

From 2020-2024 we explored the vision of ***Community Science Labs*** - school-based infrastructures that enable school stakeholders to collaboratively explore questions of school culture and design with the help of scientific inquiry, as an important foundation for enacting actual change processes in schools and education systems. During this time, we partnered with teachers and students from Anton-Philipp-Reclam-Gymnasium in Leipzig to develop and test approaches for engaging secondary school students in community science projects.

One potential community science method or "conversation starter" we developed in order to discuss the "optimal" design of schools in today's world from the perspective of evolutionary anthropology is the "School fit for humans" questionnaire. In 2021, we organized an online workshop around this theme during the annual Learning Planet Festival organized by the Learning Planet Institute.

In 2021 and 2023 we were partners of the YES - Young Economic Summit, supporting secondary school student groups in developing critical reflections on the nature of schooling in relation to human evolution and future trends.

Since 2024 our collaborator Peter Bullock is the Executive Director of our original non-profit organization Global ESD, exploring the Community Science Lab approach with educational stakeholders in the US and internationally. It has also become clear that such a vision of community science projects and a school-based infrastructure of community science labs requires more substantial changes of education systems on the level of curriculum and school organization. In this context, our focus in this space has moved to supporting participatory approaches to Computational Curriculum Studies (see p. 12).

Projects and Collaborations

At **Leipzig University**, we developed and implemented several teacher education modules. Building on earlier course concepts since 2016, we implemented the course “Human behavior and sustainable development” in English and German between 2019 and 2024 at the ZLS. This course was also adapted and taught at the **PH Bern** for several semesters. In the primary school teacher education programme, we implemented the course “Evolutionary anthropology in primary school” over two semesters. Feedback from students indicated to us that engaging future teachers in the educational potential of evolutionary anthropology is a fruitful direction (see also p. 20).

UNIVERSITÄT LEIPZIG

ZLS ZENTRUM FÜR LEHRERBILDUNG UND SCHULFORSCHUNG

PH Bern Pädagogische Hochschule

“I think the most surprising was how there are so many basic principles and knowledge about humanity that I have never heard of and that hasn't been taught to me - and I guess to most of my peers - although one could say I have a pretty good educational career, having spent my life in primary school, secondary school, abroad, in university for five years and studying three different subjects, doing additional courses and workshops outside university, …. How can things like moral psychology, fast and slow thinking, Core Principles of Cooperation and nudging, things that happen every day to me, have never come my way from an academic perspective before?”

Teacher education student at Leipzig University,
participant in the course “Human behavior and sustainable development”

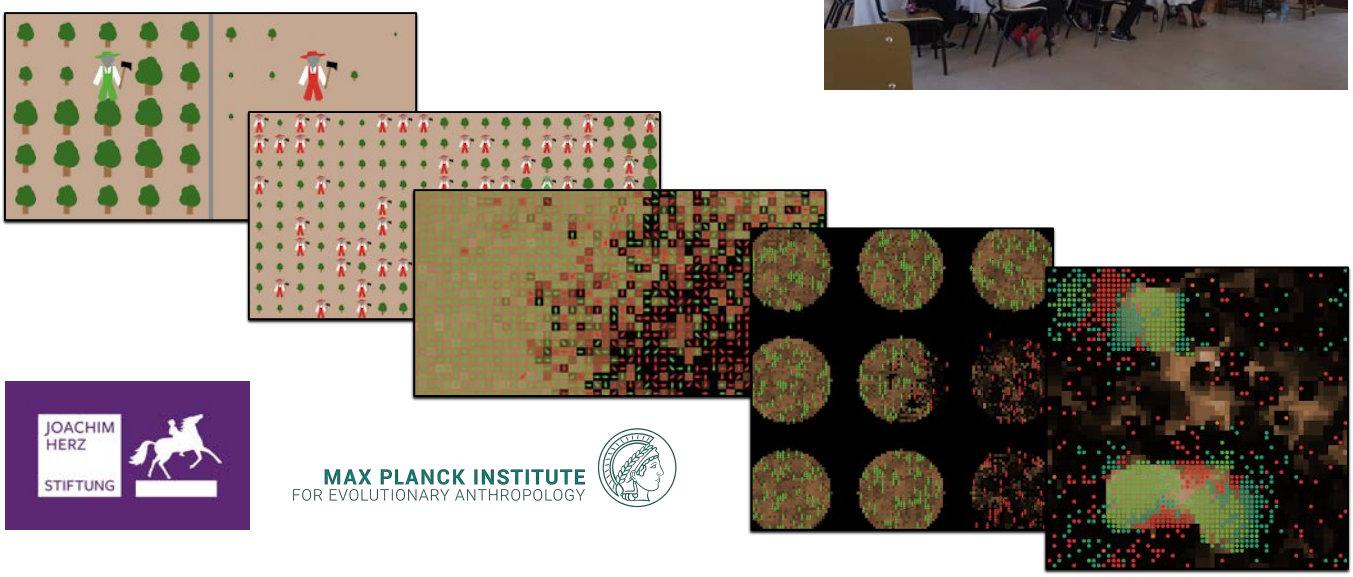
“There wasn't a single seminar that I didn't leave with an "Aha, wow!" (…) After the sessions I went to my friends and family members and proudly presented what I had learned. Most of them were probably already annoyed with me, but I found the topics incredibly exciting and interesting. (…) I'm excited to see when I can actually apply evolution in primary school science class and how the children respond to it.”

Teacher education student at Leipzig University,
participant in the course “Evolutionary anthropology in primary school”

Projects and Collaborations

In 2019, with support from the department of *Human Behavior, Ecology and Culture* at MPI-EVA, we began collaborating with a team of visitors from the Ngezi community forestry organization in Pemba, Tanzania. We explored a number of our educational approaches and materials and adapting them for the local context. Our NetLogo models of social-ecological systems were to be particularly fruitful to help local students understand the ecological and social dynamics of sustainable forest use and transferring insights to their own community contexts.

