



Puzzling Over Patterns

Lisa J. Hardy
Northern Arizona University

Abstract:

Social scientists in the United States face impacts of legislative attacks on critical thinking in classrooms from K-12 through college. Reduction and removal of content and pedagogy designed to develop and discuss critical thinking present challenges for anthropologists by increasing inequality in access and engagement for learners at all levels. Community engagement and creative problem solving can inform the development of learning opportunities for people who process and approaching complex problems differently. Puzzling, when used in education, can increase inclusivity to facilitate learning data analysis skills with different types of learners. Activities like these allow for involvement in analysis and interpretation of data and add to anthropologists' toolkits to learn, systematize, explain, and use social science informed knowledge.

Keywords: Critical thinking; Teaching anthropology; Community engagement

Introduction:

Critical thinking skills are at the core of the practice of anthropology. The ability to shift perspectives in generative ways provides foundations for transdisciplinary responses to these complicated global problems. As state legislatures increasingly focus on educational leadership, curricula, and classrooms as targets for control, social scientists are faced with challenges of how to continue teaching and learning critical thinking skills in inclusive ways. The removal of pedagogy related to critical thinking – either directly or through a chilling effect – presents anthropologists with a need to experiment with innovation, especially when our methods and subjects are under pressure from increasingly watchful eyes. We must grapple with concurrent deficits in content (e.g. histories of enslaved peoples) and familiarizations and language for processes of analytical reasoning (e.g. experiences of developing critical analyses). External pressures are transposed on anthropology's ongoing reckoning with histories and contemporary continuations of colonial and extractive practices. Interrogation of all aspects of teaching, learning, research, and dissemination is necessary to unsettle foundations of inequality.

An “anthropology of learning” requires experimenting, writing about, and engaging power and pedagogy in the construction of knowledge (Blum 2019). Challenges of practicing this anthropology of learning are twofold; 1) they involve challenging power structures that uphold access *within* education, and, 2) they require innovation through creating instruments for learners to discuss, conceptualize, and challenge power *outside* of the classroom. Principles of community engagement and creative activities in education offer opportunities for both.

Creative activities can challenge inequalities with a broad audience of ‘learners,’ a term that includes students in the traditional sense and community members, colleagues, consultants, clients, and others. A focus on community engagement provides approaches that allow for multiple forms of knowledge to be honored and incorporated in active ways that unsettle a passive educator-as-authority model while allowing for transfer of knowledge and skills. Activities can provide practical mechanisms for critical thought.

During the past decade I have been an educator, researcher, and parent in a state where discussions and implementation of education limits have come to pass. Arizona, Texas, and Florida are visible examples of shifts in education that do not stop at the borders of states, and inequalities surface constantly from within. The activity I share here does not provide a solution to ongoing issues of injustice or the changing landscapes of power, though it is one idea for engaging learners in identifying transparency and skills in a flexible way.

Anthropology in Red

When I arrived in Flagstaff, Arizona from Philadelphia, Pennsylvania I was not prepared. I stood (terrified) in a lecture hall with 100 students to discuss Emily Martin's, "The Egg and the Sperm," hoping to introduce a different way of viewing bodies and science (Martin 1991). Students angrily asked why Emily Martin "hated sperm," which I could not understand. The following week I directed students to language of SB 1070, Arizona's omnibus immigration policy, and asked them to read and reflect. Some voiced confusion over why this current policy would be discussed in an anthropology class, prompting calls from parents about how the class was *too political*, a term that I would hear over and over again from my child's teachers throughout K-12. Teachers told me that they could not address Black History month or provide lessons plans about sovereign lands and colonial theft in a place where Indigenous people traveled and continue to live because this would be *too political*. Curricula included instruction encouraging second graders to imagine themselves as colonizers, placing them in a taped square on the floor so they could feel for themselves how cramped the wagons must have been, encouraging them to take on roles like 'tax collectors' and 'wheel makers.' In addition to the removal of actual content, there was an avoidance of the introduction of questions of power, exploitation, and resistance that could have inspired critical thinking skill development. When it came time to vote for a class representative each year, teachers told parents that they could not talk about elections or voting at all; they could only count and tally tick marks and announce a winner who was nearly always the most popular white boy.

