

Opportunities and challenges in qualitative data synthesis for school culture research

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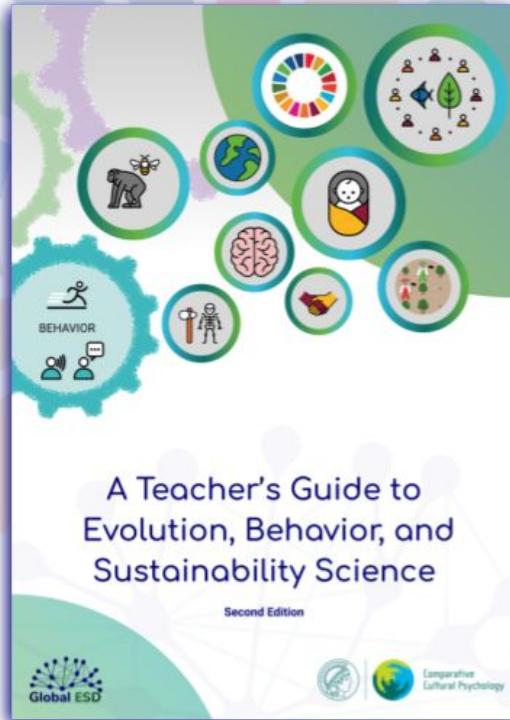


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Comparative
Cultural Psychology

Educational design concept



Teaching **human behavior**
as an **interdisciplinary** theme



Schools as Field Sites for Applied Cultural Evolution Science

Participatory scientific infrastructure to investigate and shape the cultural evolution of schools?



nature sustainability PERSPECTIVE
<https://doi.org/10.1038/s41893-019-0434-8>

Qualitative data sharing and synthesis for sustainability science

Steven M. Alexander^{1,2,3*}, Kristal Jones^{1*}, Nathan J. Bennett^{4,5,6}, Amber Budden⁷, Michael Cox⁸, Mercè Crosas⁹, Edward T. Game¹⁰, Janis Geary¹¹, R. Dean Hardy¹², Jay T. Johnson¹³, Sebastian Karcher¹⁴, Nicole Motzer¹, Jeremy Pittman¹⁵, Heather Randell¹⁶, Julie A. Silva¹⁷, Patricia Pinto da Silva¹⁸, Carly Strasser¹⁹, Colleen Strawhacker²⁰, Andrew Stuhl²¹ and Nic Weber²²

Socio-environmental synthesis as a research approach contributes to broader sustainability policy and practice by reusing data from disparate disciplines in innovative ways. Synthesizing diverse data sources and types of evidence can help to better

Alexander, S. M., Jones, K., Bennett, N. J., Budden, A., Cox, M., Crosas, M., ... & Weber, N. (2019). Qualitative data sharing and synthesis for sustainability science. *Nature Sustainability*, 3(2), 81-88.