Our development of agent-based models for teaching dynamics of sustainable resource use was further supported by a grant by the Joachim Herz Foundation in 2023-2025, allowing us to create further materials and engaging teachers and classrooms in online and in-person settings.



JOACHIM HERZ STIFTUNG

MAX PLANCK INSTITUTE FOR EVOLUTIONARY ANTHROPOLOGY

Projects and Collaborations

Due to our focus on linking education for sustainable development with concepts and insights of evolutionary anthropology, we were invited to join the Applied Working Group for Sustainability Science within the Cultural Evolution Society Transformation Fund.

Our role was to lead the educational domain with a range of collaborators. Ultimately the workshop illuminated the potential and challenges of interdisciplinary concepts and pluralism across the landscapes of sustainability science.

Understanding Agency

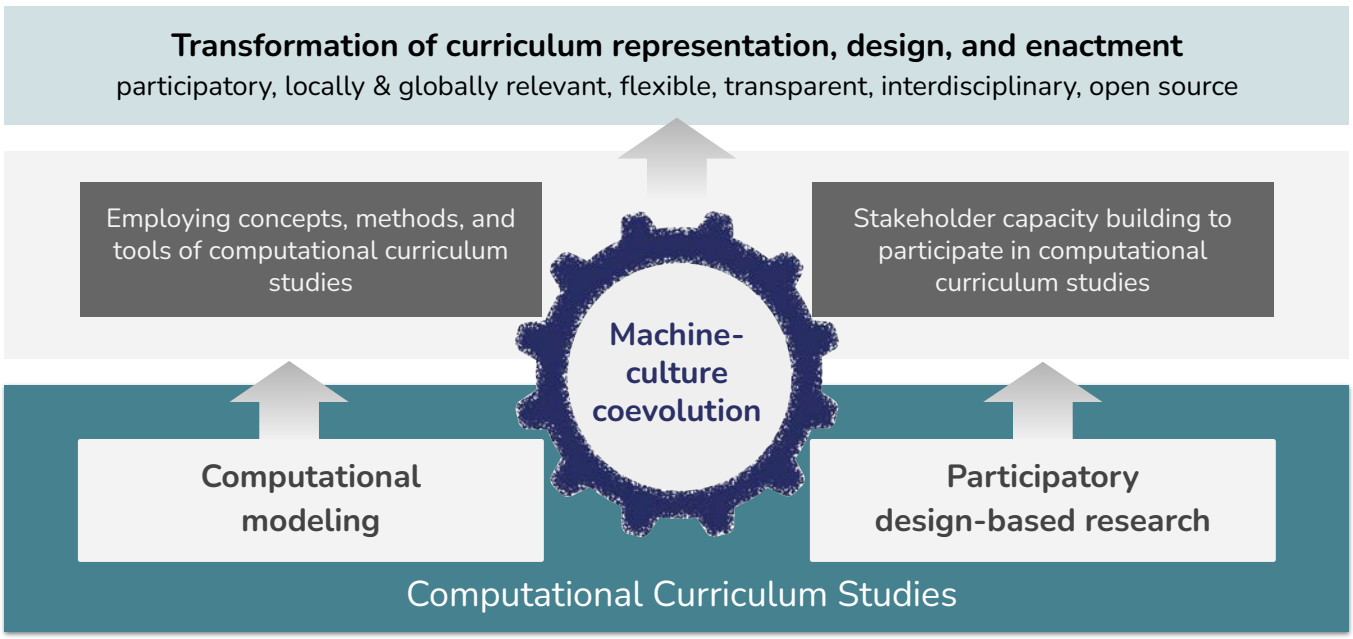
Another focus area emerged in 2022, when Dustin was a participant in the *Diverse Intelligences Summer Institute (DISI)*. There, the concept of looking at the world's many minds and intelligences across species, humans, and computational machines led to our educational innovation project concept for *Understanding Agency*. Beginning with conceptual clarification we identified areas of consensus and controversy in conceptualizations of "agency" across domains. This conceptual work ultimately led to practical empirical research in evolution education, the EvoFlex project. We began to collaborate with several biology education researchers in Germany and internationally around exploring how the concept of agency relates to and could be meaningfully integrated in evolution education research and practice.

Susi presented first insights from this work (see p. 19) at the 2025 conference of the International Society for the History, Philosophy and Social Studies of Biology in Porto, Portugal, as part of a panel discussion around exploring the educational implications of a "New Biology".

Projects and Collaborations

Computational Curriculum Studies

Starting in 2024, we began to realize that our educational design concept may interact in interesting ways with developments in computational science and Artificial Intelligence. Critically, we recognized a coming transformation in representing entire school curricula as computational models that can be understood and improved at new scales of consideration. These insights have led us to clarify the need and potential for a new field of Computational Curriculum Studies.