Now, years later, in youth-engaged research, I hear young people talk about despair related to widespread injustice and their marginalized positions and their fears of climate emergencies, violence, pandemics, and what one young person called "a genocide on trans youth." Many Arizona students have the desire to learn and think but have been faced with social and political pressure to stay silent alongside decreasing opportunities to experiment with these skills. The removal of content about power and inequality also upholds power differentials and accessibility within learning environments where access is only afforded to some.

Constantly humbled in classrooms, I do not know the answers to teaching in a state like Arizona, though I have learned more about structures discouraging critical thinking through silences that guide students away. Educators and students in K-12 must learn to function in these environments, creating a need for a different kind of pedagogy. Anthropology offers some space for their explorations of power, though we know that there are also areas of sustained injustice and ongoing violence within our discipline and within universities and structures that are the subject of difficult and damaging experiences. Learners in Arizona long for space to explore power and identity in social science, the very topics that are under attack. They are also overwhelmingly depressed and anxious in their awareness of power structures that come from encountering them throughout their lives. We need to experiment with creative ideas for learning together to invite all learners to a common ground for the interrogation of power. I share this example of puzzling in the spirit of building our repertoires of responsive engagement under increased scrutiny and control of learning environments at the level of the state.

In 2010 Arizona was a Republican 'red' state. This was the year that Arizona legislators entered the classroom with the notorious 2010 Arizona bill 2281 targeting Mexican American and other ethnic studies curricula (Hollis Thomas et al., 2014; Gutiérrez et al., 2011). Arizona is now considered 'purple' with both Democrat and Republican leadership. Recent policies continue this trend with language like that of the 2023, since vetoed by current Arizona Governor Katie Hobbs, on, "race; ethnicity; prohibited instruction" SB 1305. The intent of these bills was to "prohibit" teaching and learning about slavery and settler colonialism by stating "academic achievement, meritocracy of traits such as hard work ethic are racist or were created by members of a particular race or ethnic group to oppress members of another race or ethnic group" (Arizona SB 1305).

Misleading language of bills like Arizona SB 1305 create environments of removal of classroom content analyzing power, labor, and structural inequality. When teachers and professors introduce these topics, parents often complain. Policies in Texas, Florida, and elsewhere are similarly positioned to remove content through book banning and prohibitions of content like the infamous "Parental Rights in Education," commonly known as the "Don't Say Gay," bill passed in 2022 under Florida Governor Ron DeSantis prohibiting discussion of homosexuality in 1-3rd grade (Florida CS/CS/HB 1557). Effective June 1, 2023, Florida Senate Bill 266 requires review of "theories that systemic racism, sexism, oppression, and privilege are inherent in the institutions of the United States and were created to maintain social, political, and economic inequities" in higher education and prohibits state and federal funding to "promote, support, or maintain any programs or campus activities that (b) Advocate for diversity, equity, and inclusion, or promote or engage in political or social activism..." (Florida SB

266 Higher Education, 2023). These bills are designed to remove any discussion of power, inequality, and systemic oppressions from education.

Stating that there are destructive, heavy impacts of these policies on education is not hyperbole. In 2023 a medical student complained about Dr. Joy Alonso's critical comments of the Texas Governor's response to the opioid crisis and Texas A & M leadership placed the professor under suspension and investigation (Jones, 2023). Months later high anxiety remains among educators and researchers in the state about what can and can't be said in classrooms at a time when the legislature is busy passing policies about health and education. While Alonso is not an anthropologist, content of policies and healthcare are certainly the content of anthropology.

Rapid introduction and, in some cases, passage of higher education bills at the state level reveals social acceptance of classrooms as targets for limiting political ideologies, ideas now imbued into K-12 classrooms where anything deemed to be potentially thought-provoking becomes labeled 'political' and therefore not allowed. Social science content remains in the crosshairs of legislatures accustomed to using political pressure to create a chilling effect through policies of immigration and elsewhere. Removal of content in K-12 classrooms provides challenges for anthropologists working collaboratively that are likely to grow as students increasingly lose content useful for unpacking concepts or developing novel arguments in school or withdraw from exclusionary education, arriving in college classrooms with little engagement or not at all.

