

Annotated Bibliography and Literature Synthesis for Spring 2021 Lesson Study

Annotated Bibliography

Burns, E., & Frangiosa, D. (2021). Assessments. In L. Schleicher & M. Rodriguez (Eds.), *Going Gradeless, grades 6-12: Shifting the focus to student learning* (pp. 47 - 60). Thousand Oaks, California: Corwin.

Summary:

When designing assessments, they begin with the grade-level state standards. There is a focus on fewer, more effective questions in which students will need to use the skills the teacher is assessing. A rubric is included for all assessments, making the learning goals clear to the student and the instructor. There is also a focus on immediate feedback, both from the instructor and from the student themselves. Providing the opportunity for students to assess themselves and receive feedback from their instructor helps the student see a model of constructive criticism from their teacher and helps both the teacher and the student gauge what knowledge the student(s) has mastered and what adjustments may need to be made in order to learn what has not been mastered yet.

Cohen, E. G., Lotan, R. A., & Scarloss, B. A. (1999). Complex instruction: equity in cooperative learning classrooms. *Theory Into Practice*, 38(2), 80–86

Summary:

Complex Instruction tasks are intrinsically uncertain and open-ended in their solutions and in the ways in which they can be solved. These types of tasks increase the need for interaction with other students by forcing the reliance on each other's funds of knowledge and skills to come up with problem-solving strategies. They also require group and individual accountability, which helps students see the ways in which their thinking is similar and different to their classmates. With its strategies of recognizing multiple abilities and assigning competence, Complex Instruction works to dismantle status in the classroom. Multiple abilities focuses on highlighting the different skills and abilities every student has and making sure they are seen as important and valid. Assigning competence is specifically recognizing the contributions in thinking that a student has made to the group.

Dean, J. (2006). The future of driving: 8th-grade algebra meets rising gas prices and peak oil. *Rethinking Schools*, 21(2), 40-45.

Summary:

The author wanted to broaden students' awareness of how rising gas prices can cause economic tension and build the mathematical and statistical knowledge the students need for such tasks. In the lesson, students went beyond the basic curriculum by learning about outliers in their statistical analysis. The lesson was effective in helping students think about the socio-economic reasons people need transportation and how gas prices can hurt people disproportionately according to the type of job they have. The lesson also gave students an opportunity to be creative about coming up with solutions to the heavy reliance their community and economy have on gas prices.

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Dover, A.G. (2009). *Teaching for Social Justice and K-12 Student Outcomes: A Conceptual Framework and Research Review*. *Equity & Excellence in Education*, 42(4), 506-524.

Summary:

There is a large variety of accounts of educators attempting to teach for social justice, but not a lot of specific academic, behavioral, motivational, or attitude outcomes. The study noted that most accounts do not include attention to definition, context, and assessment. But can this type of teaching be categorized and given cookie-cutter lessons? If we are to teach for social justice, shouldn't all the work we do be personalized to our students? How can we prove that social justice education works as well or better than institutional, traditional systems of instruction when white supremacist standards of education and values are what we are using to assess how well social justice education works?

Lew, M. M., & Nelson, R. F. (2016). New Teachers' Challenges: How Culturally Responsive Teaching, Classroom Management, & Assessment Literacy Are Intertwined. *Multicultural Education*, 23(3-4), 7-13.

Summary:

This article discussed how difficult it is for new teachers to have all the skills needed in order to be a culturally responsive teacher who can effectively manage a classroom and create adequate assessments. One of the critical issues that new teachers face is a lack of familiarity and understanding of students' diverse cultures. This causes the teachers to frequently overreact to the way in which students' cultural behavior, especially nonverbal behavior, can be disruptive in the classroom. Teachers often impose rules and regulations that don't honor the way a student typically acts with others in their culture, creating friction in the classroom. Research shows that there is a significant gap between teacher education curriculum and what happens in schools in the area of culturally responsive teaching, classroom management, and assessment. This proves that there needs to be support and assistance in place at the school in order to assist new teachers in merging theory and practice in those areas.

Tutt, P. (2021, April 9). How—and Why—to Introduce Visual Note-Taking to Your Students. *Edutopia*.

Summary:

In this article, the author talked about how allowing students to try more visual, interpretive methods of processing materials helps them “identify connections between topics and themes.” The author went into depth specifically about sketchnoting and ways that it can help students connect ideas using visual memory, kinesthetic memory, and semantic memory. Some ways to introduce sketchnoting include:

1. Encourage students to play with spacing, vary text sizes, and add symbols anywhere on the page “to create a hierarchy of information that might be harder to capture in linear text.”

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2. Encourage students to start off just scribbling
3. “Identify 10 key words or concepts” from the current learning materials and begin developing a visual library of shorthand—like an icon or character—to represent them
4. Assure students that there is no right or wrong way to take visual notes
5. Provide feedback rather than a grade
6. Take the notes together on a white board or other visual to model how to do it

Literature Synthesis

One of the first articles we read in order to prepare for this lesson study cycle was *New Teachers' Challenges: How Culturally Responsive Teaching, Classroom Management, & Assessment Literacy Are Intertwined* (Lew & Nelson, 2016). The article discussed how difficult it is for new teachers to have all the skills needed in order to be a culturally responsive teacher who can effectively manage a classroom and create adequate assessments. One of the critical issues that new teachers face is a lack of familiarity and understanding of students' diverse cultures. In order to become more familiar with our students and their diverse backgrounds, we conducted empathy interviews with several focal students in which we asked them about how they see themselves as mathematicians, where they see themselves and others using math in everyday life, and what assets and challenges they feel they have as learners.

