CHAPTER 7

Moving Forward When Faced with Learning Difficulties: Rolling a Kayak

The "Podcast Boys"—Sum Dood, Justin Case, and Sue Denim—were working on a Web site to promote same-sex marriage during our third and final unit in *Math for a Cause*. They had decided their math problem would be figuring out if there was a correlation between suicide rates and same-sex marriage laws per state. While Sue Denim was lying under the table trying to convince his group mates to put a turtle on the Web site, Justin Case and Sum Dood were conducting research and trying to figure out which mathematical calculations worked best for their idea, using Sum Dood's "calculator of justice." Bryan checked on them early in the period and asked about their plan. Justin Case explained to him, "We looked up suicide rates of every state, and then we found which states allowed gay marriage and which states don't, and then we averaged out the number. We're adding the suicide rates of the states that don't allow gay marriage together and then dividing by how many states there are that don't allow gay marriage." The boys felt this simple averaging would allow them to see if there was a difference between the states that did allow legal gay marriage compared to those who did not. Bryan told them their idea was a good one. However, he was not convinced their methods would give them the answers they sought. Like many student groups had done throughout the semester, the Podcast Boys likely started calculating averages because it was the skill with which they were most familiar. Bryan chatted with them a little longer and encouraged them to keep working.

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As the Podcast Boys were finishing and deciding how to display their data on the Web site, Sum Dood declared, "Wait a second, do you know when this data was collected, this North Carolina suicide thing? Cause North Carolina just got gay marriage." He began looking at the Web site they used for suicide rates and realized their calculations were incorrect. Bryan and I came in at this point, and Sum Dood shared with us, "We just found a problem. We were basing our numbers on what states allow gay marriage right now, in 2014. But some states did not have it in 2011 when these suicide rates are from." I confirmed Sum Dood's suspicions and explained that many states only got same-sex marriage a few weeks ago due to a circuit court ruling, so they would need to find an earlier list of which states had same-sex marriage in 2011.

I helped them navigate through the information on a Web site they found that listed when different states got same-sex marriage as well as Civil Unions, a legal recognition of a relationship that some states or cities had which offered couples some of the same rights as a legal marriage. Here, they needed guidance with both dissecting the terminology and their digital literacy practices. With digital literacy, it is important that students learn how to decide what sources are reliable and relevant (Rhodes & Robnalt, 2009). Digital literacy also relates to queer pedagogy as reading online is not typically a linear task, as users can instantly click a hyperlink and begin investigating a new text instantly, which is not something easily replicated with print text. As Rhodes and Robnalt (2009) pointed out, this causes students to "construct their own unique text… [in which there] can be many paths…where each reading may result in different information or the reader may come to a different understanding or conclusion" (p. 162). With the addition of the Podcast Boys' mathematical calculations adding another layer of meaning, this resulted in their initial confusion and miscalculations of the suicide rates' relevance to same-sex marriage laws.

The students further needed assistance with critical literacy, mainly in figuring out what the power relations were between Civil Unions and marriages. The boys decided to only use same-sex marriage laws to keep their mathematical calculations simpler. Even still there were complications, as they had to decide if a state getting same-sex marriage in July of 2011 was early enough for their correlation with suicide rates. Ultimately, they decided that did not count, and only used states who had same-sex marriage in all of 2011 for the positive category; all other states were in the category of not having same-sex marriage. From here, they redid their calculations, and Justin Case commented that "we're going to send the

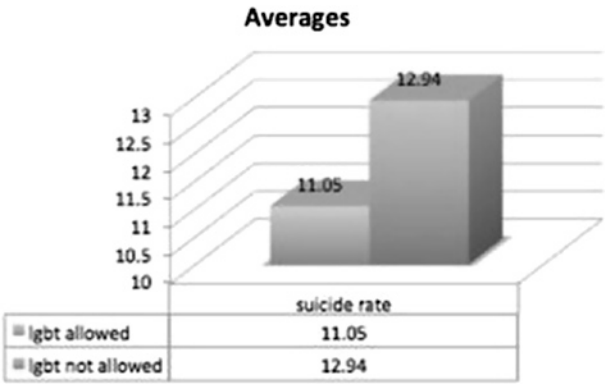

Fig. 7.1 Bar graph from the Podcast Boys' Web site

website back to alpha because the data was in 2011 and we didn't account for that." The possibility of reaching an outside audience seemed to motivate them to double-check their calculations. This authentic audience is something writing teachers often want their students to work toward, and here, it proved fruitful for their literacy and mathematics skills.

