



Educational Development & Community Science Lab

2020 Year End Report



Letter from the Director

Dear Reader,

At the Max Planck Institute for Evolutionary Anthropology we study human origins from an interdisciplinary perspective. This is an expansive topic, requiring comparative analyses of genes, cultures, cognitive abilities, languages and social systems of past and present human populations as well as those of primates closely related to human beings.

I believe that our scientific outputs represent an important public good, one that too often remains inaccessible to the general public. Therefore it seems we as researchers should be taking a proactive stance in ensuring this access within everyday educational contexts.

Our education development projects represent more than traditional scientific outreach. Our team has developed innovative teaching partnerships, teacher education programs, and international collaborations that are helping to pave the way for the science of evolutionary anthropology to serve as a foundation for interdisciplinary learning.

These projects not only provide enhanced learning opportunities for future scientists, but also include practical perspectives for all humans regarding the conditions that enable or hinder human health, well-being, and sustainability.



Best Regards,,

Prof. Dr. Daniel Haun,

Director,

Department of Comparative Cultural Psychology,
Max Planck Institute for Evolutionary Anthropology

Letter from the Coordinators

Dear Reader,

When this year began, it would have been difficult to imagine the challenges that would erupt around the world. For the scientists in our institute as well as the teachers and students we work with, the global pandemic has made life and work difficult, yet we have persisted, and in this light, made remarkable progress. In the pages that follow you will see our wide diversity of successes, not just advancing educational outreach on the science we produce as an institute, but also supporting foundational research and educational development infrastructure to more broadly advance the teaching of human evolution, behavior, cognition, and culture as an interdisciplinary scientific theme. Indeed, the progress we have made in 2020 is merely a foundation for strengthening our networked approach to educational development within Leipzig and internationally in the year to come.

Thank you for your interest in our work,



Dustin Eirdosh, M.Sc.,

Education development coordinator,
Department of Comparative Cultural Psychology,
Max Planck Institute for Evolutionary Anthropology



Dr. Susan Hanisch,

Guest Scientist & University of Leipzig Liaison,
Department of Comparative Cultural Psychology,
Max Planck Institute for Evolutionary Anthropology

Our Year in Review



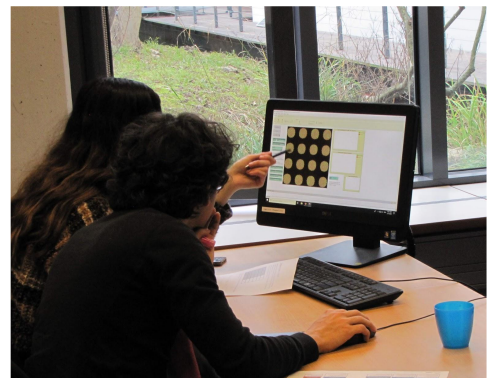
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Outreach Activities

Off to a Good START...

In the months preceding the pandemic, we were able to offer a range of outreach activities to students in the state of Saxony. Through a collaboration with the START program for students with a migrant background, we hosted a group of youth in engaging a 2-day intensive exploration of many themes in evolutionary anthropology. Among others, students did primate observations at the Leipzig Zoo, explored cooperation games, hominid fossils, and agent-based models of behavioral evolution.



Skype-a-Scientist

Pandemic Politics and Evolving Schools



When the first wave of shut downs occurred, we moved our outreach efforts online, through the international volunteer network of scientists and educators, *Skype-a-Scientist*. We offered two online sessions to classrooms in the US. With 7th graders, we explored the moral psychology of wearing face masks during the pandemic. With 11th graders, we explored the evolutionary educational psychology of student choice and autonomy in education.

Talks and Webinars

We continued to offer a range of talks and webinars aimed at students, teachers, and education researchers from a wide range of backgrounds.

ISTE Global Collaboration Webinar The Science Behind Sustainable Behaviors

Today's global society faces major challenges in achieving the Sustainable Development Goals, including sustainable resource use, social equality, and providing access to good education, health and human well-being for all.



In this international webinar for teachers from across subject areas, we presented a diversity of teaching materials at the intersection of human evolution, behavior, and sustainability science education.



This View of Life Podcast with David Sloan Wilson Finding Purpose in Evolution Education

Evolution education is often considered solely the domain of the biology classroom, with evolutionary explanations centered largely on genetic change over generations.

In this TVOL Podcast, David Sloan Wilson talks with education researchers Susan Hanisch and Dustin Eirdosh about emerging approaches in evolution education that challenge this view and embrace an interdisciplinary conceptualization of evolutionary change more suitable to understanding the human condition.

