Using community mapping and tours to create community in science classrooms

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Classroom communities are more than just teachers and students. Administrators, other teachers and students, teacher aides, all school staff, families, friends, community leaders, and more influence a classroom community in different ways. Places and events in the surrounding community also impact a classroom community. The COVID-19 pandemic is a perfect example of how events and people outside the classroom impact classroom communities. Consequently, when creating a scientific classroom community, we must consider the people and places outside our immediate classrooms.

Expanding who and what is considered a part of a classroom community means we need to know about and include the people, places, and events outside the classroom in our science teaching. Including students’ everyday lives into our science teaching is not a new idea. In fact, Appendix D of the NGSS (NGSS Lead States 2013) indicates the importance of place and the role of funds of knowledge (Moll et al. 1992) in supporting historically marginalized students in learning. Therefore, to support all students—especially students who are historically marginalized in and by science—our scientific classroom communities should include students’ out-of-school lives. Enacting justice-oriented pedagogies that use students’ everyday lives is easier said than done (Brown et al. 2018). Therefore, we describe our use of community tours and mapping as a means to build relationships with students’ communities and improve your curriculum.

**Community tours and mapping**

Community walking tours and mapping build relationships with communities. Walking, talking, being, and documenting a community with members, in an intentional way, enables people to gain firsthand accounts of what students and other community members find important and special about their community (Pink 2008). Tours create opportunities to challenge stereotypes and assumptions about communities while also providing chances to learn about problems facing the community from the perspective of the people who live there. By documenting the tour on a map, we are able to remember physical places like parks, beauty shops, historical markers, and churches as well as human assets like restaurant owners, coaches, and activists. Eventually, you can integrate and leverage what is learned from the tours in your science curriculum (Thompson et al. 2021). Through sustained participation in tours and mapping, we can notice more and positively support and sustain the local communities and their cultures in our classroom communities.

The following are guidelines for using community mapping and tours to inform your curriculum. The guidelines come from four years of triumphs and challenges of using community mapping with science teachers across the United States. These guidelines are suggested steps rather than “rules” because there is not only one way to be successful in using community mapping and tours to learn about your school’s community and its place in science curricula.

**Step 1: Create an initial map**

“I don’t know much about my school community. I just moved here and I barely know my way around.” One facilitator responded by saying, “It’s okay to not know much. The reason we are doing research first is to learn something before we go on a tour.”

To start the mapping process, create an initial map. The initial map gives you a baseline by which you can note what your students designate as important. Without familiarity with the “content”—in the case of mapping, the community surrounding the school—you will be unprepared to learn from your students. Your initial map can be hand drawn, digital, or a spreadsheet with categories. For example, Figure 1 shows a map a teacher made using a screenshot of Google Maps that they mocked up on Jamboard. Figure 2A shows a map created by a teacher with the Google Maps app to create a fully interactive digital map. The map structure is up to you. To start, include all the things you know about the community. Include places you buy food for lunch or locations you remember from your commute.

Afterward, search the internet, read books, watch local news, and/or go on a solo drive or walk through the community. We highly recommend using a map-based search. This search can yield information about parks, restaurants, grocery stores, museums, religious institutions, and other landmarks in the community you may not know about already. Your goal should be to learn about important places, people, events, history, and contemporary happenings in the community. For example, one teacher from New York City bought a book to help them learn more about the Hudson Bay, a key natural resource near their school. From the book, they learned about the importance of the Hudson Bay in early New York City and became inspired to find out how the communities around their school were addressing environmental problems and injustices. Taking time to
learn about a community before your tour will allow you to ask intelligent questions and avoid the all too common and oppressive tendency of inquiring about things you could easily find on your own.

**Step 2: Reflect on your map**

* A teacher was lamenting, “I don’t see anything that useful for my math and chemistry classes that would be easy to go to. I only found a pizza place, a corner store, and a laundromat.” Responding, another teacher said, “Maybe those are just places you find valuable. Your students will see more than you do.”