The Podcast Boys did find a slight correlation—states that had same-sex marriage had a suicide rate of 11.05%, while states that did not had a suicide rate of 12.94%—which they exaggerated in a bar graph to look visually persuasive (shown in Fig. 7.1). Justin Case wanted their Web site to send a strong message that same-sex marriage laws decreased suicide rates, as discussed in Chapter 5. They were so proud of themselves and their discovery that they included in their Web site credits that Sum Dood was the "fatal flaw figurer outer." Rather than being stymied when they were thrown momentarily off course by a misreading of information that resulted in their miscalculation, they were able to successfully stay on track and complete their project. This relates to rolling in kayaking, which is explained below.

7.1 Learning to Roll

A kayak rolls when it flips over, tipping the kayaker upside down and into the water. This can happen in strong rapids or when a kayaker leans over too far, going beyond a manageable secondary stability (meaning

when a kayaker leans over so the boat is on its edge; explained further in Chapter 4) or angled posture. Unlike in a canoe where a paddler will fall out of the boat when tipped over, a kayaker is often attached to their boat. Kayakers, especially those in white water (rivers with heavy rapids) wear a spray skirt, an item made of a stretchy waterproof material worn around the waist where the hem of the skirt attaches over the lip of the kayak opening (called the cockpit coaming) where the paddler sits. The skirt surrounds the kayaker's waist on all sides this way, sealing them into the boat. As kayaks sit low in the water, without a skirt water would come into the boat when paddling through rapids. In our metaphor, a mental tool (the skirt) keeps a student attached and within their learning mindset (the kayak) even in times of difficulty.

If a kayaker is in rough water or panics when they turn over and cannot successfully roll back up (a technique which is explained in the following paragraph), they can pull the skirt away from the kayak, using the handle at the front of the skirt, while under water. This allows them to detach from the kayak and swim to shore. Kayakers call this a wet exit. Then, they may need to portage around the rough water, as described in the previous chapter, and must work to keep track of their kayak and other gear. As with portaging, there is no shame in having to bail out of your boat. A kayak may get stuck in debris which makes rolling impossible, or a kayaker may lack the confidence and skill necessary to roll. A student may encounter a rapid, which in our metaphor is a difficult learning situation, before they are ready to move through it and so are not ready to complete a successful roll when they are tipped out of their comfort zone. However, rolling is preferable to getting out of the kayak and can allow the paddler to continue their journey with minimal interruption or stress. Teachers can help students prepare for a roll by practicing them in safe situations, so they can later successfully complete one in a difficult learning situation, causing them to gain confidence as they work through challenging material or ideas on their own.

Many kayakers learn to roll in a pool or in a calm section of a river or lake. Like with any learning, beginning kayakers need support from experienced instructors or peers in a safe environment before trying a roll on their own. It can be shocking to have your head suddenly pushed under water by the rapids, causing someone to forget their technique. Having another person standing in the water in case of

distress is crucial to increasing a learner's confidence, as well as allowing them to see that taking the risk of rolling can have a positive benefit. To complete a practice roll, you sweep the paddle away from the kayak while leaning in the same direction, which brings the boat over sideways. Then, place one kayak blade (the kayak paddle has blades on both sides, unlike a canoe paddle) vertically in the water into the "strike position." The paddler next moves their hips sharply while continuing to move the paddle, which twists them underwater, and brings the paddler above the surface on the opposite side. Meaning, if you go into the water on your right side, you will twist so that you continue your motion to come up on the left side. In a learning situation, students who struggle are sometimes trying to go against their learning rather than work through or with it. They may oppose a new problem for lack of understanding and when they falter, may want to backtrack (try to exit the water on the same side of their kayak from which they entered it) or give up (making a wet exit when it is unnecessary). A skilled teacher can encourage students to keep trying, using new strategies, until they are more comfortable with the material. I know I have told students to try to "roll with the punches," or their trials and mistakes, and picturing this as a kayak physically rolling through the water can help us imagine students rolling through learning difficulties, remaining in the learning experience, and being ready to try to keep paddling (Fig. 7.2).