Outreach Activities

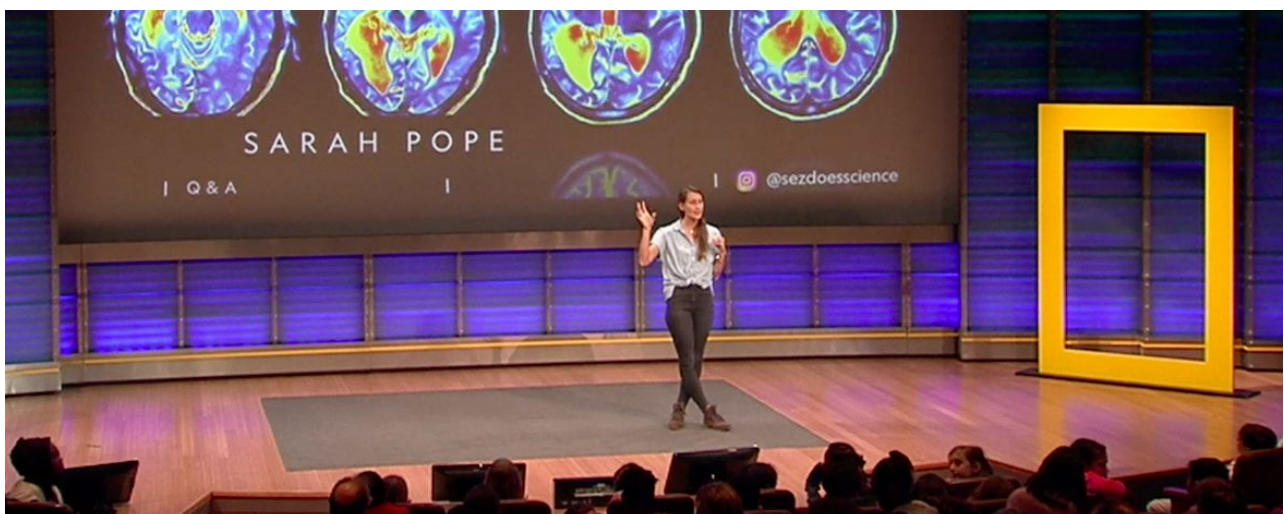
Talks and Webinars

National Geographic Explorers

Cognitive Flexibility

As part of her role as a National Geographic Explorer, Dr. Sarah Pope offered a talk to participants in the Hugh O'Brian Youth (HOBY) World Leadership Congress, a 5-day workshop focusing on youth leadership skills that was virtually attended by high school students from over 15 countries. The focus of the 2020 HOBY summit was "What the World Deserves." In this talk, Dr. Sarah Pope challenges students to tackle problems by thinking flexibly.

After introducing the concept of cognitive flexibility, the ability to integrate both familiar strategies and novel approaches, Dr. Pope outlines several classic psychology experiments demonstrating that humans are not always very good at flexible thinking. However, she goes on to demonstrate that there is substantial variation in cognitive flexibility between primate species and even across human cultures. What causes us to be inflexible in some scenarios and flexible in others? Cognitive flexibility is about balancing old strategies with new ones. This talk ends with a challenge, to consider how familiar strategies might be preventing you from discovering better alternatives.



Dr. Sarah Pope delivers a talk in 2019 as part of her role as a National Geographic Explore. She continued this work online in 2020.

Talks and Webinars

TEDxLeipzigInternationalSchool

Why human behavior is at the center of education.

In September 2020, students at the Leipzig International School organized a TEDx event around the theme of boundaries, personal, social, and planetary. Dustin Eirdosh presented a talk entitled "Why human behavior is at the center of education", which frames how the science of human behavior offers new ways for students to extend their learning beyond the boundaries of classic school subjects.

The talk highlights why human behavior is central to understanding the human condition more broadly, and how our understanding of human behavior impacts how we relate to ourselves and others. The talk concludes with a call to action regarding how schools can re-conceptualize the role of human behavior as both scientific content to be engaged, and an empowering context for school and community action towards a more sustainable future.

→ **Watch the TEDx talk here:** <https://go.nature.com/3nSeuBi>



Community Science Lab

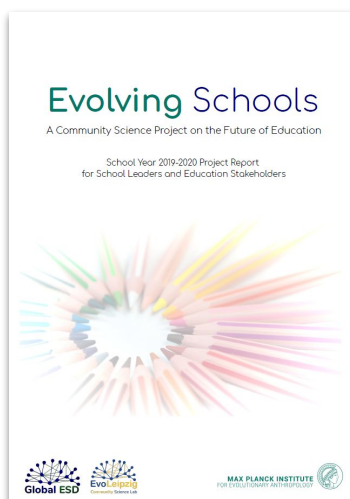
Evolution Understanding Through Service and Science

Our Community Science Lab works with students to develop materials and methods that help improve their schools and communities through elevating student voice and reflection on scientific understandings of the human condition. Students are in a unique position within their own communities to be able to learn about and advocate for valued changes to the world they are inheriting.



By grounding community science investigations within cultural evolutionary perspectives on human cooperation, students can engage a powerful set of theoretical and methodological tools to investigate and communicate the sustainability issues that directly impact their lives.

The Evolving Schools Project at Reclam Schule



The Covid-19 pandemic situation requires schools and students to radically and immediately adapt learning processes to more distributed, digital, and, often, home-based learning strategies for an indefinite period of time. How school communities and individuals experience these changes provides an opportunity to reflect on the purpose and design of schools and how schools can best meet the needs of all students and communities around the world.

As the pandemic shifted our Community Science Lab collaborations to online exchanges, we launched and continue to refine the Evolving Schools project to empower youth voice in creating more adaptive learning environments.