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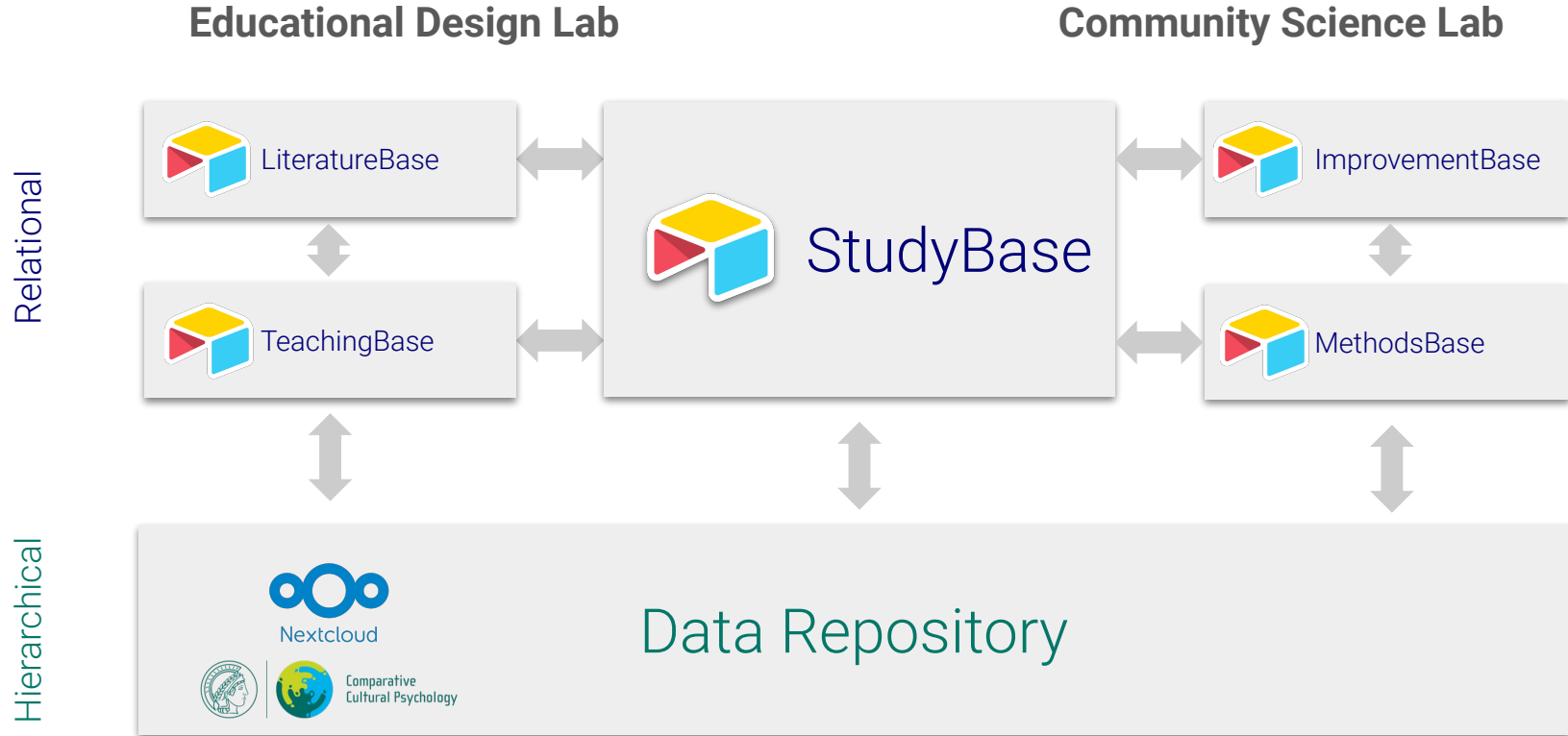
Comparative
Cultural Psychology

Open Source Community Science Platform for Networked School Improvement

- **Integrating data** from *Educational Design & Community Science Labs* within an *innovation ecosystem*
 - Structured for **longitudinal, comparative, and cumulative** analyses
- **High value** potential for
 - School Improvement
 - Science Education
 - Comparative Cultural Psychology
- **Not there yet!**