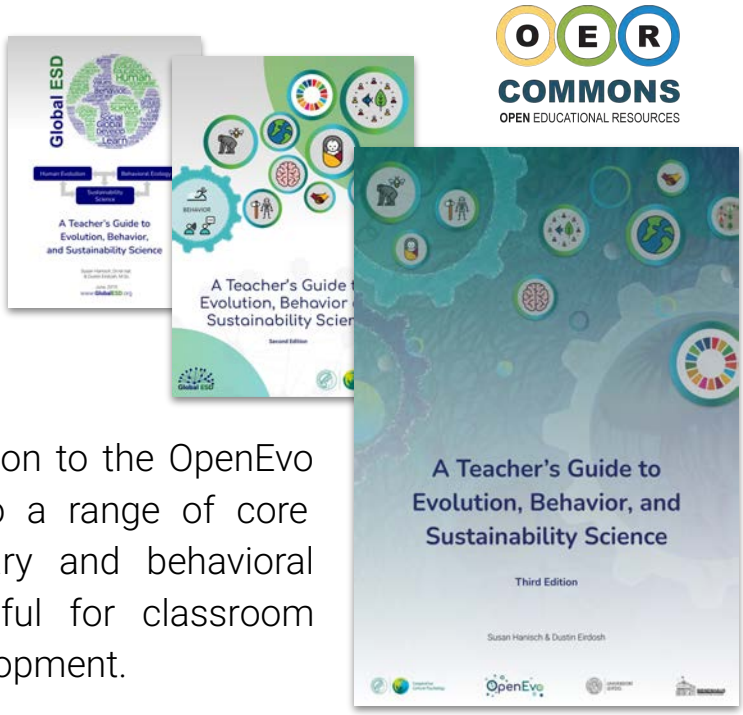


In September 2025, Dustin began growing a global network of inter-disciplinary education experts. First, by engaging student, teacher, and researcher facing workshops in India. We are now bringing together partners including the OECD and Future of Learning Collaborative to evolve new tools for computational curriculum research and participatory curriculum design.

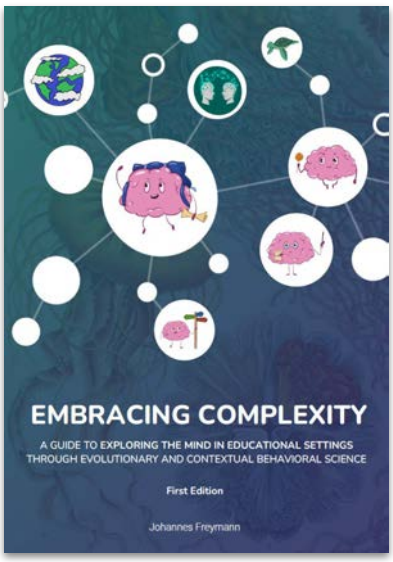
With funding from the Max Planck Society International Office, Dustin engaged hundreds of educational stakeholders across multiple workshops in New Delhi, India.

Open Educational Resources

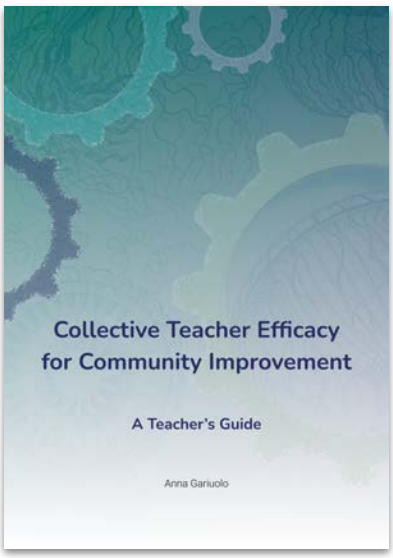
Since 2019, we published three editions of our ***Teacher's Guide to Evolution, Behavior, and Sustainability Science*** in English and German, with the third edition also available in Turkish.



The guide offers an easy introduction to the OpenEvo design concept (see p. 5) and to a range of core themes in the human evolutionary and behavioral sciences that we think are helpful for classroom engagement and competency development.



In 2023 and 2024, we collaborated with Johannes Freymann, a clinical psychologist in training. Drawing on his experience in research, clinical practice, and exchange with international experts, he developed ***Embracing Complexity – A Guide to Exploring the Mind in Educational Settings through Evolutionary and Contextual Behavioral Science,*** available in English and German. It has since been presented at several conferences and shared widely with educators, practitioners, and clients across Germany, the US, Argentina, Poland, and Switzerland.



In 2023 and 2024, we also worked with Anna Gariuolo, a master student in Early Childhood Research at Leipzig University. She combined her interest in collective teacher efficacy with some of our educational approaches and materials to create ***Collective Teacher Efficacy for Community Improvement. A Teacher's Guide.*** It offers a synthesis of insights across behavioral and educational sciences as well as a wide range of practical tools for reflection and group collaboration.

Open Educational Resources

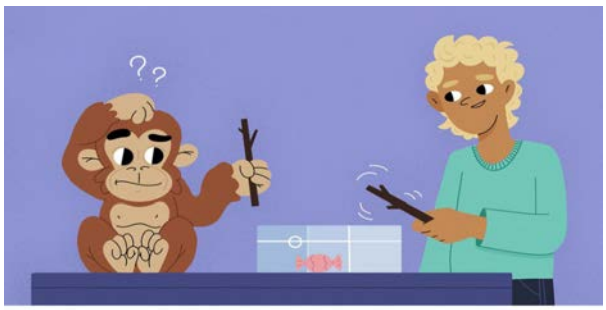
How can young people not only understand the complex concepts and methods of evolutionary anthropology, but also experience the processes of scientific publication themselves? The *Frontiers for Young Minds* journal answers these questions by having scientists write youth-accessible scientific articles which are then 'youth-reviewed' by students in classrooms around the world.

Since the launch of OpenEvo, we have facilitated the publication of three such articles - two of which were written by scientists in the MPI-EVA Department of Comparative Cultural Psychology, and one of which was youth reviewed by local students in our Community Science Lab (see p. 8).

frontiers FOR YOUNG MINDS

WHAT IS "FAIR" IS NOT THE SAME EVERYWHERE

DO MONKEYS CARE WHAT IS FAIR?