→ <http://evolvingschools.globalesd.org>

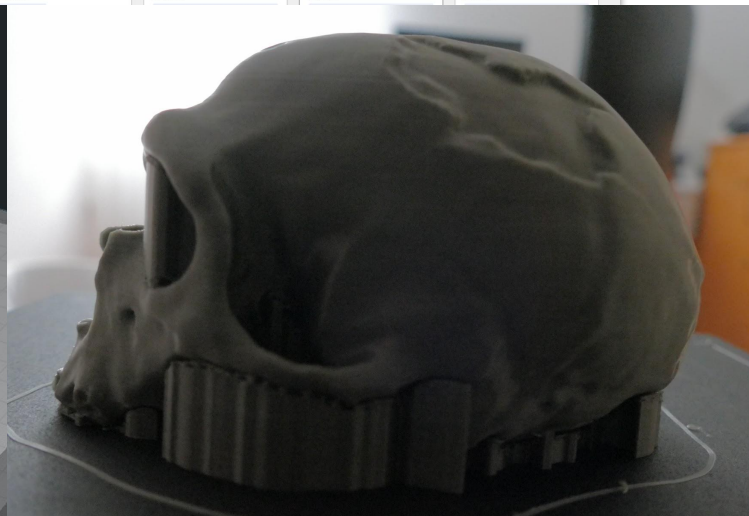
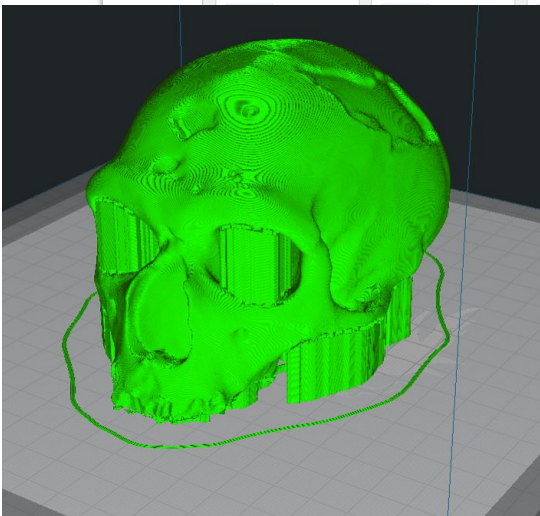
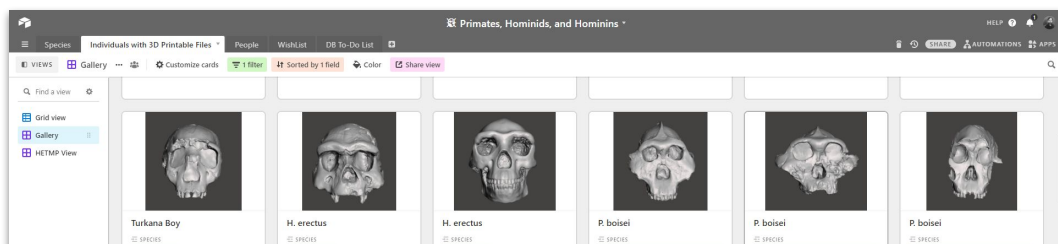
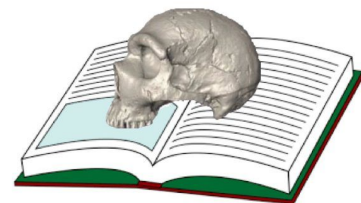
Community Science Lab

3D Printing Hominid Skulls

In collaboration with the Leipzig International School's *Creativity, Activity, and Service (CAS)* project work program, our student collaborator, Yannick, has been systematically optimizing and documenting the 3D printing process for the collection of hominid crania data that we have been organizing in collaboration with evolution education leaders at *Ancient Ancestors* and the *Human Evolution Teaching Materials Project*. Our aim is to work towards a lendable library of specimen that teachers or classrooms can borrow from the MPI-EVA Library in Leipzig, and the MPI-SHH in Jena, Germany.



HUMAN EVOLUTION
TEACHING MATERIALS
PROJECT



Teacher Training

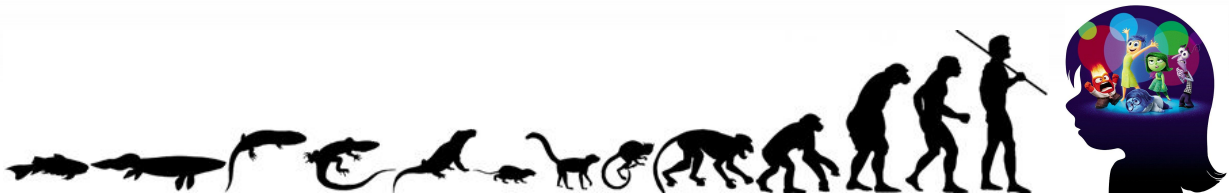
Human Behavior and Sustainable Development

The theme of human behavior holds many possibilities for teachers to develop interdisciplinary learning opportunities. Many themes in the curricula of subject areas deal with human behavior explicitly or implicitly. Many objectives of education in general, and of education for sustainable development in particular, aim to promote in students the ability to act responsibly, to take the perspectives of others, and to develop social-emotional competencies. At the same time, many social problems, from xenophobia to mental health, to problems of sustainable resource use, have in common that they are causes and consequences of human behavior. Furthermore, we humans, across cultures, generally have a great interest in human behavior - intuitively and almost every second we perceive human behavior in everyday life, and we are constantly thinking about its causes and consequences.

Our interdisciplinary teacher training course "Human Behavior and Sustainable Development" is designed for teacher training students across subject areas and cultural backgrounds to explore the core concepts of evolution, behavior, and sustainability science as well as methods for teaching these concepts in primary and secondary school contexts.

The course has so far been implemented in 2020 at the University of Leipzig Center for teacher training and school research (ZLS) as well as at the Pädagogische Hochschule Bern. The Teacher Training faculty of University of Antananarivo, Madagascar, is currently adapting the course to their program. Our aim is to grow this network of teacher educators to collaboratively and iteratively adapt, implement, and evaluate course design, with the central goal of advancing the teaching of human behavior as an interdisciplinary theme in sustainability education.