Doing Anthropology

Anthropologists have plentiful resources for describing and learning methods for data collection. The *processes* of making sense of data – practical mechanisms for critical thought – are sometimes assumed. Beyond the concrete tools of data analyses, inspired analysis usually involves intentionally moving between creative intuition and concept synthesis. We learn to leap back and forth from detail to context, embodied knowledge to data, and observation to interpretation. These vibrant and often internal aspects of the process of *doing anthropology* are not always easy to teach. This is especially true in settings where discussions of political and economic nuance are discouraged, and creative thinking is misinterpreted as non-scientific. Most of us, for example, know the frustration of the representation of anthropology as 'soft,' through the framing of qualitative findings as 'anecdotal,' and participant observation with structured field notes as, 'writing in a diary.' Ideas about data collection challenge our ability to develop, hone, grow, and teach creative leaps that occur during data collection and analysis in a way that engages many minds and bodies. How do we do this in ways that are intentionally designed to reduce existing inequalities among learners? These are ongoing questions for all of us who practice and teach methods, analysis, ethics, and writing of anthropology which are becoming more important in a climate of legislative control.

Community Engagement

Contributions in the area of community engaged research and practice are rich and numerous. These models are useful in thinking strategies designed to challenge existing power structures and increase accessibility. A few examples of engaged models are Community Based Participatory Research (CBPR) (see, for example Wallerstein & Duran, 2010; Wallerstein et al., 2017; Israel et al., 2012) and Rapid Assessment, Response and Evaluation (RARE) (Trotter & Needle, 2000; Trotter, 2001; Hardy et al., 2020). The processes and principles that undergird these approaches offer insights that can improve the ability to teach and learn. Plentiful contributions from Indigenous, feminist, and queer approaches and methods enrich thoughtful changes in pedagogy and in research and practice.

Common themes in power-challenging approaches remain the identification of where and how inequality manifests in working together, and examples of strategies for reducing and challenging power. Scholars of community engagement highlight the need to focus on practical implementation of how engagement works. Focus on process makes assumed knowledge tangible for discussion and learning together. The same logic of making invisible processes tangible can be useful in inspiring critical thinking in research and analysis learning. Two main principles of these approaches useful for learning analysis skills are *transparency* and *incorporation of different forms of knowledge* (Hardy, 2023).

Transparency calls for discussion of process and difference in ways that are accessible. An example of incorporating transparency into engagement is creating an open budget for a grant project that all partners can review and discuss together. Closed budgets allow for shrouding inequality and power.

Incorporation of *different forms of knowledge* means that there are some experts who are traditionally academically trained and others who have different forms of expertise like lived-experience related to a particular community or research area. Engagement allows for tangible structural change that brings forward different forms of knowledge to build research questions and conduct research and analysis. An example would be a youth engaged project where young people lead and design research strategies and questions based on their knowledge of their demographic experience. Using these principles in a classroom environment increases the ability to challenge power and enhance critical thinking in inclusive ways even in educational environments of need.

Reframing Expertise

The development and growth of community engagement in research and practice has provided space for challenging power structures through reframing expertise. These processes do not solve inequality though they can challenge unacknowledged places of power and improve systems for better results. Building skills of critical thinking and analysis through community engagement can increase engagement, collaboration, and depth and value of data in classrooms and in research. Often it is in the concrete details of how to learn and use processes that community engaged practices shine. Something as simple as pre-paying for hotel rooms for community members rather than expecting people to use a credit card at a conference can increase inclusivity through small, practical steps. This focus on identifying and reducing the small mechanisms of exclusion can be implemented through learning activities.

Some research designs engage learners of different levels in recruitment efforts and some data collection but leave analysis to highly educated and theoretically-oriented researchers. For example, community researchers or students serve only on advisory boards or make maps, conduct intercept interviews, collect surveys, and track gift cards while academic researchers lead what may appear to be a mysterious process of analysis. However, there are opportunities to make some of the processes of analysis and critical thinking accessible and tangible for learners at different levels will increase insights and inclusion in engaged research. Training students, practitioners, community members, and others to successfully implement tools of anthropology requires multiple levels of instruction and the encouragement and facilitation of critical thinking skills.