STUDYING GREAT APES AND CULTURAL DIVERSITY TO UNDERSTAND THE HUMAN MIND

→ Hanisch, S., Eirdosh, D., Schäfer, M., & Haun, D. (2021). What Is "Fair" Is Not the Same Everywhere. Frontiers for Young Minds, 9. https://doi.org/10.3389/frym.2021.580435

→ Cronin, K. A., & Hopper, L. M. (2020). Do Monkeys Care What Is Fair? Frontiers for Young Minds, 8, 550299. https://doi.org/10.3389/frym.2020.550299

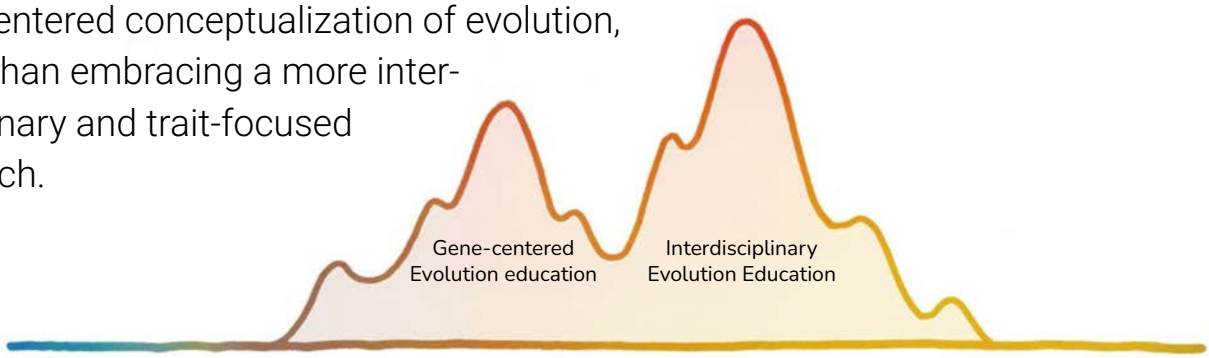
→ Sánchez-Amaro, A., Eirdosh, D., & Haun, D. (2024). Studying Great Apes and Cultural Diversity To Understand the Human Mind. Frontiers for Young Minds, 12, 1337514. https://doi.org/10.3389/frym.2024.1337514

Academic Publications

Our academic work has been focused on the general vision of OpenEvo, i.e. to establish a greater and more coherent focus on human evolution and behavior in interdisciplinary education, including sustainability education, across subject areas. We found that a ***design-based research approach*** is fit for the task by helping us scope out the research questions and methods to address several levels of educational systems innovation, from the small-scale design of innovative teaching methods, teacher and student conceptions to broader aspects of curriculum and school design.

→ Hanisch, S., & Eirdosh, D. (2020). Educational potential of teaching evolution as an interdisciplinary science. *Evolution: Education and Outreach*, 13(1), 25. https://doi.org/10.1186/s12052-020-00138-4

In this paper, we offer a bold claim and a number of hypotheses to the evolution education research community: that evolution education research and practice might be "climbing the wrong mountain" by focusing and optimizing towards a gene-centered conceptualization of evolution, rather than embracing a more inter-disciplinary and trait-focused approach.



→ Hanisch, S., & Eirdosh, D. (2023). Behavioral Science and Education for Sustainable Development: Towards Metacognitive Competency. *Sustainability*, 15(9), 7413. https://doi.org/10.3390/su15097413

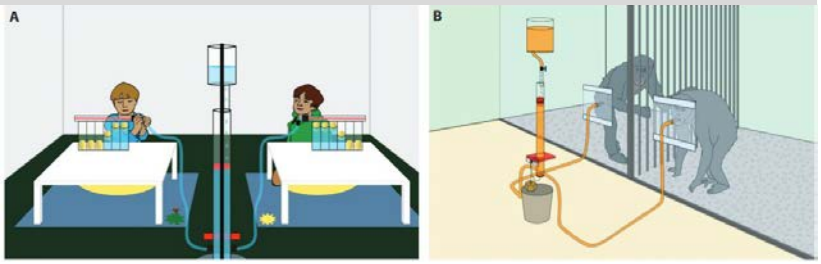
This paper's audience is the sustainability education community. Here, we offer more detailed rationales for a focus on the development of metacognitive competencies through engaging the concepts and methods of behavioral and evolutionary sciences *as content* in interdisciplinary education.

Academic Publications

One of the human behavioral traits that we consider important to explore with students is our species' ability and motivation to cooperate with many people. We argue that students need to understand the factors that enable and hinder humans to cooperate in order to develop their own cooperation competencies metacognitively.

→ Hanisch, S., & Eirdosh, D. (2021a). Are Humans a Cooperative Species? Challenges & Opportunities for Teaching the Evolution of Human Prosociality. *The American Biology Teacher*, 83(6), 356–361. https://doi.org/10.1525/abt.2021.83.6.356

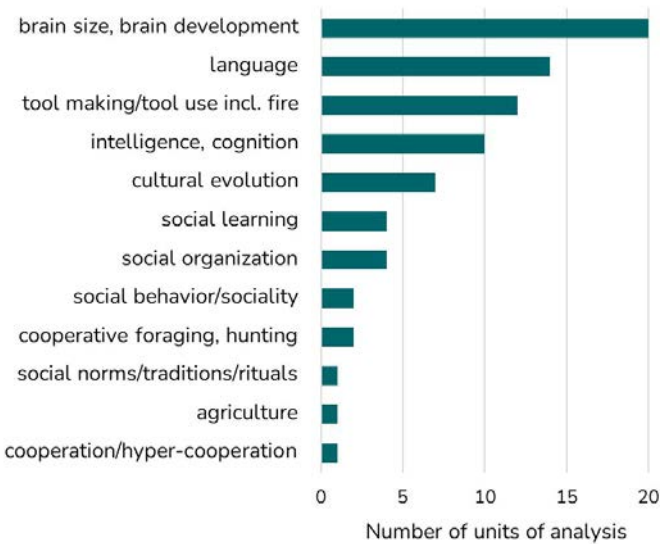
This article presents an example of how we have been using research from evolutionary anthropology as classroom content in order to elicit and reflect student and teacher conceptions about human behavior.