→ Learn more: <http://teacher-training.globalesd.org>



In recent years, many researchers have become interested in advancing the teaching of evolution in the primary school years. Studies find that younger students can understand the various concepts of evolution either intuitively or through scaffolded instruction. Thus, more and more educators are calling for the teaching of evolutionary concepts early and throughout K-12 education.

In this course, we explore and expand upon a range of best-practice methods for teaching evolution in K-4 years. Furthermore, we reflect upon how we can promote learning transfer of core concepts in human evolution. Focal concepts include: the evolutionary origins and functions of our everyday experience as humans, such as emotions, thoughts, perceptions, intuitions, values, psychological needs, music, cooperation, and other social behaviors.

The course therefore also has a focus on the role that evolutionary understanding might have on the development of social-emotional competencies in young students, which is currently an unexplored educational potential.

The course has been implemented in the University of Leipzig Primary School Education Institute in the wintersemester of 2020/2021.

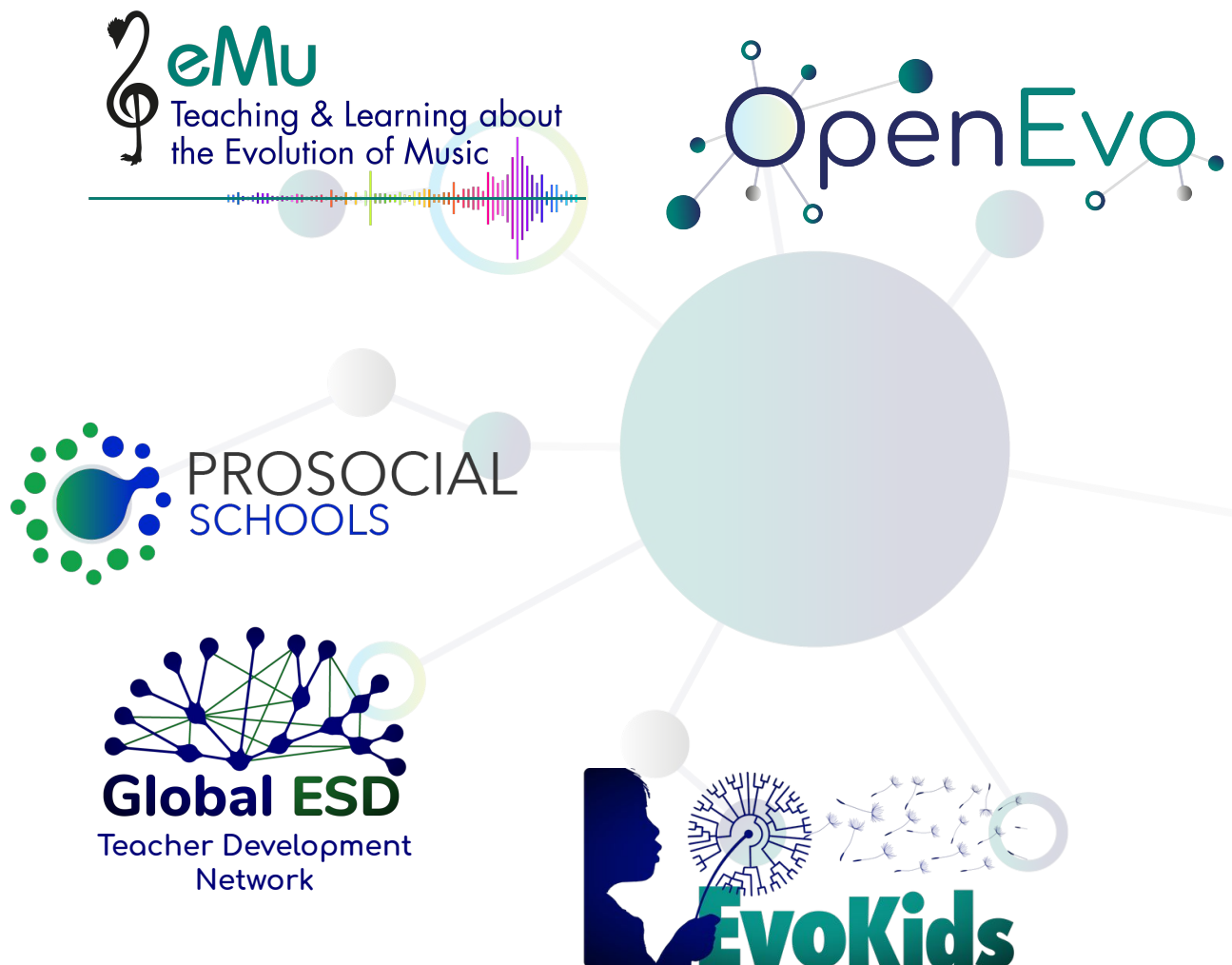
In the future, the aim is to support a range of pre-service teacher state exam theses to implement and evaluate lessons and units in primary school classrooms.



Education Development Projects

Teaching and learning about the evolution of human social behaviors, cognition, and culture is itself a highly cooperative act, requiring the collective creativity of a rich diversity of educational professionals and stakeholders.

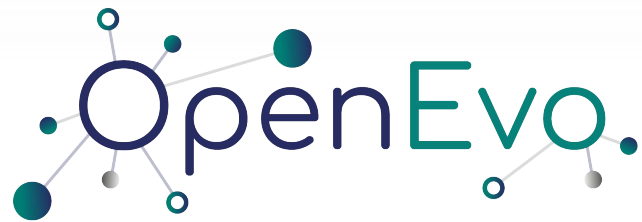
In 2020, we have begun to more strategically coordinate the multitude of educational development initiatives and partnerships we are engaged with, by situating this work within the *Networked Improvement Communities* (NICs) model for the design and spread of educational innovation. The NICs framework allows us to focus on targeted systemic improvements to educational design elements (such as teaching materials), while also cultivating a sense of shared purpose across otherwise disparate communities.