When learning to roll, kayaking instructors will scaffold beginners' learning, just as a classroom teacher does. The instructor will likely go over the equipment, asking new kayakers to practice putting on and releasing their spray skirt from their kayak while on land before they even get into the water. They may ask beginners to simply capsize their boat and stay underwater for a few seconds, gaining comfort with the disorienting feeling of being underwater and upside down. It is also important to practice a roll on both sides of the kayak, as a paddler needs to be skilled on both as you cannot control on which side you turn over. The instructor may also have students practice rolling a few times in a row, perhaps even with the same breath, as in heavy rapids or large waves this is a possibility. These steps help the newer paddler gain confidence in their techniques and get comfortable in a new situation before practicing the skill of rolling while also navigating heavy rapids and worrying about avoiding rocks or debris.

Fig. 7.2 A kayaker learns to roll in a pool

Combat Rolls

Once a paddler has practiced their roll and is confident, they may begin going on more difficult rivers, paddling through white water, or in heavy rapids. White water is fun for an experienced kayaker, and the speed is thrilling while also requiring skill and technique, similar to the rush an experienced classroom learner may feel with challenging material and a fast-paced curriculum. When a kayaker's boat flips while in white water (rather than in a practice situation or on calm water as described above) and they successfully flip themselves upright again, it is called a combat roll. In this situation, there are added factors to consider such as the river current, rocks, or other obstacles, and the temperature as colder water will be more shocking. This is why practicing in a pool or still water is essential, as these factors can be unpredictable or even invisible.

As a model for learning, a combat roll serves as a symbol for problem-solving in the moment. When students complete critical literacy

practices, they may be confronted with an idea that upends their worldview, feeling like they are flipping over. For some of our students, their worldviews were challenged when they learned how systemic racism can lead to mass incarceration, or that transgender People of Color can face discrimination in the healthcare system for their race and their gender identity and expression. Or, a combat roll can occur when students encounter a difficult text or other problem that temporarily disorients them, making them feel like they are in an alien environment or forget how to use their learning tools to get themselves upright again. However, with teacher supports in the form of prior practice, and student learning tools like a spray skirt serving as a support for their learning mindset, as well as self-confidence and a willingness to work through risks, students can continue through and beyond this difficulty. A combat roll in the classroom will leave students feeling confident in their learning and with their skill set and will allow them to continue on their learning journey with minimal interruption. The thrill of successfully completing a combat roll will increase student confidence and likely their motivation to continue problem-solving, as it did with the Podcast Boys in the previous example.

7.2 Rolling in a Social Justice Classroom

The sense of the unknown that can come from learning to roll, as well as completing a combat roll, is relatable to a queered classroom where there are less boundaries (Britzman, 1995), which requires students to take risks. This increase in freedom also means that students have more chances to take risks that a teacher cannot predict. However, if a teacher can help students learn how to turn themselves back upright in a safe environment, when they are later faced with disorienting and difficult situations, they will be more successful doing this on their own. In a classroom, it is common practice to scaffold learning in a similar way to the kayaking instruction described above so that students have support in learning how to complete tasks independently (Hammond & Gibbons, 2005). For example, if teachers want students to learn a new technology for creating a video, they may allow them to play with that technology first and create short videos of their choice. Then, if the ultimate goal is for students to create a video that analyzes a text, they can practice that skill separately, before bringing their technological and analytical skills

together in a final video project. In this way, students are not trying to learn how to create a sophisticated analysis while simultaneously learning new technical skills, which often leads to students feeling overwhelmed. While in a queered classroom there may be less boundaries and scaffolding, in my study I found that when students had no scaffolding it sometimes leads them to flounder in confusion—such as students who tried to work with texts above their reading level—rather than being able to critically engage with the material. In these instances, their confusion caused them to portage rather than roll. While there is no hierarchy between portaging and rolling, knowing how to do both is crucial to learning success.