Kissel and Blum (2021) write that progressive pedagogy in anthropology includes actively working with the knowledge that students learn and communicate in multiple ways, “As faculty become more aware of their students' multiple situations, it becomes increasingly hard to defend practices that reward only a single type of well-resourced extroverted native speaker.” Kissel and Blum cite Lang (2021) who highlights weaknesses and barriers present in assigning participation grades as an example of exclusionary practices in teaching and learning. Activities that allow learners to find their own space, pace, and comfortable social situation increase opportunities for a range of learners.

Attending to upbringing, cultural and social identity, personality, neurodivergence, and, most importantly, power in learning environments means shifting toward active engagement. Scholars and practitioners working in the areas of community engaged and community based research and practice incorporate the idea that effective engagement requires investigating and different types of knowledge. While one person may have the expertise of being a seasoned researcher, another person may not have finished high school but may know the internal workings of a neighborhood of study.

An essential part of working together in engaged research and analysis requires tangible integration of different ways of knowing. Activities for observing, sharpening, sharing, and listening to one another about different ways of thinking can be playful, thought-provoking, and useful for discussion. These activities can supplement other forms of pedagogy.

Finding Patterns in Puzzles

This section contains a simple and easy-to-implement assignment for teaching and learning anthropology by using puzzling to facilitate critical thinking, learning, social connections, and analysis skills. We can call this an anthropology of puzzles; both in practice and in the way we define and understand scientific analysis and make sense of intertwining and complex conceptual connections. The pedagogy of this puzzling learning example draws directly on community engagement strategies and anthropology concepts by making processes explicit,

accessible, and reflective. Puzzling inclusively encourages learners to work in multiple ways at their own pace to develop a process that makes sense to them. This activity can add dimension and learning to other training.


I have assigned puzzling in anthropology graduate courses on ethnographic research methods and topics courses. Learners respond with enthusiasm and layered insights, always sharing that this is a valuable activity they would like to see continue in future syllabi. I believe that this activity can be used effectively with groups in workshops or other training programs for engaged research and practice.

Instructions begin with grouping learners in pairs where they are tasked with selecting 1,000 piece puzzles for their partner. Once they purchase the puzzle or borrow one from the instructor, they deliver the puzzle to their partner after removing the puzzle box and all related images that would indicate what the image of the puzzle is. Each partner receives questions for reflection as they work to complete their puzzle. Once the puzzles are complete, the group shares insights on learning and process with one another. Short papers and discussions provide an additional benefit of encouraging communication between learners in the room rather than instructor-led lecture or overly-guided discussions.

Image 1: Instructions and questions provided in class

Puzzling Over Patterns

Instructions



1. Select a 1000 piece puzzle for your course partner.
 - Remove the puzzle pieces from the box and place them in a bag or envelope without any images of the full picture.
 - Give the pieces to your partner. Do not provide any hints or images to your partner about the image on the puzzle. They should have no information about the content of the puzzle.
2. Obtain your puzzle pieces from your partner.
 - Find a place to set up your puzzle.
 - Assemble the puzzle over time.
 - As you assemble the puzzle take notes on what you notice about the process and about your process regarding making sense of the puzzle.
 - You are free to do other things while you do the puzzle. Binge watch Netflix, cook, or do whatever you'd. Just be sure to take notes.
 - Complete the creative thinking insight questions while you work on your puzzle.
3. Complete your notes and answers to the questions below.
 - Submit your notes and answers and bring them to class for discussion.

Creative Thinking Insight Questions

1. Provide a description of what you did for this assignment.
2. Discuss the process of doing this activity including what you learned.
 - Did you learn anything about how you learn or what it means to learn through doing? Explain.
3. Discuss the process of critical thinking related to this activity.
 - What, if anything, you learn anything about thought processes, patterns, repetition, or any other processes that you might related to critical thinking skills?
4. Describe the process of start to finish with your activity.
 - Were there some aspects of the activity that were slower or faster? When did that happen?
 - Did you have times when you were stuck or had trouble moving forward? How did you move forward?
 - What did you enjoy most about this process? What does this tell you about your process of learning/thinking/doing?
5. One purpose of this assignment is to help you to learn how you think and how you learn and to help you to think about the process of skill acquisition and data analysis. Are there insights here that you would like to add to your toolbox for future research or data analysis? Explain.
6. Upload photos of your process and provide a brief description of each one.