Education Development Projects

OpenEvo

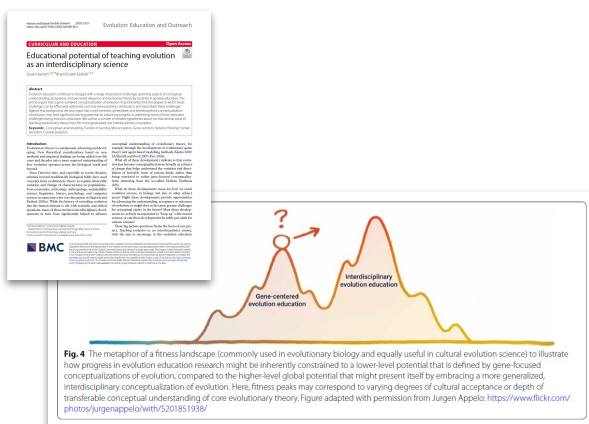
In October 2020, we launched OpenEvo to evolve an open, networked and interdisciplinary evolution education research community.



Evolving an **open**, **networked**, and **interdisciplinary** evolution education research community

Our aims

- ❖ To advance **open science practices** in evolution education research
- ❖ To advance **networked improvement science** in evolution education research
- ❖ To advance **interdisciplinary approaches** in human evolution education and educational research
- ❖ To support undergraduate, masters, and PhD **student thesis work**



Building on our *Evolution: Education & Outreach* article on the educational potential of teaching evolution as an interdisciplinary science (see p.16), the OpenEvo project seeks to change the landscape of evolution education research.

Example Thesis Collaboration

Pre-service teacher Angelique Janke, from University of Halle's Biology Education Research group, developed a novel thesis looking at the knowledge, attitudes, and beliefs of her peers in biology education regarding teaching evolution as an interdisciplinary science, including concepts such as cultural evolution and the evolution of sustainability-relevant behaviors.

Education Development Projects

EvoKids Global



EvoKids Global is an international effort inspired by the German EvoKids.de project by the University of Gießen Biology Didactics group and the Giordano Bruno Foundation.

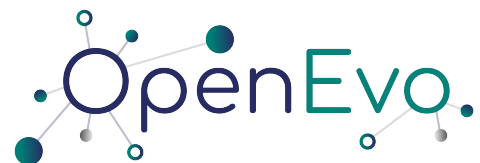
We work to organize and support innovative evolution education research in the primary and early-middle school context.

During 2020 we have more than tripled the size of our in-house library collection and open online database of evolution books for children. Dr. Susan Hanisch has also begun teaching a pre-service teacher education module: *Evolutionary Anthropology in the Primary School Classroom* (see p. 8), through her position at the University of Leipzig - Primary School Science group.

→ EvoKids Global Library Database: <http://Library.EvoKids.org>



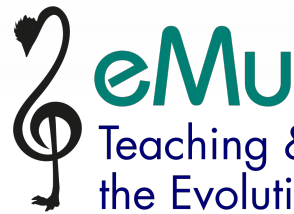
EvoKids is connected to OpenEvo through the shared aims of advancing the teaching of evolution across subjects and grades through open and collaborative research approaches.



EvoKids is also connected to the Global ESD Teacher Development Network through the shared aim of advancing teaching competency in teaching evolution and human behavior across subjects and grades.



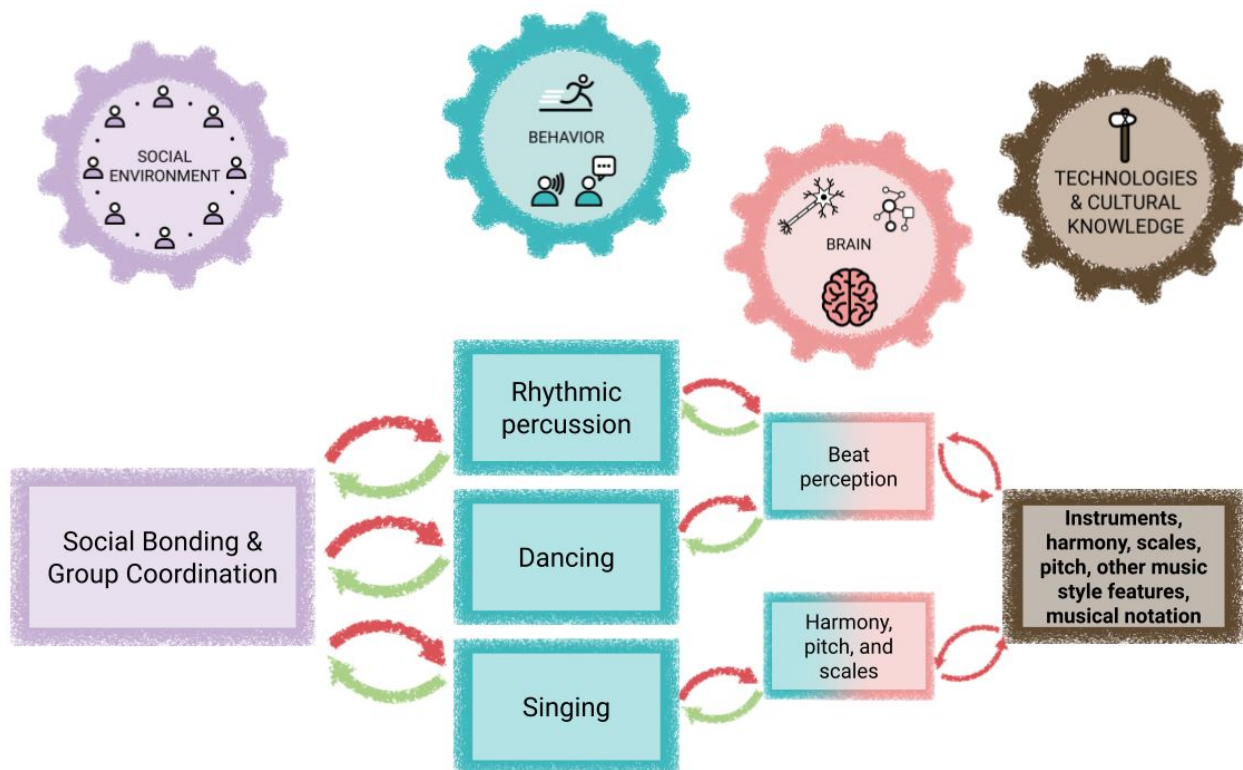
Music is a deeply meaningful component of the everyday lives of many students around the world, and yet, they are rarely afforded the opportunity to learn the science behind this complex cultural phenomenon.



