



EDUCATIONAL
SERVICE
DISTRICT 112



THE SUSTAINABLE CLASSROOM PROJECT

High School Case Study: Tom

Project designed and developed by the
ESD 112 Educational Technology Support Center
Debbie Tschirgi, Director
2500 NE 65th Avenue
Vancouver, WA 98661
Phone 360.750.7505

Research design developed, conducted and
reported by MLaCounte Services
Dr. Marlene LaCounte, Principal Investigator
6134 SE Sigrid Street
Hillsboro, OR 97123
Phone 503.577.2263



<http://edtech.esd112.org>

About Tom

Tom has been teaching for sixteen years, with thirteen of those in his present position as a high school social studies teacher. He holds a double Bachelor's Degree in English and History from the University of Washington, and a Master's Degree in Curriculum and Instruction from Portland State University. He recently completed the requirements for the National Board for Professional Teaching Standards Certification in History.

The school in which Tom teaches is located on a bluff above the Columbia River in southwest Washington. The school district is located in the Columbia River Gorge National Scenic Area, which offers a variety of outdoor recreational activities and acts as a magnet for outdoor enthusiasts, tourists, and active retirees. The region's long history of an economy dominated by the timber-industry has shifted in recent years to one that mixes its remaining timber-related business with a service economy based on tourism and recreation, as well as a growing high-tech and arts community. The school district itself has long taken a lead role in the integration of technology in the classroom, having established a long-history of using grants to bring computers into the classroom at each of its schools. The district's elementary school was a recipient of a Gates Foundation Grant in 2000, and teachers and classrooms at all three of the district schools have used grant funds from a variety of sources to integrate technology, curriculum development, standards-based learning, and research-based teaching strategies for students throughout the district.

Tom has expanded his technology knowledge through engagement in projects such as the Gates Teacher Leadership Project (TLP), Technology, and Essential Learnings: Developing Effective Classrooms (TELDEC), Classrooms@Work:Tools@Hand, and the Washington Virtual Classroom. His interest in the emerging practice of distance learning via the Internet led him to focus on student collaboration in online learning environments as a focus of his Master's Degree research. Since receiving a classroom lab of seven computers in 1996, Tom has found ways of using technology to increase student interest and involvement in the curriculum and improve learning. Even before his involvement in the Sustainable Classroom Project, Tom's classroom was equipped with seven wireless notebook computers, and 13 desktop computers. He and his students used software and Internet programs such as Microsoft Office, Inspiration, FileMaker Pro, Hot Potatoes, Fireworks, Adobe Distiller, and Macromedia Dreamweaver to examine and create knowledge. Tom created a classroom website to communicate with students and parents and serve as a portal to online activities and resources that support classroom curriculum.

Tom's Classroom



Introduction

Tom wrote in his application for the Sustainable Classroom Project that he wanted to be part of the grant because of its strong connection to the instructional strategies in the book *Classroom Instruction That Works* (Marzano, Pickering and Pollock, 2001) and because the grant focused on the "use of technology to support clear and effective instructional decisions." He went on to say:

When the instructional goals come first, and available technology is used in support of those goals, the rewards for all involved are that much greater, and the learning that occurs is authentic, valuable, and worth the time, money, and effort that the technology requires.

This year Tom is teaching 51 sophomore and junior level students (60% male and 40% female) in blocked social studies and English classes that average 17 students. The ethnic make up of students in his students is 72% white/non-Hispanic, 20% Hispanic, 4% Native American and 4% African American.

Tom reported that the students in his classes come from mixed academic and socio-economic backgrounds. He wrote:

Students in my reading and world history classes are, on average, below grade level in many basic skills and are low-performing academically. They tend to represent a lower socio-economic group than my U.S. History class, which represents more of a cross-section, socio-economically speaking. The community has a history of lumber, agriculture, and orchard business, but those industries have diminished in importance in the past 10 years. Many newcomers are semi-retired or professionals who may work in the Vancouver-Portland area, 60 miles away. These families tend to be more affluent, and the students from these families tend to have a richer, more diverse range of experiences than their less-affluent counterparts. The Hispanic community in the area has become less dependent on migrant-based jobs, so most of the Hispanic students I have in class have lived in the area for at least four or five years.