Learning how to roll, or to regain your position and continue to move with your boat when faced with a difficult or shocking situation, can save time and energy rather than moving to shore and carrying your equipment in every such circumstance. I do not want to imply here that rolling is a synonym for resilience, a term with varied definitions and uses in educational research that refers to positive responses and outcomes from children facing adversity, usually used for children labeled "at-risk" (Lutha, Cicchetti, & Becker, 2000). Nor do I intend rolling to serve as a parallel to the concept of grit, a term also used to describe the ability of children (usually racial minorities) to recover from adversity. As critics have noted grit does not take into account the systemic racism and other oppressive structures that work on and against students (McGee & Stovall, 2015).

A queered classroom in pursuit of social justice must take into account where our students come from, how those origins and related structural issues affect them, and what tools they can use to navigate difficult situations. In our class, the students possessed a lot of privilege, and we hoped that by discussing social justice issues directly they could become what Swalwell (2013) called the "Activist Ally" (p. 8), meaning privileged students who harnessed their privilege to work with oppressed groups. Teaching these students to roll and portage, and how to judge when to do each, could help them stay engaged in social justice work and prevent them from becoming "The Resigned" (Swalwell, 2013, p. 5), meaning students who were overwhelmed by social justice issues and felt social change was impossible. While the example of the Podcast Boys' Web site above is a less dire example than working directly with oppressed people, this supported practice in class can develop the necessary skills to roll with difficult situations or seeming setbacks in the "real" world outside the classroom.

Rolling can also conceptualize teaching practices. Teaching requires adjusting lessons in the moment, no matter how carefully you planned your lesson and prepared your materials. Teaching for social justice may possibly require more of these adjustments, as it is not possible to anticipate every reaction students will have to diverse topics. Often, teachers who want to practice social justice can fear student, parent, and administrative pushback and may hesitate to introduce any topics deemed "controversial" (Shore & Freire, 2002). In this mindset of fear, when teachers are faced with a challenge they may tip over and struggle in an attempt to bring their kayak back up on the same side, rather than completing a roll and continuing on their teaching journey. With the support of colleagues and a foundation from a teacher education program steeped in social justice, teachers can successfully right themselves when under duress. They may feel shaky the first few times they have to complete a combat roll, such as addressing a parent complaint for the first time, but with practice their skills will increase. An experienced teacher may, for a few examples, be up-to-date on current research, know the school or districts policies on diversity and inclusion, and have aligned their lessons to curricular standards.

7.3 Roll Practice in Our Classroom

Returning to *Math for a Cause*, we had many instances of roll practice as we helped students work through skills and try new methods. While every skilled teacher uses scaffolding to guide student learning, a queered classroom will likely give students more chances to be in their secondary stability, and thus slightly out of their comfort zone. These classrooms will also give them space to tip their boat over completely when faced with difficulty, so that they will need to learn to roll to remain upright. Using queer pedagogy means stepping back more often and letting students direct their own learning, even if it means they may sometimes fail (or feel like they failed) or do not come to the teacher's expected outcome.

Racial Disparities and Stereotypes

Confronting racial disparities and examining racial stereotypes often caused our privileged and primarily White students to tip their kayak. One example was discussed in Chapter 4, when Morgan led the students

through a worksheet on percentages and the US prison system. Some students were tipped over by the shock of the high numbers of African-American and Latinx prisoners as compared to Whites. When Morgan said, "Now I didn't hear anybody look at these numbers and say, 'Oh that means that African Americans and Hispanics are bad people, are worse than White people because they're ending up in prison. So they must all be criminals.' Did that thought cross anybody's minds?" Rosette admitted, "A little." Because Morgan had created an open classroom environment and had frequently asked the students to share how they felt when faced with their calculations, Rosette was able to admit that she had tipped over in that moment, disoriented by the numbers. She followed up her "A little" comment with "But not a lot." Rosette was able to use her reasoning skills (serving as the spray skirt in this moment, to support her kayak, or her learning mindset), and our discussions about how People of Color are portrayed negatively in the media from our unit on Michael Brown and determined that her initial thoughts were likely untrue. Thus, Rosette was able to roll back upright and continue in her learning, using her own agency with Morgan's support. In the future, when faced with racial stereotypes, I hope that she will be able to roll back up on her own without the need for adult support.