Reflective Outcomes

Shifting Perspectives

Learners reflect on how they approached the puzzle prior to assembly. Some begin by identifying edge pieces while others create small clusters of pieces of color or pattern and work from that pattern recognition until they begin to identify themes. Some puzzlers think in shapes or colors or both. Some observe a sound associated with shapes that help them to focus and find a missing piece or a home for a piece they want to place. Working with other puzzlers helps learners observe how they puzzle compared to someone else who approaches puzzling differently.

Once the puzzle begins to take shape, puzzlers often shift. Some puzzlers observe negative space, and others look more at the larger image. Many move back and forth between different ways of seeing and figuring as they go. Puzzlers turn puzzles or move themselves around the puzzle to change vantage points, suddenly showing that colors can be matched together that previously seemed unrelated.

Skills of experiencing, looking at, and listening from different vantage points provides entry into learning exploratory analysis. Identifying shifts in puzzling strategies provides a concrete example for teaching how shifting one's own perspective helps researchers identify themes. Learners may not yet know what a large data set looks like, but they can begin to think about how the thought process of shifting vantage points works.

Mixed methods data collection and design also requires shifts. Learners can think about consciously looking at different data through different perspectives. Where do they find processes that help them to make connections and identify patterns? This discussion can help to explain how researchers explore themes through coding software or statistical analysis. Drawing on observations of shifts can enhance learner understanding of different theoretical perspectives in analysis as well.

Discussing differences in puzzling can help to inform discussions on consensus, engaged analysis, and even intercoder reliability. A puzzler might ruminate on one corner, intent to complete a certain image. Another puzzler may see something entirely different. Two or more puzzlers can work together to figure through challenges that one puzzler might encounter when trying to identify the images without knowing what's there.

Negative space

Some learners use spatial recognition of negative space to puzzle by focusing on a missing shape and sifting through pieces to find the matching one regardless of, or in relationship with, the colors or other attributes of the puzzle and pieces. This focus on negative space can lead to insights on lack of information in data. New researchers may assume that an absence of something means that it doesn't exist. Or they may ask about something specific and receive unexpected answers. When this happens, they may assume that the question was wrong. Negative space can lead to learning on missing and incomplete data and about the boundaries and limitations of a data set. Learners may query how focusing on negative space shows them something important, and that data that exists in the absence of information, or in negative space.

Emerging Themes

Beginning a puzzle without a guide can be challenging and anxiety provoking. Where do you start when you don't know what you are looking at? Learners talk about looking for identifiable imagery or words that they can begin to construct. This aspect of the assignment leads to important insights about inductive versus deductive research and the ability to create the circumstances for emergent themes. In qualitative research, using grounded theory and other forms of analysis that allow the researcher to sift through data and look for themes that they may not have set out to find runs counter to what many students learn about the scientific method.

Puzzling without an image leads to a discussion about how inductive inquiry means beginning some scaffolding from which researchers start and at the same time allowing for the emergence of themes that participating interviewees or others tell the researcher are important. Searching for patterns and checking to see if they hold up across different participants and methods allow researchers to act on intuitive knowledge and measure that knowledge quantitatively through additional sources of data. There is something similar about doing a puzzle

without knowing by observing as the pieces come together to create a bigger picture, and this type of data analysis.

Identifying Contexts

The ability to work on details of a puzzle prior to knowing what the larger patterns are is a skill that learners may sharpen through puzzling. Often entering a data set prior to the larger knowledge of what is to come can create anxiety for learners at different phases. Taking a breath and focusing on details of filling out spreadsheets or transcriptions or applying codes can be connected to looking for edge pieces or piling up colors for a puzzle without any knowledge of the image that will appear.

Puzzling can be implemented with learners in different subdisciplines including archaeology where learners find themselves analyzing data from a site prior to knowing the larger context. What does it mean to work on details and identify patterns prior to a larger conceptual foundation? This practice requires shifting from detail to concept and it also means learning to become comfortable with uncertainty while wading through tasks. Later in the process of puzzling and analysis there are moments of insight that are satisfying. Learners reflect on the feeling they have when they finally see what they're working on or when they add the very last piece to the puzzle. Asking learners to take note of and remember that experience can help them to think about later processes when they feel lost in data.