The Book Study

CHAPTER 1: BEGINNING THE STUDY

Tom viewed the Sustainable Classroom Project as a professional challenge. "...it's exciting to consider looking at old strategies, in new ways, or consider using approaches I'm not familiar with, to try to increase our students' learning." he said. "And while it's exciting, it's also a little scary.... I...wonder if I'll be able to find the best ways to use the tools to foster the most learning possible."

Tom elaborated:

It's my hope that the research base to this grant will help me see the learning tasks I've used in the past in new ways, to "shift the paradigm" if you will, and feel free to tackle learning from a new direction I hadn't seen before...It's going to be a very full year, in terms of pushing myself to change as a teacher. But that's part of the allure of this thing we call teaching. As we push our students to learn, we get to go along for the ride, and learn a little something new ourselves.

INSTRUCTIONAL STRATEGY 1: SIMILARITIES AND DIFFERENCE

Unit Topic: U.S. History – 1920s and 1930s

Technology Used: Interactive whiteboard, wireless response system

Upon reading *Chapter 2: Similarities and Differences*, Tom’s mind-set shifted from the philosophic to the practical. He journaled:

The first set of strategies all focus on getting students to recognize similarities and differences as a way to truly and deeply understand concepts, using approaches such as the Venn diagram, classification, and categorization...One of the interesting things the authors of this book used for all these approaches is showing a teacher-directed and a student-directed example for each of the different “forms” discussed...It seems like you’d have to start with a lot of coaching, or scaffolding, to get the students comfortable with the process. Then, as time goes on, students should become more comfortable and proficient with the different skills and attitudes required to complete them.

There is a concern I have with these approaches: time...I’ve somehow lost a week in the curriculum already and haven’t even started the WWII unit, and these things take time to complete...I know coverage isn’t the real goal here, but I’m going to feel pretty foolish if my classes don’t make it to Watergate by the end of the semester.

The goal for Tom’s experimental lesson in a U.S. History unit on the 1920s and 30s was to develop and extend student understanding of key concepts in the unit as they relate to key themes in U.S. History. Tom recounted:

*I’ve finished my first lesson tied to the technology grant and Marzano’s strategies, and I think it went well. I focused my lesson on 5 of the 8 key themes in the textbook (*Democracy & Citizenship, Multicultural Society, Everyday Life, Technological developments, and Global Interactions*), and, as a review for the unit, pairs of students had to categorize 20 or so different concepts from the unit as fitting most closely in one of these thematic categories. We used my interactive whiteboard and the [wireless response system] to collect opinions of the students, and discussed concepts as we worked through them, having students explain why they categorized them the way they did, especially if there was a significant discrepancy among student groups.*

The day after the activity, the students took an examination over the unit. Tom dealt with the student achievement and time in his assessment of the lesson. “...although the scores as a whole were not okay (averaging only 73%), the items that tested concepts we covered during the review activity were a little bit better (averaging 76.3%).”

He continued:

The one review activity that students really struggled with was one where the term did not appear in the answer (it was D-None of the above) and without that one, the average for review concept questions on the test was 82%....

I don’t know if you can take away that the categorization activity alone was responsible for the higher scores on those items...I do know, however, that none of the test questions asked students to classify the concepts into thematic categories, which is what the review activity did. So if they learned the concepts better as a result of the classification activity, it had to have had some transfer to better understanding as a whole, regardless of the activity involved. And that is what we’re after, right?

As for the issue of time, Tom wrote, “I know one of my concerns about this strategy that I noted in my earlier journal was time, and this took a fair amount of time. I usually devote a class period before a test to review, but we usually cover a lot more territory than we did in this activity.”

In using the wireless response system to evaluate the lesson:

- ◆ 79% of the students in Tom’s class voted that they absolutely or mostly understood the lesson ideas;
- ◆ 84% indicated that both the instructional strategy and the technology helped them absolutely or mostly understand the ideas;
- ◆ 49% absolutely or mostly liked the way they learned the lesson.

INSTRUCTIONAL STRATEGY 2: SUMMARIZING AND NOTE-TAKING

Unit Topic: U.S. History – Cultural Life in 1950s America

Technology Used: Interactive whiteboard, document camera

Even before he was involved in the Sustainable Classroom Project, Tom had expressed concern to colleagues over the inability of students to distinguish between main ideas and illustrative details. So, he looked forward to working through *Chapter 3: Summarizing and Note-Taking*. But, again, he mentally worked through the issue of time shortage:

What I thought would take no more than one class period took nearly two, and the in-class assignment for day two had to be rushed through, and today we ran out of time for the quiz so we had to push it off to Monday, but they're already starting on the next chapter.... I guess what I'm trying to express (besides a little bit of end-of-week frustration) is that I wonder if the regular mindset of controlling and planning activities can live side by side with the experimental mindset of this grant.... I'm not a typical control freak, but when it comes to teaching in my classroom, I do like to be efficient and move forward to meet the time goals in my class. And I'm feeling the pinch of time and frustration as I try some of these new strategies.