Teaching & Learning about
the Evolution of Music

<http://music.eva.mpg.de>

eMu is an educational research and development network to advance teaching and learning about the evolution of music as an interdisciplinary theme in general education. We aim to empower students and teachers to engage with the latest advances in evolutionary musicology. We have conducted an initial review of the literature to identify a range of educational development targets, and are now structuring an introductory self-study module for teachers and pre-service teacher students to explore and further develop these resources.



Causal map based on perspectives in evolutionary musicology, including: Savage et al. (2020). Music as a coevolved system for social bonding. <https://doi.org/10.31234/osf.io/qp3st>; Savage (2019). Cultural evolution of music. <https://doi.org/10.1057/s41599-019-0221-1>

Education Development Projects

Prosocial Schools



We have been active leaders in the development of **Prosocial Schools**, a network of researchers, psychologists, educators, and students within the wider **Prosocial World** community.

Prosocial uses the science of human evolution, behavior, and cooperation to strengthen the cultural evolution of more cooperative groups across multiple levels of social organization towards greater human well-being.

The aim of Prosocial Schools is to explore the ways that the science and processes of Prosocial can advance well-being and learning in schools.



In January 2020, we organized a workshop for school garden stakeholders at the Leipzig Research Academy/Leipzig Lab where we introduced and explored the Prosocial approach for the context of school gardens.

Since then, Dr. Susan Hanisch has been integrating the science of Prosocial into primary school teacher education modules for school gardens and evolutionary anthropology.

Our education development team, including scientific assistants and interns, have continued to collaborate with the growth of Prosocial Schools.

→ Learn more: <http://www.prosocialschools.org>

Education Development Projects

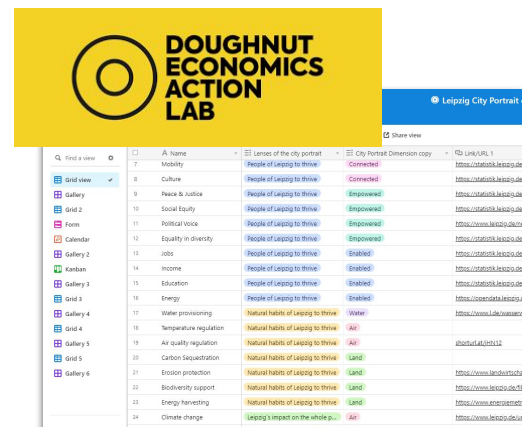
Prosocial Schools

Through the Prosocial Schools network, we have also connected with the UK based educational organization, *Connect*, which has developed social-emotional learning educational materials for ages 4-11, building on an evolutionary understanding of human behavior, cognition, and culture.



Two interns from the University of Leipzig Early Childhood Research master program, Naiera Amini and Juveria Iqbal, supported us in these projects by translating lesson materials into Farsi and Hindi. We have continued to work together to explore and structure educational design research methods to support the cross-cultural adaptation of this important direction in early childhood social-emotional learning.

Prosocial Schools has also connected us to the Doughnut Economics Action Lab (DEAL). Doughnut Economics is a framework by Oxford Economist Kate Raworth, to help build a sustainable economy. DEAL is a network of researchers and practitioners that aims to develop and share tools to help communities “live within the doughnut” of sustainability, thus having overlapping aims with Prosocial World.



Paula Krollik from the University of Halle Anthropology program had previously taken our University of Leipzig teacher training module, and continued to work with us during her internship to explore the educational potential of the DEAL City Portrait framework for economic and sustainability education in Leipzig. Paula created a collaborative database of local resources for future development of this effort among education and sustainability actors in Leipzig.

Education Development Projects

Teacher Development Network



Our Global ESD Teacher Development Network aims to work across teacher training institutes to advance the implementation and research of teacher training modules that integrate concepts of human evolution, behavior and sustainability, informed by the Global ESD Design Concept.

In 2020, we have collaborated with Dr. Sebastian Tempelmann of the *Pädagogische Hochschule* (PH) Bern, in the cross-institutional implementation of our teacher training course: *Human Behavior and Sustainable Development* (see p.7).

An article outlining the course concept and insights from course implementation at University of Leipzig and PH Bern is currently under review in the *International Journal of Sustainability in Higher Education* as part of a special issue on interdisciplinary approaches to sustainability education.