Results indicate that many students and teachers in Germany do not view humans as a very cooperative species, contrary to views in evolutionary anthropology.

→ Hanisch, S., & Eirdosh, D. (2024). Cooperation as a causal factor in human evolution: A scientific clarification and analysis of German high school biology textbooks. *Journal of Biological Education*, 58(1), 64–88. https://doi.org/10.1080/00219266.2021.2020875

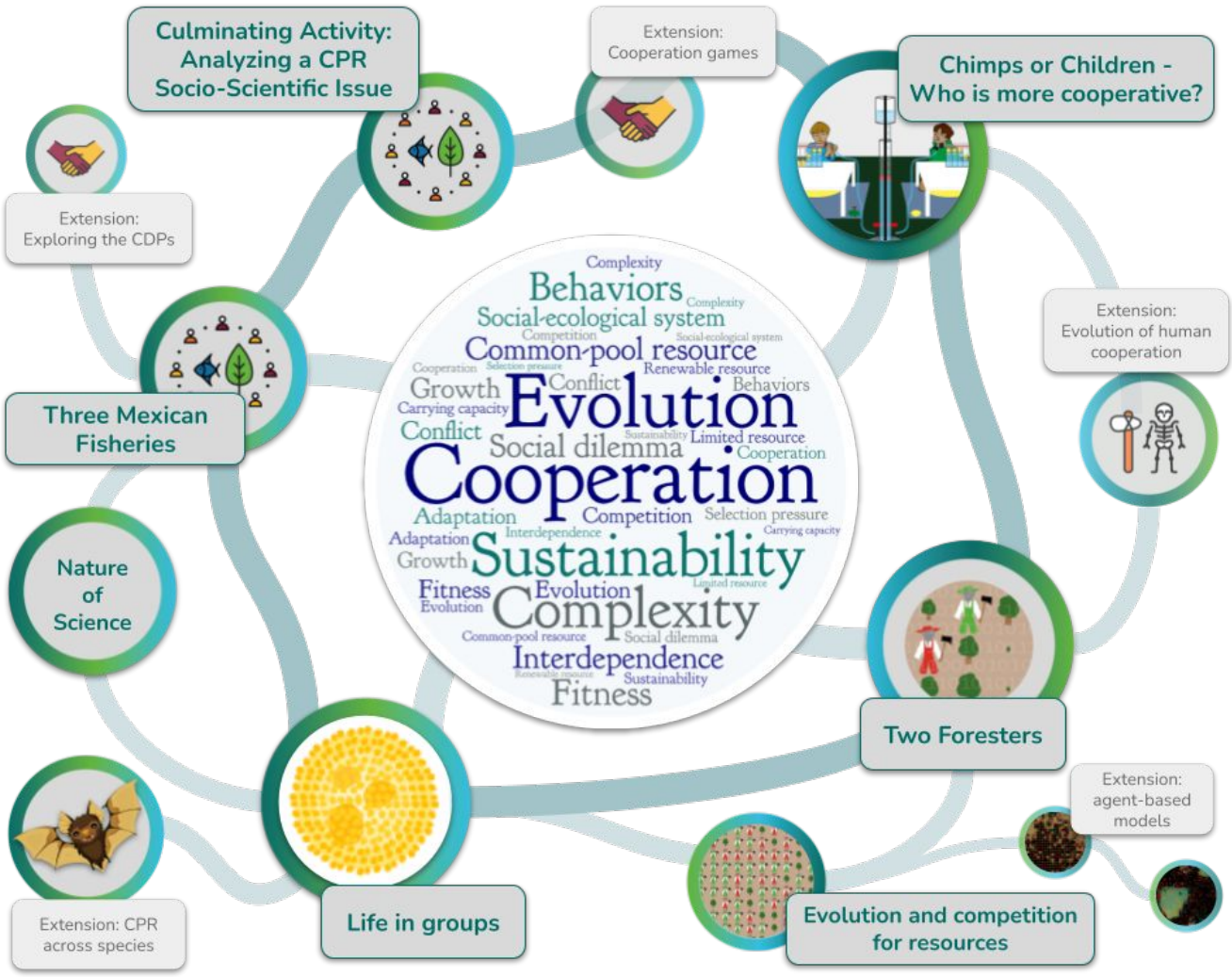
We analyzed a number of German high school biology textbooks to explore in what way human cooperative traits are emphasized and how they are explained in sections on human evolution and behavioral ecology. Results indicate that cooperative traits are much less emphasized and featured as part of the "secret of our success" compared to intelligence or brain size.



Academic Publications

→ Hanisch, S., Eirdosh, D., & Morgan, T. (2023). Evolving cooperation and sustainability for common pool resources. In X. Sá-Pinto, A. Beniermann, T. Børsen, M. Georgiou, A. Jeffries, P. Pessoa, B. Sousa, & D.L. Zeidler (Eds.), Learning evolution through socioscientific issues (pp. 127–147). UA Editora. http://doi.org/10.17617/2.3486776

We published a chapter in the edited book *Learning evolution through socioscientific issues*, in which we describe the potential and concrete educational approaches for exploring the role of cooperation in sustainable development from an evolutionary perspective. In 2022-2023, we worked with teacher Tammy Morgan in the US to implement some of these innovations in her classroom.