With our focal students in mind, we set forth to create a lesson that would build on their assets to achieve a specific content and equity goal. Our content goal was that students would be able to use their understanding of slope-intercept form (rate of change) to interpret the y-intercept (initial value) and the slope in real world scenarios. From readings such as Jana Dean's article (2006-7) describing how she designed a math lesson around the social-justice-motivated theme of rising gas prices in order to encourage empathy and push students' thinking, we chose to design a math lesson around whether or not someone could support themselves and/or their family while making minimum wage. We wanted students to see connections in analyzing data, understand how that data could be represented in a linear graph or equation, and realize that everyday social issues are related to what they are learning in school. The ultimate goal of this lesson sequence would be for students to be able to interpret a scenario and provide an accurate linear equation and represent it graphically.

Our equity goal was developed with influence from the Teaching for Tolerance Social Justice Standards (Southern Poverty Law Center). We asked ourselves How can we support students in recognizing the importance of being a part of the learning process (their own and others) as more important than the right answer or their grade? In order to foster this equity goal, we created many opportunities for students to share their knowledge in a multitude of ways: whole class discussions, small group discussions, sharing work on Desmos slides, highlighting the way in which certain students were approaching the problem, reiterating that each student brings their own unique perspective and skills to our work together.

To foster conceptual understanding of the content knowledge, the group activities were organized around the teaching strategy of Complex Instruction and allowing students to write

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down their knowledge in a variety of ways (Tutt, 2021). Complex Instruction tasks are intrinsically uncertain and open-ended in their solutions and in the ways in which they can be solved (Cohen, 1999). These types of tasks increase the need for interaction with other students by forcing the reliance on each other's funds of knowledge and skills to come up with problem-solving strategies. They also require group and individual accountability, which helps students see the ways in which their thinking is similar and different to their classmates. With its strategies of recognizing multiple abilities and assigning competence, Complex Instruction works to dismantle status in the classroom. Multiple abilities focuses on highlighting the different skills and abilities every student has and making sure they are seen as important and valid. Assigning competence specifically recognizes the contributions in thinking that a student has made to the group. (Cohen, 1999)

The teaching strategies in Complex Instruction seemed to fall in line with the research conducted by Burns and Frangiosa (2021) regarding creating accurate and appropriate assessments. The authors state that when designing assessments, they begin with the grade-level state standards. We began our lesson design with grade level standards for comprehending linear equations, specifically slope and y-intercept. Burns and Frangiosa's research showed that a focus on fewer, more effective questions in which students will need to use the skills the teacher is assessing was the best way to truly assess the knowledge students are building. The article also mentioned that a focus on immediate feedback, both from the instructor and from the student themselves, is extremely helpful. Providing the opportunity for students to assess themselves and receive feedback from their instructor helps the student see a model of constructive criticism from their teacher and helps both the teacher and the student gauge what knowledge the student(s) has mastered and what adjustments may need to be made in order to learn what has not been mastered yet. Our team designed in-the-moment assessments using Desmos slides, by reviewing what was being discussed in whole class and small group discussions, reading what notes students had taken, and creating an exit slip in which the students answered a few, very specific questions about how well they felt they understood the main concepts of the lesson.

Through our exit ticket and the discussions we heard in class, we learned that most students felt like they were meeting the learning goal of understanding slope but not yet meeting the learning goal of what the y-intercept represents. With that in mind, future lessons will focus on helping students reach the content goal of understanding the y-intercept. We observed that most students were a bit hesitant to share their thoughts in the main room setting, but once they entered breakout rooms and started group work, they were more vocal in the chat or by using their voice. This shows that students are comfortable sharing in small group settings and are well-practiced and comfortable with building upon each others' ideas. Having to juggle in-person and online instruction is incredibly challenging. Structures were set in place in the classroom to try to support students in both spaces and it was still hard to be able to reach and hear from all students during the lesson. Having the small groups contain a mix of in-person and online students gave the online students a chance to be heard and collaborate in the best way possible for these circumstances.

Complex Instruction, assigning competency, and highlighting multiple intelligences are ways to make students a part of the learning process (Dover, 2009). As we disrupt status, we create the conditions for students to share their thoughts comfortably and engage in deep,

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authentic issues (like minimum wage). Classroom culture is such an important component to having students participate in the learning process and collaborative group tasks. Creating more ways in which students can appreciate one another and build on one another's thoughts works towards creating a more culturally responsive and inclusive learning environment for all students.

Sources used during this lesson study cycle:

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"Social Justice Standards." *Learning for Justice*, Southern Poverty Law Center, 2021, www.learningforjustice.org/frameworks/social-justice-standards.

Tutt, P. (2021, April 9). How—and Why—to Introduce Visual Note-Taking to Your Students. *Edutopia*.