In 2020, we have also continued our long-term collaboration with Prof. Josiah Razafindramanana at University of Antananarivo, Madagascar, who is heading the department of Anthropology and is a Professor of Biology at the Ecole Normale Supérieure teacher training institute. Together with her and four student and teacher assistants, we have been exploring opportunities to adapt elements of our teacher training course and Global ESD design concept to the Anthropology and Sustainability Master program as well as teacher training courses at University of Antananarivo. A range of Global ESD teaching materials have been translated into french and are planned to be explored with a group of students in 2021.

Academic Publications

Eirdosh, D., & Hanisch, S. (2020). Can the science of Prosocial be a part of evolution education. *Evolution: Education and Outreach*, 13 (5).

<https://doi.org/10.1186/s12052-020-00119-7>

Hanisch, S., & Eirdosh, D. (in press). Are humans a cooperative species? Challenges and opportunities for teaching the evolution of human prosociality. *The American Biology Teacher*.

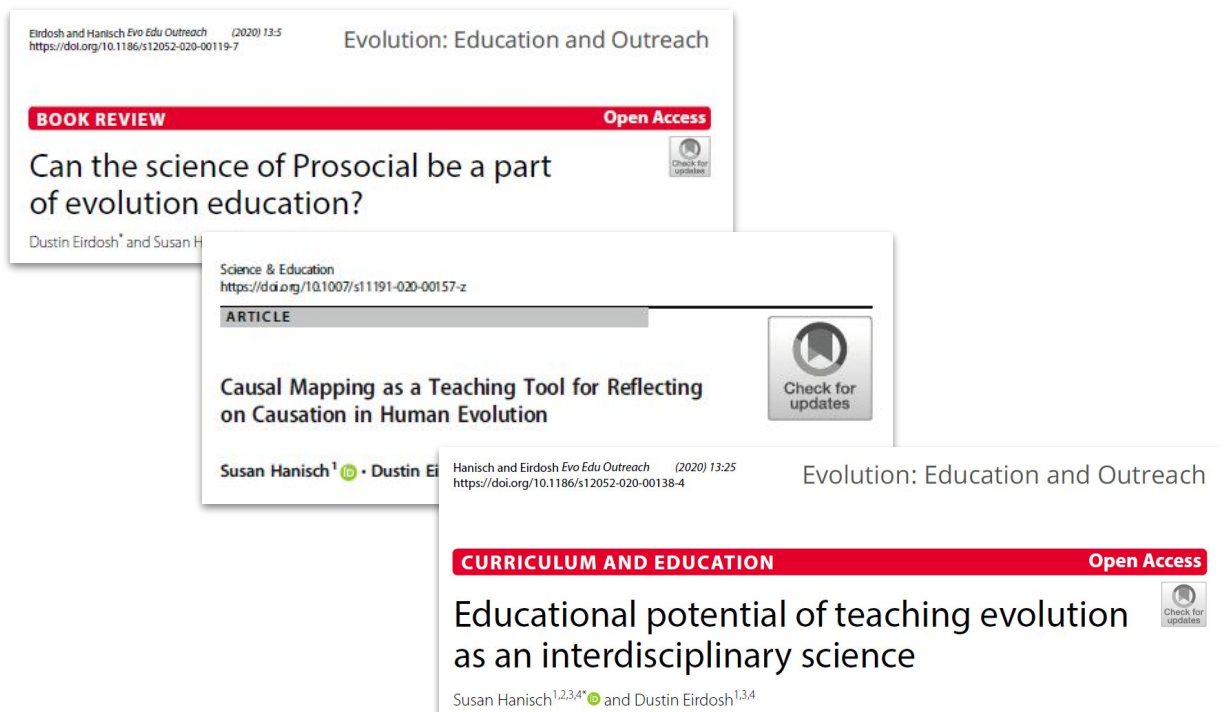
Hanisch, S. & Eirdosh, D. (2020). Educational potential of teaching evolution as an interdisciplinary science. *Evolution: Education and Outreach*, 13 (25).

<https://doi.org/10.1186/s12052-020-00138-4>

Hanisch, S., & Eirdosh, D. (2020). Causal Mapping as a Teaching Tool for Reflecting on Causation in Human Evolution. *Science & Education*.

<https://doi.org/10.1007/s11191-020-00157-z>

Hanisch, S., Eirdosh, D., Schäfer, M. & Haun, D.B.M. (in press). Fair is not fair everywhere: How children across cultures share the benefits of working together. *Frontiers for Young Minds*.



Publications

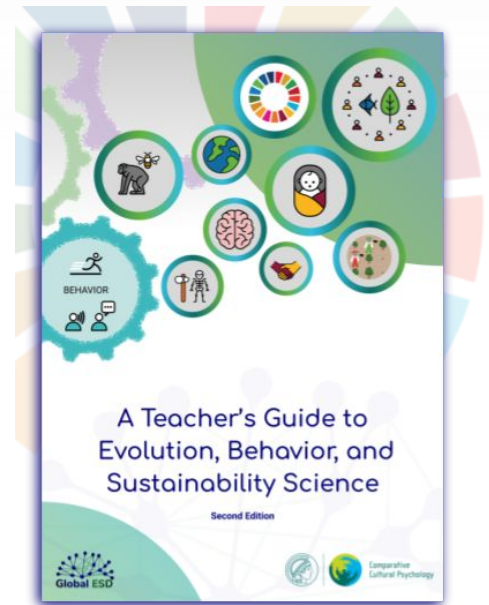
Reports and Guides

A Teacher's Guide to Evolution, Behavior, and Sustainability Science, 2nd Edition

In this second edition of our teacher guide, we have added and adapted new content and introduce our community science and education research approaches.