Challenges and Breaks

Observing challenges can help puzzlers anticipate inevitable difficulties in research. Puzzling can cause anxiety when a learner becomes stuck. Some learners do not complete their puzzles and others find ways to overcome their frustrations. Puzzlers find strategies like getting up, walking around, and doing something else and returning. These examples help learners to take note of what happens when they feel stuck or become anxious. Taking note of how learners identify and navigate through challenges may help them in future research. One puzzler spoke of frustration trying to find a seagull by looking painstakingly at every single piece until concluding the cat ate it so they went to sleep. When they returned there was the piece, only instead of a seagull, it was a dog. Shifting perspective, releasing an idea that was incorrect, letting the mind wander, and doing something else was what this learner needed.

Learners reflect on enjoyment with the puzzle precisely because they had time to do something other than reading and writing. They puzzle while listening to podcasts or watching shows, alone or with partners, friends, or family members who wander by. These insights help learners think about what they do while they are doing other things and where and when ideas synthesize. New researchers who worry they are procrastinating by changing what they're doing when they're in the middle of data analysis may find that a walk was what they needed to make sense of the patterns they find.

Some learners become frustrated. Even when learners dislike puzzling or have trouble completing their puzzle, they often share insightful reflections on how they approached the activity and what helped them. Some learners who do not complete their puzzles share insights that are useful when completing their own data analysis as they deal with the ebbs and flows of productivity and critical inner voices. These learners can lead groups to reflect on different types of data collection and analysis, recognizing that they may prefer some data collection and analysis methods over others. Learners of social science can think through what they enjoy and understand as they design and develop their own independent projects. This self-knowledge may help them to observe and understand where and how they might make the strongest contributions.

Answering Questions

Answering reflective questions helps learners see what pattern identification and analysis look and sound like in ways that provide a starting place for understanding. A puzzle only has one correct picture while data has multiple layers of analysis. Still, the goal of analysis is not to decide what researchers want to find but to look, listen, observe, explore, and check identified patterns through skillful shifts and inductive observation.

When guided through questions, puzzling allows learners to imagine how to make sense of data. They may imagine 20 transcripts of two-hour interviews in hundreds of pages of overwhelming transcripts. Beginning a puzzle without a picture helps learners think about beginning to identify patterns prior to knowing exactly what

they will find. They know it's a puzzle with certain colors and shapes and maybe even a few identifiable details. They build their knowledge of the image as they go, just as they might identify patterns in data and then check for reliability and validity.

The Creativity of Analysis and Science

This activity is a starting point to learning data analysis. The use of different analysis techniques provides pragmatic guidelines for approaching a large data set with a strategy that researchers apply systematically to code, analyze, and often quantify results. It is worthwhile to become aware of, and speak with learners about, creativity in analysis designs as part of this activity. Seasoned researchers follow skilled analysis designs that allow for creative thinking and intuitive exploration. When conducting a semi-structured interview, for example, a researcher may hear something that seems significant even though they do not yet know why. Later, they may explore the phrase with a larger data set and identify salience, or not. A team viewing a messy concept map might suddenly see an exciting theme jump forward. They will then work together to determine if the theme holds up. Researchers may also need to step away from our data from time to time to allow it to gel, and return with new insights and ideas to explore. Learning to identify processes like these, and learning to be comfortable in the chaos of early data analysis can help learners to understand where and how analysis occurs.

Limits and Alternatives

Puzzling as a reflective activity is designed to foster inclusivity for different types of learners. However, puzzling relies heavily on sight and examples of 'seeing' data as a primary sensory experience. Accessibility and inclusion require alternative assignments. Learners may be sight impaired or have difficulty deciphering colors and shapes. Unhoused learners or those living in public housing situations may be excluded due to limitations on a space to store and continue to work on puzzles. Some learners may have difficulties with puzzles that become insurmountable and counterproductive. Providing an alternative assignment allows learners to select a different activity without disclosure of limitations.

Adding other activities to this one allows learners to explore multisensory aspects of ethnography and call attention to a primary focus on sight by also providing activities to hear, feel, taste, experience while learning together. I sometimes provide an alternative assignment that asks learners to place their bodies in different environments or activities that allow them to sense and observe outside of their everyday experiences. This activity focuses more on embodiment and participation without the exclusive attention to sight, and it also leads to insightful discussion on research and ways of knowing.