Maybe it's just the cost of trying something new. But I have to keep telling myself it's worth it.... and it is. The current strategy, dealing with summarizing and note-taking, is an important one (it's the one that prompted me to read this book a few years ago) and it's a difficult one to teach. Maybe the introduction of technology into the mix will help me get students to internalize a few of the strategies I introduce, to help them understand what they read and hear.

Tom developed the experimental lesson for the chapter using the Rule-Based Strategy. His goal for a unit on the Cultural Life in 1950s America was that students would understand key ideas in the text reading and understand how information was structured in their textbook. Tom demonstrated the Rule-Based Strategy for summarizing on the interactive whiteboard using a sample from their textbook, then handed out photocopied paragraphs of sections of the textbook to students and coached them as they worked individually through their section. Students used the document camera to share their summaries with peers and took notes on other sections.

Tom was not happy with the results of the activity in terms of the “triviality” of the material in the text chosen for the activity and his perception that the activity was too lengthy or slow-paced. However, he thought the Rule-Based Strategy had merit and deserved another try. He brainstormed the following modifications:

1. *I would choose a different text. The individual paragraphs, written in textbook-ese, didn't have enough meat on them, and consequently many students probably couldn't see the value of performing the four discrete steps of the strategy.*
2. *I would use a modified jigsaw format for the class. As it was, each student had a single, unique paragraph, and worked on their own to perform the steps. In the future, I'd assign fewer different texts to allow students to work in pairs or trios to discuss the steps and compare their choices as they work. This would allow them to verbalize their choices in smaller groups before explaining their choices to the class.*

3. *By using fewer “texts” I’d reduce the amount of time required to share the results with the entire class.... That would move the lesson along at the point where students were getting a little antsy and losing focus.*

Then he summarized:

Looking back on these ideas and the actual lesson, it seems obvious to me that these are logical changes, aka “no-brainers.” But it’s not surprising that I made these mistakes, really. We’re in the habit of introducing new skills using shorter, simpler activities, hence the individual paragraphs from the text. However, I think the texts were too easy, and left many students feeling like the strategy was more work than it was worth. And I continue to believe it is a valuable strategy. Maybe looking back at the process and the results will help me work it into future lessons in more productive ways.

In evaluating the lesson using the wireless response system:

- ◆ 83% of Tom’s students indicated that they absolutely or mostly understood the ideas in the lesson;
- ◆ 78% voted that the strategy used in the lesson absolutely or mostly helped them understand the lesson ideas;
- ◆ 72% said they believed the technology absolutely or mostly helped them understand the lesson ideas; and,
- ◆ 33% absolutely or mostly liked how they learned the lesson.

INSTRUCTIONAL STRATEGY 3: REINFORCING EFFORT AND PROVIDING RECOGNITION

Unit Topic: U.S. History – Civil Rights Movements of the 1960s

Technology Used: Interactive whiteboard, wireless response system

As he began *Chapter 4: Reinforcing Effort and Providing Recognition*, Tom had renewed optimism. He wrote in his journal:

Well I think I’ve finally found a strategy in this project that doesn’t look like it’s going to slow me down! As you might recall, I’ve written in past journals that I’m feeling the pressure of time to get through the curriculum as I try out these strategies from the Marzano book, but that isn’t a concern with this new one on reinforcing effort and providing recognition.

He went on to carefully analyze the intent of the chapter:

When I was describing this new strategy to [a colleague in the project], I found myself using the words “praise” and “rewards,” and knowing I wasn’t capturing the idea correctly. Then, I went back and re-read the chapter and realized that the terms the authors chose for the chapter (“reinforcing effort and providing recognition”) were chosen very carefully. They aren’t talking about rewards and praise in the way those words are commonly used. Instead, they’re talking about carefully—and logically—applied feedback to students related to the work they do. (An economic term that closely parallels this would be the concept of “incentive”....).