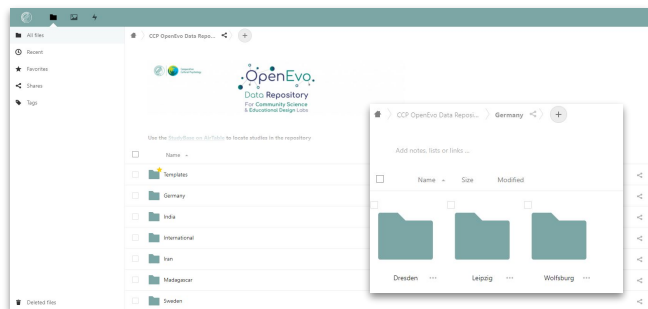


OpenEvo Science-to-Learning Database

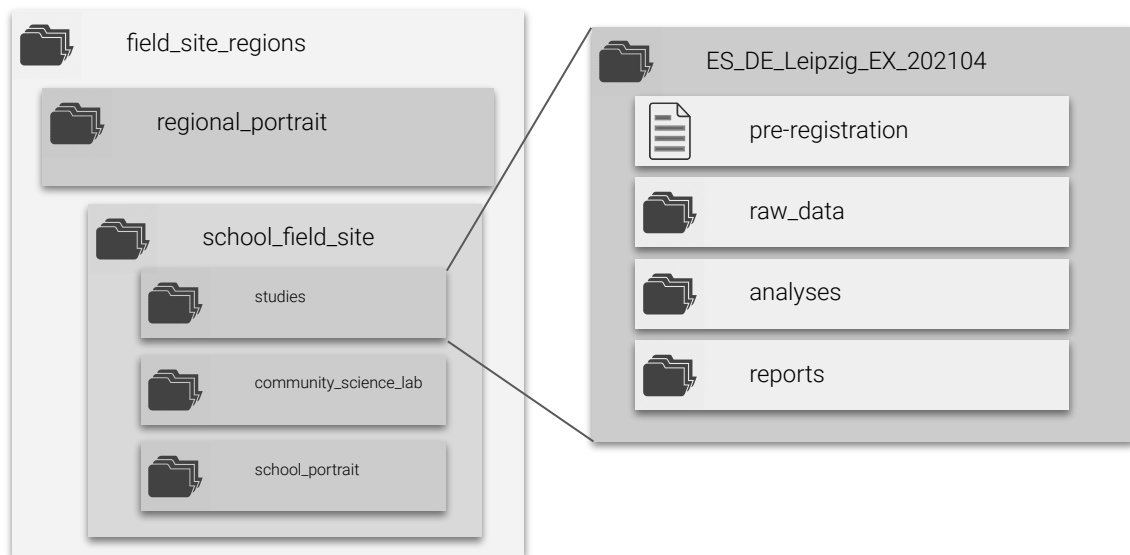


OpenEvo Data Repository

Geographically structured, secure, NextCloud data repository at MPI-EVA



Data Structure for School Field Sites



OpenEvo - StudyBase

Relational database of field site regions, field sites, researchers, and all community science and educational design lab studies

Tracks **researcher engagement** and **data access** permissions

Organizes studies

Manages **workflow**



A screenshot of the Airtable interface showing a grid view of study records. The table has columns for A Name, HE Site, Status, Pre-reg?, N., Type of participant, Institutional Context, Notes, and Start Date. The records are as follows:

A Name	HE Site	Status	Pre-reg?	N.	Type of participant	Institutional Context	Notes	Start Date	
HBSD_DE_Leipzig_UL_202104	Unileipzig	Data Collection	✓	23	pre-service teachers	English	Elective for teacher education students from all subject areas and years of study	full module	4/14/2021
HBSD_DE_Leipzig_UL_202004	Unileipzig	Complete		7	pre-service teachers	English	Elective for teacher education students from all subject areas and years of study	seminar within module	4/14/2020
HBSD-DE_Leipzig-10-2019	Unileipzig	Complete		7	pre-service teachers	English	Elective for teacher education students from all subject areas and years of study	full module	10/15/2019
HBSD-SI-Bern-03-2021	PH Bern	Data Collection	✓		pre-service teachers	German		full module	3/15/2021

A screenshot of the Airtable interface showing a workflow view of study records. The workflow is organized into stages: Planning, Data Collection, Data Analysis, Interpret and Share, and Complete. Each stage contains cards for specific studies, such as ES_DE_Leipzig_UL_202104, ES_DE_Leipzig_LIS_202103, ES_SE_Stockholm_FS_202103, ES_TU_IR_NS_202104, ES_DE_Leipzig_RG_202102, and ES_DE_Leipzig_RG_202103. Each card displays the study name, field site region, field site, and data quality (Bronze or Practice).

OpenEvo - TeachingBase



Relational database of creative commons **teaching materials** suitable for development, trialing, and improvement, with embeddable web-based views for **easy teacher access**

Lesson Material Title	Short description	Material Link	Subject / Topic	Concepts	Type
54 Chimps or children - who is better at sharing res...	A set of experiments that let us explore the huma...	https://docs.google.com/ur...	Biology Social Studies	Cooperation	Dev Experiment Full lesson plan
55 Commons game	A classroom game in which students experience t...	https://docs.google.com/ur...	Social Studies	Ethics Cooperation	Sust Game Full lesson plan
56 Collective Action Puzzle Game	A group game that lets students experience the d...	https://docs.google.com/ur...	Social Studies	Cooperation	Soci Game Full lesson plan
57 Climate Change Game	A cooperation game that lets students experience ...	https://docs.google.com/ur...	Ethics Geography	Cooperation	Fair Game Full lesson plan
58 Perception of eyes and prosocial behavior	A behavioral experiment that tells us about the rol...	https://docs.google.com/ur...	Ethics Social Studies	Cooperation	Soci Experiment Full lesson plan
59 What motivates people to save energy	A behavioral experiment to find out what motivat...	https://docs.google.com/ur...	Social Studies	Ethics Cognition, Think...	Experiment Full lesson plan
60 Exploring the Design Principles for Cooperation	Students explore the principles that allow groups t...	https://docs.google.com/ur...	Human Evolution	Bi Cooperation	Dev Project Full lesson plan
61 Three Mexican fisheries	Students compare the stories of three Mexican fis...	https://docs.google.com/ur...	Social Studies	Geogr Cooperation	Sust Reading text Full lesson plan
62 Public Goods game	A set of behavioral experiments with groups that ...	https://docs.google.com/ur...	Ethics Social Studies	Cooperation	Dev Experiment Full lesson plan
63 Exploring values	Students explore the concept of values and ident...	https://docs.google.com/ur...	Social Studies	Biolog Identity, Belongin...	Analogy table/Sort Full lesson plan
64 NetLogo: 2 Forests	An interactive introduction into concepts of ecol...	https://docs.google.com/ur...	Math Social Studies	Complex system...	Computer Model Full lesson plan
65 NetLogo: Two communities			Social Studies	Math	Computer Model Full lesson plan
66 NetLogo: Evolution and competition for resources			Biology	Math	Computer Model Full lesson plan
67 Causal relationships between communication, e...	Students explore the causal relationships between...	https://docs.google.com/ur...	Social Studies	Humana	Complex system... Reading text Full lesson plan
68 Causal relationships between social behavior, so...	Students explore the causal relationships between...	https://docs.google.com/ur...	Social Studies	Humana	Complex system... Reading text Full lesson plan
69 Causal relationships between technologies, life e...	Students explore the causal relationships between...	https://docs.google.com/ur...	Social Studies	Humana	Complex system... Reading text Full lesson plan
70 Causal relationships between social behaviors, p...	Students explore the causal relationships between...	https://docs.google.com/ur...	Social Studies	Ethics	Complex system... Causal map Full lesson plan
71 Causal relationships between technologies, pop...	Students explore the causal relationships between...	https://docs.google.com/ur...	Social Studies	Histor	Complex system... Reading text Full lesson plan
72 Causal relationships between technologies, reso...	Students explore our resource use, population...	https://docs.google.com/ur...	Social Studies	Humana	Complex system... Reading text Full lesson plan