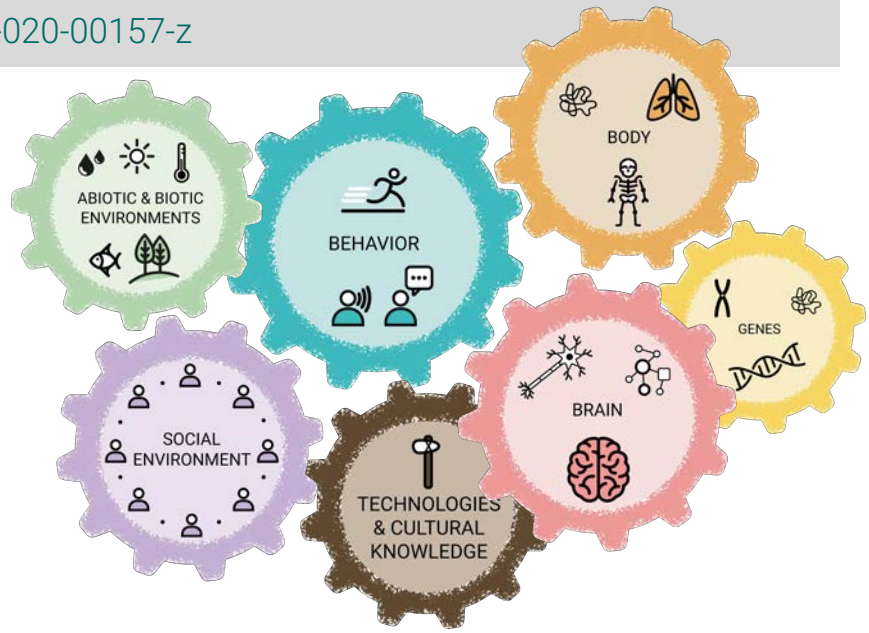


Academic Publications

Building on our arguments in Hanisch & Eirdosh (2020, see p. 15), we started to explore specific aspects of a more generalized conceptualization of evolution and their implications for classroom practice.

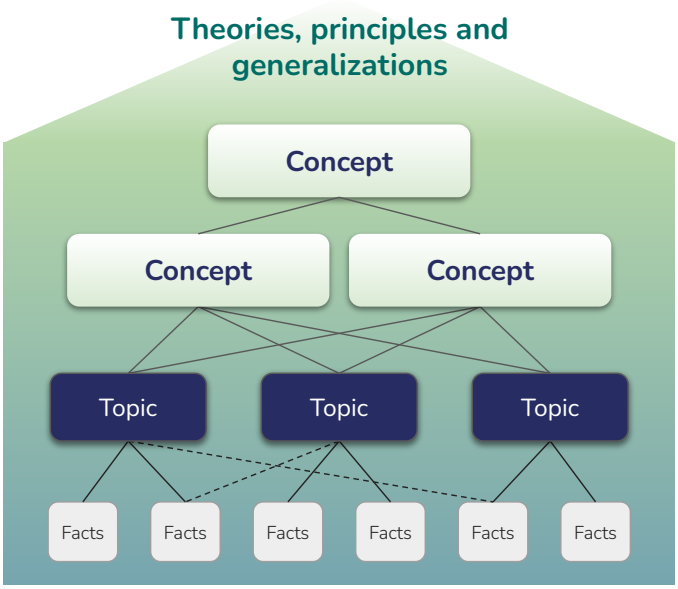
→ Hanisch, S., & Eirdosh, D. (2021). Causal Mapping as a Teaching Tool for Reflecting on Causation in Human Evolution. *Science & Education*, 30, 993–1022. https://doi.org/10.1007/s11191-020-00157-z

In collaboration with a biology teacher in Leipzig, we developed a causal mapping teaching tool that helps to consider a range of factors and their interactions in the evolution and development of human traits.



→ Hanisch, S., & Eirdosh, D. (2023). Teaching for the Interdisciplinary Understanding of Evolutionary Concepts. In A. du Crest, M. Valković, A. Ariew, H. Desmond, P. Huneman, & T. A. C. Reydon (Eds.), *Evolutionary Thinking Across Disciplines: Problems and Perspectives in Generalized Darwinism* (pp. 147–180). Springer International Publishing. https://doi.org/10.1007/978-3-031-33358-3_8

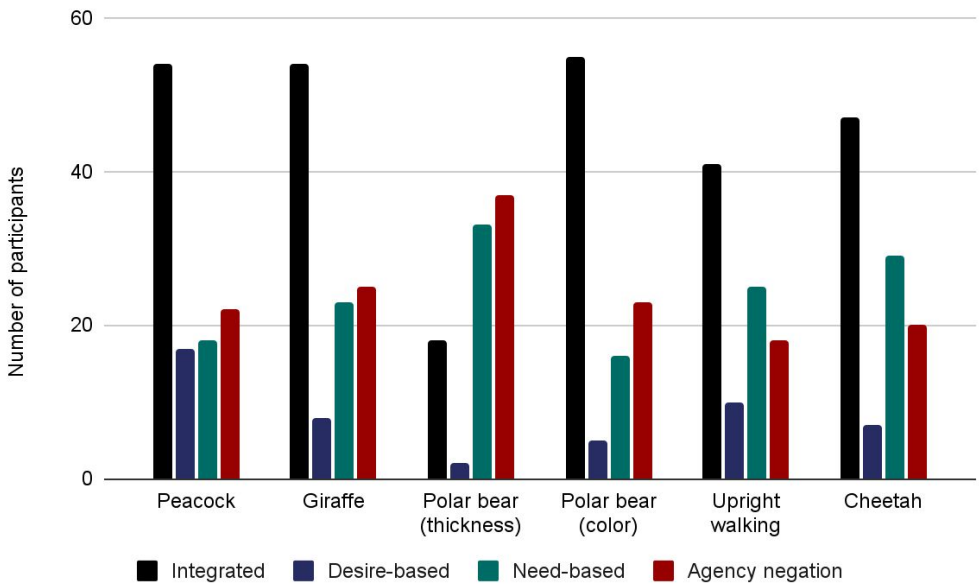
This book chapter draws on arguments from cognitive sciences, epistemology, and curriculum design - especially around the structures of knowledge and the roles of generalization and analogical transfer - to argue for the teaching of generalizable evolutionary concepts.