Download the guide here:

- English: <http://guide.globalesd.org>
- German: <http://leitfaden.evoleipzig.de>

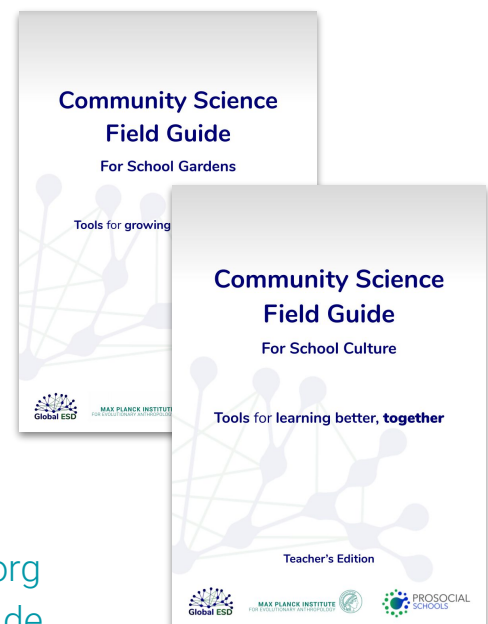


Community Science Field Guides

The Community Science Field Guides for School Culture and School Gardens are a result of our collaboration within the Prosocial World network (see p. 13) and introduce students and teachers to concepts and tools to investigate and strengthen the cooperation dynamics of their own schools and school gardens.

Download them here:

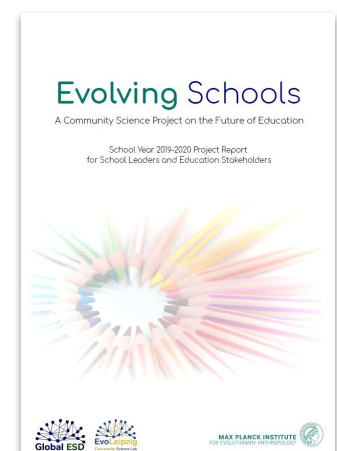
- English: <http://communityscience.globalesd.org>
- German: <http://communityscience.evoleipzig.de>



Evolving Schools Report

The Evolving Schools Report summarizes results of our Community Science Lab's first efforts to engage students as participants in the science of school improvement.

- <http://evolvingschools.globalesd.org>

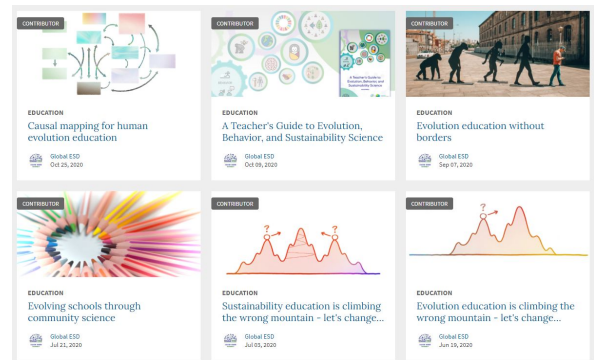


Popular Press & Blogs

Our Blog @ Science of Learning



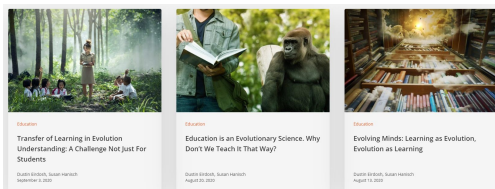
In April we launched our blog within the Nature Partner Journal Science of Learning community. In addition to sharing the educational products of our work, we also use the blog as a platform for advancing professional discourse on teaching evolution as an interdisciplinary science.



THIS VIEW OF LIFE

Evolution Education without Borders:

A Collection of Essays on Teaching Evolution as an Interdisciplinary Science



Evolution education has traditionally been confined within the bounds of the biology classroom.

This need not be the case and may actually contribute to the persistent challenges in public understanding and acceptance of the science itself. In this collection of essays, Dr. Susan Hanisch and Dustin Eirdosh explore the challenges and opportunities presented by teaching evolution as an interdisciplinary science that transcends the boundaries of traditional school subjects. These essays examine the pedagogical, scientific, and cultural aspects of leveraging evolutionary perspectives on the human condition as a centerpiece of interdisciplinary learning across the general education curriculum.

Outlook

We are looking forward to many exciting developments and collaborations in 2021. We highlight a few of these planned efforts below.



OpenEvo will be developing an online learning and educational design research platform for interdisciplinary evolution education.



The eMu scientific advisory board and collaborators will support the development of an open online teacher education module on the OpenEvo learning hub. Classroom teaching experiments will also begin as soon as practical.



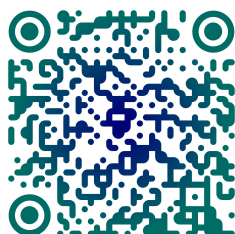
Prosocial Schools will launch the Youth Corps, a global network of students, educators, scientists, and social change agents working towards school improvement and global sustainability.



EvoKids Global will develop an open online teacher education module on the OpenEvo learning hub. We will continue to grow and structure content analysis on our EvoKids Global Library database.



We will strengthen our new collaboration with YES! Young Economic Summit, to offer innovative science-based student challenges to explore practical solutions to societal problems through the lens of interdisciplinary human sciences.



→ Learn more online:

<https://www.eva.mpg.de/comparative-cultural-psychology/education.html>