After creating an initial map, you need to reflect. When reflecting, take time to notice patterns and trends, and identify things you think will enhance your teaching or are assets in the community. Question your motivations and reasons for labeling certain places as assets. Notice your biases and assumptions about the community because they can easily enter how you guide students to create their own maps and/or construct tours. The goal is to learn about a community, not have your own ideas confirmed. For example, the teacher above noticed most of what they identified as assets were restaurants.

Another pattern to look for is where the assets are located. The teacher in the quote above only labeled assets in gentrifying parts of their school’s community, but later gained insights into broader, less-white spaces in the community when they had their students take them on a tour after school. Finally, try to note assets or places you want to learn more about. For the teacher above, they wanted to know more about a park near the school where they noticed students spending time before, during, and after the school day. This will help you do more research, assist you in choosing someone to go on a tour with, and provide you with potential questions to ask students if and when they create maps and take you on a tour.

**Step 3: Go on a “tour”**

* Talking about a walking tour the previous year, one teacher said, “When I did my tour, we basically walked around the community for five hours after school, but I was only able to hear from one person.” Responding, another teacher planning their first tour said, “I don’t know if I can get someone for that long, but I am thinking I want to be able to get a lot of data from parents and students. I think I might start with a survey.”

Going on a tour is a three-step process. The first step is choosing a tour guide. The tour guide should be able to provide you with information you could not gain from other sources. We recommend starting with your students but also including community elders, community leaders/activists, a colleague, or anyone else you believe can provide unique insight into the community. You need to take time getting to know the person before asking them to take you on a tour. For example, this activity requires people, particularly students, to be vulnerable by sharing themselves and their community with you. If students do not already have a relationship with you, they may be hesitant to share or only give you information they think you want. Therefore, we do not recommend this activity during the first few weeks or even the first month. You need to have a strong, authentic relationship with the tour guide, like students, first. This is not meant to be a graded, formal assignment for students but a learning process for you, the educator. Assigning these activities for credit would hinder the relationship building it is meant to foster with your students and their community.

Once you believe you have strong relationships with students and/or other tour guides, you can plan and participate in the tour. Talk with the tour guide to co-design the tour, considering what you want to learn and their expertise and what is physically and temporally feasible. For example, you may want to walk around the neighborhood, take a drive, or sit...
and talk during school hours. With students, you may not be able to leave school grounds, so we suggest having them create maps and give you a virtual tour via Google Street View. If you can leave school grounds, create parameters such as how far to go from the school or which areas to visit; these are all things you should plan with any guide but especially students before the tour happens. Think of questions to ask your guide along the way. Give your tour guide some direction. Use your initial map. What places, people, and/or histories do you want to hear more about? Write down questions you can ask during the tour. We have included sample questions teachers generated for their tours on the next page. Finally, go on the tour. You can take pictures, write notes, track it on a running app, or you may want to experience the tour and write down what you learn after. For students, this can be particularly empowering because you are positioning them as the expert, something that may not happen often.

**Step 4: Create a final map**

Talking about their tour, one teacher said, “I realize a lot of what students care about is inside their house. It seems most of them just spend time on the internet and gaming.”

After the tour, take stock of what you learned. Create a new map. Overlay what you found on your initial map or create a new one. You can even overlay maps created by students directly. Figure 2C shows the resulting final map after creating an initial map (Figure 2A) and going on a walking tour (Figure 2B). Like the teacher above, you may worry you didn’t understand the community at all or get information you didn’t expect. That is okay. By going on the tour, you learned new information you did not and could not get on your own. Spend time reflecting on the new map and reflect on your feelings and assumptions. Seriously consider the question “What did I learn?” If you feel you need more information, do a little research and go back to your tour guide to talk. Continue to build the relationship(s). For example, after finding out their student tour guides resented the community the school was in, a teacher went back to the students for more information. The teacher learned the students thought the community was boring and instead highlighted other communities, where their extended families lived, as more interesting and relevant to their lives.

**FIGURE 2B**

The teacher’s community tour route after creating initial community asset map.