Academic Publications

→ Hanisch, S., Eirdosh, D., González Galli, L., Hartelt, T., Peréz, G., & Cupo, B. (2025). Understanding agency in evolutionary explanations: An assessment tool for biology education. *Journal of Biological Education*, 1–30. https://doi.org/10.1080/00219266.2025.2486963

The role of organism agency in evolution is currently a topic of lively debate in evolutionary biology and its philosophy. In this work, we developed the EvoFlex assessment tool and used it to explore to what degree teacher education students in Germany and Argentina can flexibly and adequately consider the role of organism behaviors and preferences in evolutionary change. Results indicate that integrating agency in evolution education has some interesting potential by connecting to student intuitions of organism agency. However, exploiting this potential requires a fundamental shift in educational practice away from gene-centered conceptualizations of evolution.



Research with the EvoFlex tool showed the capacity of biology teacher education students to partially reason adequately and flexibly about the possible roles of organismal agency in evolutionary processes.

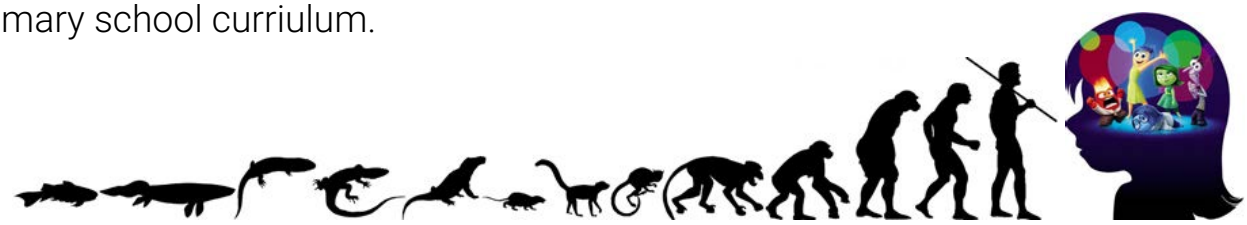
Currently, we are expanding this work with further collaboration partners in Brazil, Uruguay, India, and Albania as well as elaborated research and teaching methods.

Academic Publications

The two publications below highlight our design-based research approach applied to two different teacher education courses.

→ Hanisch, S., & Eirdosh, D. (2023). Developing Teacher Competencies for Teaching Evolution across the Primary School Curriculum: A Design Study of a Pre-Service Teacher Education Module. *Education Sciences*, 13(8), 797. https://doi.org/10.3390/educsci13080797

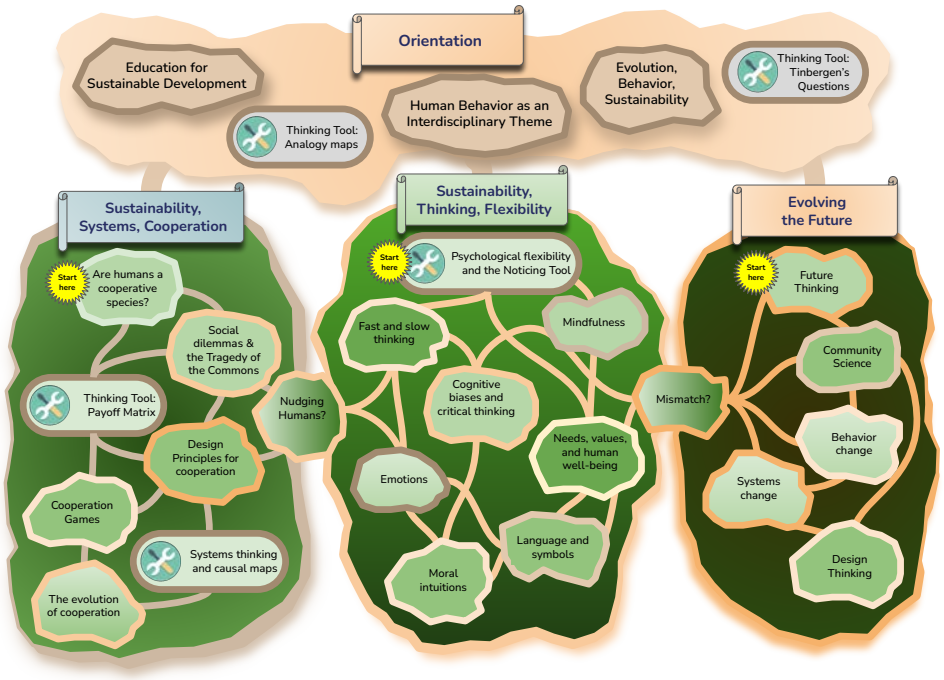
Through two semesters of educational design, implementation, evaluation, and re-design, we explored how primary school teacher students could be enabled and motivated to teach evolutionary concepts across topics in the German primary school curriulum.



→ Hanisch, S., & Schneider, D. P. (2025). Menschliches Verhalten und Bildung für nachhaltige Entwicklung – Ein Versuch der didaktischen Reduktion. *die hochschullehre*, 11(44), 575–589. https://doi.org/10.3278/HSL2544W

Our course concept "Human behavior and sustainable development" underwent a major design upgrade in 2022-2024 with the aim to maximize both breadth and depth.

We showed that the course design enabled teacher education students to explore a wide variety of human behavioral science perspectives in a self-directed manner, while encouraging deeper reflections on those perspectives.