Conclusion

Larger questions of access and justice remain relevant to all anthropologists regardless of where we practice social science. Activities like these may provide a starting point for the integration of principles of engagement and pedagogies that create more accessible teaching, learning, and change. While activities are not overtly political, they may help to address gaps that may be widening where K-12 educators are prevented from focusing on how to think. Once curious learners are presented with challenges to let their minds play, they can identify, enjoy, and document how they work, and they can learn how to sharpen skills of reasoning and critical thinking. These skills can lead to increased knowledge and confidence when facing inevitable self-doubt and challenges while working on large, complicated, personally meaningful projects. Puzzling allows researchers to let their minds play over shapes, colors, textures, pictures, themes, and mystery as they watch the image of the puzzle emerge.

Land Acknowledgement

Northern Arizona University sits at the base of the San Francisco Peaks, on homelands sacred to Native Americans throughout the region. We honour their past, present, and future generations, who have lived here for millennia and will forever call this place home.

Acknowledgements

Thank you to Karen Renner for suggesting that I consider sharing this work in a manuscript, and to colleagues Corina Kellner, Kaitlyn Davis, and peer reviewers for taking time to thoughtfully comment on revisions. I also gratefully acknowledge the enthusiasm and creativity graduate students brought to puzzling and reflection in anthropology seminars for the past several years.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- Blum, S.D. (2019), Why Don't Anthropologists Care about Learning (or Education or School)? An Immodest Proposal for an Integrative Anthropology of Learning Whose Time Has Finally Come. *American Anthropologist*, 121: 641-654.
- Gutiérrez, L., Hanhardt, C.B., Joseph, M., Licona, A.C., and Soto, S.K. (2010). Nativism, Normativity, and Neoliberalism in Arizona: Challenges Inside and Outside the Classroom Transformations: The Journal of Inclusive Scholarship and Pedagogy. Vol. 21, No. 2, Teaching Sex (Fall 2010/Winter 2011), pp. 123-148 (26 pages). Penn State University Press
- Hardy, L.J., et al., Building a narrative of equity: weaving indigenous approaches into community-engaged research. *International Journal of Environmental Research and Public Health*, 2020. 17(14): p. 5148.
- Hardy, L.J. (2023). *Community Engagement through Collaborative Writing: Storytelling Together*. Routledge.
- Israel, B.A., Schulz, A.J., Parker, E.A. (2012). *Methods for community based participatory research for health: Edition 2*. San Francisco: Jon Wiley & Sons, Inc; 2012
- Jones, D. (2023). A Texas A&M professor was suspended for allegedly criticizing Lieutenant governor. NPR. Accessed on Feb. 3, 2024.
- Kissel, M., & Blum, S. D. (2022). Let's talk teaching: Progressive pedagogy in anthropology courses. *American Journal of Human Biology*, 34(S1), e23706.
- Lang, J. M. (2021). Should we stop grading class participation? *The Chronicle of Higher Education*. <https://www-chronicle-com.libproxy.nau.edu/article/should-we-stop-grading-class-participation>
- Martin, E. (1991). "Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female Roles." *Signs* 16(3): 485-501.
- Thomas, M. H., Aletheiani, D. R., Carlson, D. L., & Ewbank, A. D. (2014). 'Keeping up the Good Fight': The Said and Unsaid in Flores v. Arizona. *Policy Futures in Education*, 12(2), 242-261. <https://doi.org/10.2304/pfie.2014.12.2.242>
- Wallerstein, N., and Duran, B., (2010). Community-Based Participatory Research Contributions to Intervention Research: The Intersection of Science and Practice to Improve Health Equity *American Journal of Public Health* 100, S40_S46, <https://doi.org/10.2105/AJPH.2009.184036>
- Wallerstein N, Duran B, Oetzel J, Minkler M. (2017). *Community-based participatory research for health*. 3rd. San Francisco: Jossey Bass; 2017
- Trotter, R.T. and R. Needle, RARE Project field assessment training methods workbook. Washington DC: Department of Health and Human Services, 2000. 107.
- Trotter, R.T., et al., A methodological model for rapid assessment, response, and evaluation: the RARE program in public health. *Field methods*, 2001. 13(2): p. 137-159.