**FIGURE 2C**

The teacher’s revised community map showcasing a greater number and diversity of resources after their walking tour.
Questions for the interview

Interview questions generated by the teachers in the 2021–2022 professional learning community to conduct their mapping tours. These are not meant to be all-inclusive but provide guidance for what has been useful, productive, or deemed important in other teachers’ mapping experiences. These questions were generated for both adult- and student-guided tours.

1. How do you feel about living here? Would you recommend living here to a friend who is looking to move? Why or why not?
2. What are your thoughts on the school district overall? On leadership? On organization? Have these feelings changed over time/as you got older/as your kids got older?
3. How do you feel part of your community here?
4. Are there things you feel are missing/you would want to be involved in?
5. Are there parts of this community you feel proud of? Are there parts you don’t feel as proud of?
6. Have the priorities of the school district changed? If so, in what ways? If not, why do you think so?
7. What are some qualities that describe or illustrate your perception of the district? Are there any locations or historical reasons that cause this perception?
8. What do you think about the accessibility of your community? Is it easy to get around? Cheap? Are there places that you would like to go but are inaccessible/unwelcome?
9. How does this place/thing contribute to the community?
10. Are there things about the community you’d like to improve?
11. What places that were significant in your life during your high school years?
12. Where did you/do you work? Where do you find yourself frequently? Where do you enjoy going/hanging out with friends?
13. Where do you avoid going? (Where do you feel unsafe, where are you nervous getting caught when doing stupid stuff, where might you run into people you dislike?)
14. If you had a free day to do anything you want to, where would you go and what would you do?
15. Are there places you wish you could go but don’t feel like you can?
16. If you didn’t go to school here, would you spend time in this neighborhood?
17. What is your fondest memory in this neighborhood and where did it take place?
18. What does your average day during the summer look like?
Step 5: Create/adapt science curriculum

When talking about developing a unit after their tour, one teacher said, “I feel like I could build my entire year's curriculum around this one tour. I learned so much about the history of the area and it is all interconnected just like the science concepts I teach.” Responding, another teacher said, “I didn’t learn much, I just found out the students really like the aquarium. Maybe I can plan a field trip there for later in the year as a reward.”

Each tour will be different and will provide something you can use in your curriculum. We will not explain how to revamp your curriculum. Instead, we will provide a few ideas for where to start. Begin by locating a place to which you can take your students for a class period or a field trip to supplement the existing curriculum. This could be an aquarium, like in the vignette above or a park across the street.

Another place to start is to pick a phenomenon you notice embedded in a tour experience. For the teachers who noticed their students participated almost exclusively in online communities, they chose to plan a unit around how human bodies react to sitting still for long periods of time. The teacher above who, “didn’t learn much” kept speaking with their students and colleagues. They eventually developed a unit focused on the idea of “food swamps” because of the exclusive presence of fast-food restaurants in the community. The key is to start with the map and work forward.

Conclusion: The first tour is only the beginning

Having students and other community members participate in community mapping and tours is rewarding, but it is also risky. There is no clear way to assess student learning, nor should there be for this activity. Students are sharing their community with you, and although they may also learn about their community through this process, it is you, the teacher, who is the targeted learner. Ultimately, the curriculum you create will be the assessment of the mapping and tours—success is marked by your development of community-grounded curricula that engages the students in their local context.

You must also consider safety and school regulations when planning for this activity. Be sure to obtain administrative and guardian consent. You can even invite them to join the tours. Creating an initial map may help you locate possible areas of concern (e.g., busy intersections and areas of the community you cannot physically reach by foot).

We have found after school is the best time to have students participate in this activity because short class periods can hinder deep discussion and distance traveled. Additionally, we often only build the necessary relationships with a subset of students to make this activity impactful rather than perfunctory. With this said, any student can create a map in the classroom—all it requires is the internet or printed community maps. At the end of the day, you must use your professional judgment to decide the best form of participation in mapping and tours because, truthfully, there is no “wrong” way. It must fit your local community and their norms, beliefs, and customs.

By continuously reengaging with community members about their community, your science teaching can become local and concrete rather than unfamiliar and abstract.

REFERENCES

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