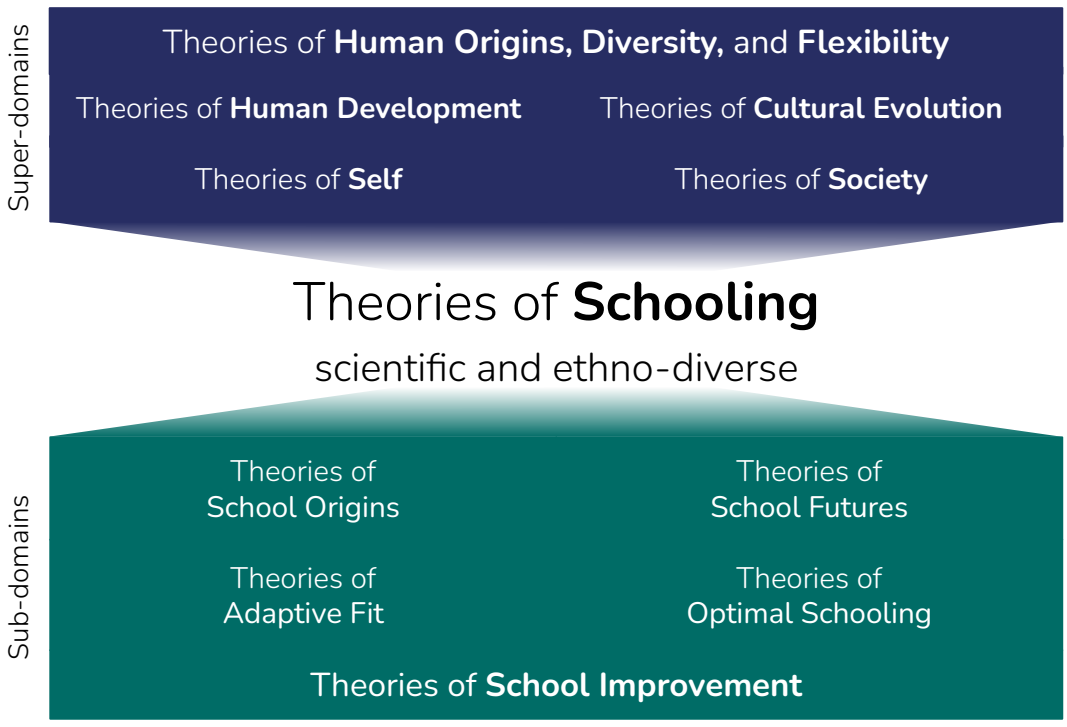


Academic Publications

As part of our Community Science Lab model (see p. 8) we developed the concept of ***Theories of Schooling (ToS)***, diverse cultural and scientific models of humanity and the purpose and optimal design of schooling systems. This resulted in multiple publications - including a book chapter framing the theoretical context for ToS, and a large collaborative book chapter in which globally diverse child development researchers contributed cross-cultural case studies reflecting the diverse forms and functions of ToS across contexts.

→ Eirdosh, D., & Hanisch, S. (2023). A Community Science Model for Interdisciplinary Evolution Education and School Improvement. In A. du Crest, M. Valković, A. Ariew, H. Desmond, P. Huneman, & T. A. C. Reydon (Eds.), Evolutionary Thinking Across Disciplines: Problems and Perspectives in Generalized Darwinism (pp. 125–146). Springer International Publishing. https://doi.org/10.1007/978-3-031-33358-3_7

→ Eirdosh, D., Prasetijo, A., Aprilia, C., Greenfield, P. M., Lavi, N., Muchukunnu, A., ... & Rothstein-Fisch, C. (2025). Learning to navigate change: Case studies in education across cultural boundaries. In A Field Guide to Cross-Cultural Research on Childhood Learning: Theoretical, Methodological, Practical, and Ethical Considerations for an Interdisciplinary Field (pp. 267-308). Open Book Publishers. https://hdl.handle.net/21.11116/0000-0011-2AED-4



The Future of OpenEvo

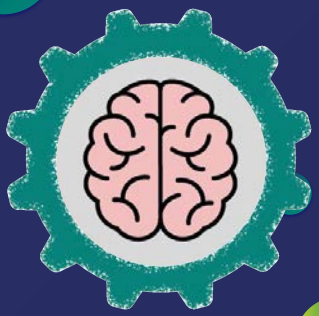
Since 2011, we have established a vision for educational innovation centered around human evolution and behavior as focal interdisciplinary curriculum themes. In the last 5-10 years, we have begun to make progress on realizing our vision in various directions, showing that there is indeed potential - and often great interest by many education stakeholders, from students, to teachers and education researchers - in reorienting the curriculum around bigger interdisciplinary questions of what it means to be human. This makes us optimistic about the future, in which there is still a lot more work to be done!

A major focus in 2026 will be the further development of the field of **Computational Curriculum Studies** by convening a network of international collaboration partners from across scientific fields and educational practice, organizing a regular webinar series and in-person workshops as well as first explorations of research questions, methods, and funding opportunities.

Another major output planned for 2026 is the publication of an edited Springer Book ***Evolutionary anthropology as interdisciplinary biology education*** in German and English. Education researchers in Jena, Leipzig, and Halle will join us in a more in depth exploration of the educational implications of teaching perspectives of evolutionary anthropology for the goals of student competency development.

Finally, since the summer of 2025, Dustin and Susi have been coordinating a scientist-led effort across the diverse departments at MPI-EVA to redesign the educational exhibit in the institute foyer, with a focus on teacher education and innovation across subject areas. This will provide a rich platform for local capacity building and global outreach reflecting the OpenEvo design concept.

Photo and tool production: MPI-EVA Human Origins scientist, Guillermo Bustos-Perez, representing a stone tool core and flakes from his own tool making experiments.

OpenEvo



https://openevo.eva.mpg.de