Ally had a similar response, stating "Well the first thought that came to me wasn't just because they're bad people, because it's like a really popular but bad thing that's happening in our country where Black people are stereotyped, so instead of thinking that they're all bad I start to feel bad for them." Ally needed less support in this instance, and so was able to complete a combat roll, with Morgan nearby in case she struggled. In the cases of Ally and Rosette, the students had the background knowledge and practice to successfully roll and continue thinking with a social justice mindset about the material.

Other examples of students sorting through their ideas of race, especially racial stereotypes, occurred during small group discussion. During the first unit on Michael Brown,[1] when Sum Dood, Justin Case, and Sue Denim were first pretending to be on a podcast as they worked through their article, Sue Denim and Sum Dood chastised Justin Case for saying, "OK I was gonna make a really racist joke." Sue Denim responded "What the heck dude, why? That's not even funny." When Justin Case proclaimed "I was kidding, I wasn't actually going to do it" his group members still held him accountable. They repeated that his statement was not funny and immediately shut down the conversation. In some

spaces in the broader community surrounding The Anchor School, it would have been acceptable for a White person to make a racist joke. In this case, even stating that you were thinking about making such a joke, not even saying it aloud, was cause for censure. While Justin Case had tipped his kayak over by admitting to thinking a racist joke, his friends helped him roll back upright by their quick responses. This also could have been a case where the whole group tipped over as the admission was shocking to Sum Dood and Sue Denim, but they were able to dialogue with Justin Case in the moment and remained in their secondary stability, waiting for Justin Case to join them.

Marriage Equality

In the beginning of the third unit, when everyone was working on marriage equality, we began with a scaffolded worksheet that included critical literacy and critical mathematics activities. I had created it based on a local newspaper article discussing the recent statewide legality and the immediate increase of same-sex marriages in the county where The Anchor School was located. We also included this in the curriculum as we wanted our students to be able to use our course as a moment of celebration for this happy occasion. One of my questions stated:

> The Register of Deeds (responsible for processing marriage licenses) said that normally the office processes between 12-15 marriage license applications per day. But on October 13th, the office processed around 50. Estimate how many of these applications were from same-sex couples.

Working outside of my disciplinary home of English, I did not realize that it was unusual for a middle school math problem to include a range of numbers from which to begin your calculations. Therefore, I received many questions from student groups that were confused on what to do with 12–15, and this confusion tipped them from their secondary stability to being completely off balance. Many expressed that they had no idea how to begin their mathematical calculations. With support, they realized one way to find an estimate was to pick a number between 12 and 15, and so their answers varied between groups. This effected their answers to the next question, which read, "Using your above estimate, calculate the percentage of marriage license applications from same-sex couples in our county on Monday, October 13th." In this way, students

were continuing to practice their skills working with percentages, something they were gaining confidence in, with the new skill of estimating to learn more about a social justice cause that was important to them.

Students were able to see that they could have different answers, and try different ways of solving the problem, which may have helped the Podcast Boys realize their later mistake in the chapter's opening example. Letting students try different methods, even if they fail and tip their boat over, is important to instilling confidence in their abilities. It is also important for students to learn that falling over does not mean you should quit trying. We also gave students space to reflect during this activity, as the following question was "What is your reaction to these numbers?" By asking students to pause in an eddy after they were thrown off balance in the previous questions, they had time to breathe and think deeply about their results before moving on to their next task.

Another example of roll practice occurred before we asked the students to work in small groups on their final project on same-sex marriage. To continue helping students learn to read and calculate percentages critically, we created a way for them to explore same-sex marriage debates through investigating polling data, so we could help them roll as needed. To mimic the practice they had with the prison populations worksheet, I created an activity on polling data regarding same-sex marriage from an easily-accessible Web site (pollingreport.com). Students were asked to look through the data and complete the following:

1. In general, how have the opinions about gay marriage changed over time? Give specific data to support your answer.
2. Compare the percentages of people who think gay couples should be allowed to adopt and should be protected against job discrimination with the percentages of people who think gay couples should be allowed to adopt and should *not* be protected against job discrimination. What do you notice?
3. Find data that asks people's opinions about same-sex marriage in general vs. data that asks about same-sex marriage in their state. Are there any noticeable differences? Why or why not?
4. Create your own math problem based on something else you can find in this data. Be sure to explain what you are looking for and then answer your questions.