The image displays a grid of six embeddable teaching material cards. Each card features a title, a short description, a material link, and a set of tags for subject/topic, concepts, and type. The cards are:

- Chimps or children - who is ...**: A set of experiments that let us explore the human capacity for cooperation around shared, limited resources. Tags: Biology, Social Studies, Cooperation, Dev, Experiment, Full lesson plan.
- NetLogo: 2 Forests**: An interactive introduction into concepts of ecology, behavioral ecology, and sustainability with a computer simulation of a simple ... Tags: Math, Social Studies, Complex system..., Computer Model, Causal map, Pa.
- Commons game**: A classroom game in which students experience the challenge of cooperation around shared resources, and explore strategies for cooperatio... Tags: Social Studies, Ethics, Game, Full lesson plan.
- Collective Action Puzzle Game**: A group game that lets students experience the dilemma between self-interest and collective interest when groups have to work together to ... Tags: Cooperation, Social dilemmas, Game, Payoff Matrix, Full lesson p.
- Climate Change Game**: A cooperation game that lets students experience some of the challenges of cooperation in addressing global climate change. Tags: Ethics, Geography, Social Studies, Cooperation, Fairness, Moral cog, Game.

Problems with AirTable



- Proprietary software
- Third party servers
- Limited ability for hierarchical structuring of bases and base collections (workspaces)
- Limited between base relations
- Limited importing/exporting of coding systems
- Limited base exporting
- Limited entries for some field types
- Limited conditional field entry
- Limited formatting of frontend views
- Limited aggregation and analytic capacities
- Limited file attachments
 - Limited metadata for attachments

WordPress database using Advanced Custom Fields

- Partial / possible solution
- User interface not (yet) ideal for novice community scientists
- Workflow functions of AirTable will require **further custom development**

The top screenshot shows the 'Field Groups' overview page in the WordPress Admin interface. The left sidebar contains the WordPress navigation menu, and the 'Custom Fields' section is highlighted. The main content area shows a list of field groups with checkboxes and a 'Description' column. The bottom screenshot shows the 'Edit Field Group' page for 'TeachingBase'. The left sidebar is the same. The main content area shows a table of field settings.

Order	Label	Name
1	Resource ID *	resource_id
2	Authors	authors
3	Link to article	link_to_article
4	Content Anchors	content_anchors
5	Short Description *	short_description
6	Subject Areas	subject_areas
7	Content Anchors	content_anchors
8	Grade levels	grade_levels
9	Concepts	concepts
10	Status	status
11	Language(s)	languages
12	Links to LiteratureBase	links_to_literaturebase

Open Source Community Science Platform for Networked School Improvement

- **Open science** data management **standards** for interdisciplinary synthesis in school culture
- *AirTable-like* **interface** as **integrated data** and **workflow management** platform
- **Open source**, local servers, interoperability across trusted servers
- **User-friendly** front-end experience across Science-to-Learning Databases
- **Flexible** group structuring and linking



Additional Information

Education development at MPI-EVA-CCP

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

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