This worksheet included many skills and techniques we had already worked on: (a) primary stability of practicing a skill: "compare the percentages"; (b) secondary stability of interpreting data on their own: "find data that…"; (c) catching an eddy to reflect: "What do you notice?" and "explain what you are looking for"; and (d) the chance of rolling while they "create your own math problem" or find data that they have difficulty interpreting. By helping them roll through some difficult problems as a large group, they could then continue moving through problems on their own with greater confidence.

After completing their worksheet, and the previously discussed one on same-sex marriages in the local community, students Ashley, Ally, and Rosette decided to use the polling data to find the average percentage of the increase in favorable opinions toward same-sex marriage. For their final project for this third unit, they created a video using that data to persuade a larger audience that same-sex marriage was important. Aiden and Jimmy Smith, who were also creating a video, began by converting the percentages on poll questions they were interested in to numbers as they thought actual numbers of people might be more persuasive than percentages of opinions. They looked up the US population and used that with the favorable percentages of people who supported same-sex marriage and other queer rights issues to complete their calculations. Another group was interested in seeing the differences in opinions among different political parties, and the Podcast Boys began investigating suicide rates, as discussed in the opening vignette. Because all students had practice with looking through both quantitative and qualitative data about their topic, and had practiced a few different kinds of math problems, they were ready to kayak on their own to finish out the course on a positive note and were also better prepared to deal with unexpected data or findings.

7.4 Knowing When to Roll

There are times in the classroom when teachers are faced with trying to convince students to keep pushing through a difficult situation even when they get tipped over (rolling), versus going around the problem all together (portaging). When students worked through the previously described practice worksheets on racism in the prison system and same-sex marriage, they were able to create mathematical investigations that were interesting and asked more sophisticated questions than their previous work. While initially I worried that in our final unit we had given

them too many boundaries and that I was putting too much structure into a queered classroom space, I realized this scaffolding and practice was necessary for them to continue learning on their own. My worrying about creating a curriculum that was "queer enough" for an imagined queer pedagogy court of my peers prevented me from seeing what my students needed, and so prevented me from rolling. By allowing more scaffolding at select moments, which allowed them to practice their own rolls, students thrived. This also likely prevented them from unnecessarily portaging around obstacles such as having to estimate and confronting racial stereotypes. In these cases, the obstacles were not insurmountable or harmful, and the students were able to work through them, gaining renewed confidence in their learning abilities.

Note

1. For a review of the units and student activities, refer to Table 2.1 in Chapter 2.

References

Britzman, D. (1995). Is there a queer pedagogy? Or stop reading straight. *Educational Theory, 45*(2), 151–165.

Hammond, J., & Gibbons, P. (2005). What is scaffolding? In A. Burns & H. Joyce (Eds.), *Teachers' voices 8: Explicitly supporting reading and writing in the classroom* (pp. 8–16). National Centre for English Language Teaching and Research. Oxford: Oxford University Press.

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*(3), 543–562.

McGee, E. O., & Stovall, D. (2015). Reimagining critical race theory in education: Mental health, healing, and the pathway to liberatory praxis. *Educational Theory, 65*(5), 491–511.

Rhodes, J. A., & Robnalt, V. J. (2009). Digital literacies in the classroom. In L. Christenbury, R. Bomer, & P. Smagorinsky (Eds.), *Handbook of adolescent literacy research* (pp. 153–169). New York: Guilford Press.

Shore, I., & Freire, P. (2002). What are the fears and risks of transformation? In A. Darder, R. D. Torres, & M. Baltodano (Eds.), *The critical pedagogy reader*. Milton Park: Taylor & Francis.

Swalwell, K. (2013). "With great power comes great responsibility:" Privileged students' conceptions of justice-oriented citizenship. *Democracy & Education, 21*(1), 1–11.