One other aspect of the chapter..., which provides a really interesting avenue to explore, is the opening section on effort. The section on reinforcing effort notes that there are four basic causes that people attribute success to: ability, effort, other people, and luck. Of these, effort is the only one that people can directly and completely control in their own endeavors. As such, it’s the only one that students can fully influence on their own. This is something that I’ve discussed from a coaching point of view with my soccer players...Effort and attitude, I tell them, are the only things they can completely control. So that’s where they have to focus their energy. The same, it seems, is true in the classroom. And that need for effort (indeed, the lack of effort among so many of the

lower-performing students) is such a key, determining factor among those who are successful. That is the message of the reinforcing effort of this chapter, and verbalizing this for students, and giving them the skills to monitor their own effort, are the two generalizations it provides.

Tom decided to focus on effort and achievement for his lesson and to incorporate it into the study of various “civil rights’ movements of the 1960s. He described the lesson:

I chose six different people who were instrumental in the changes in either the black, Hispanic, Indian, or women’s rights movements and found short biographies of them on the Internet. Then, using a jigsaw format, divided the students to learn about one, and score their achievement and effort using a modified rubric. Finally, each group had to share information about the life and achievements of their assigned person, and lead the class in an evaluation – using the rubric – of their accomplishments.

The external observer was invited to watch the first day of the lesson and recorded the following observations:

Observation #1:

Eighteen students were seated in five rows of desks that they later moved into small groups for research and discussion. The classroom was equipped with about one computer for each student – older models as well as newer laptops. Technology used during the 1-1/2 hour blocked class period included the wireless response system, interactive whiteboard, computers, a classroom website, the Internet and PowerPoint software.

As students entered the classroom after lunch, they picked up a wireless response system remote and checked into class. Tom began the period with a quiz on their homework reading assignment and worksheets. Student used the wireless response system to respond to the quiz questions using their class notes. Tom then read each question out loud and showed the correct responses on the interactive whiteboard. Students were attentive and interested in the number of correct responses. They asked questions about the quiz and asked for clarification of responses.

Tom then displayed a question on how much effort students had put in on homework the previous night. Students responded using the [wireless response system]. Tom noted that more students were completing more homework and praised the students who were putting in more effort.

Tom described the assignment for the day’s class period – each student was to read a short biography of one 60s civil rights leader and then work in small groups with others studying the same leader (jigsaw) to determine what the leader’s goals were, if they achieved their goals, examine what obstacles each faced as he grew up and worked toward those goals, and how successful the leader was. Tom provided an analogy about effort, obstacles and achievement related to the students’ own lives. Students moved their desks into groups and began discussing and writing responses to questions. Students were told that they should feel free to use computers in all phases of the work. Tom noted that there were additional information resources about most leaders on the class website. One group retrieved a laptop and used it to write responses. Tom circulated between groups asking questions and providing insights.

As groups neared completion of writing, Tom pulled up the class website and told students to click on the PowerPoint presentation template and add information about their leader. He also showed them an “effort and achievement rubric” that would be used to score their presentations. Students spontaneously moved to computers as their groups completed their research and discussions. The students were self-directed, motivated, and engaged in the activity.

As the class period ended, Tom touched base with all groups about the status of their PowerPoint presentations and made sure he had access so he could assemble them for the next day’s presentations.

In his assessment of the lesson, Tom began, “As you recall, in my earlier notes about this strategy, I thought implementing it would not slow me down, but I was wrong. The activity took almost two complete class periods ... and I feel like we could have spent another class period debriefing.” Although time was again an issue, in terms of the effectiveness of the strategy, he appeared pleased. He wrote:

The students certainly learned about the content (civil rights leaders) and were introduced to the concept of the amount of effort expended in reaching a goal having an impact on the ultimate achievement of that goal...More important is using the focus on effort and achievement as a way to learn about and critically evaluate the actions of these civil rights leaders of the past, and to get students to think about their own effort when trying to achieve a goal of their own.

Student evaluation of the lesson indicated:

- ◆ 79% said they absolutely or mostly understood the key lesson ideas and believed the strategy they used helped them understand the ideas;
- ◆ 57% believed the technology absolutely or mostly helped them understand the lesson ideas; and
- ◆ 57%, as well, absolutely or mostly liked how they learned the lesson with the remainder half-way or a little bit liking how they learned it.

INSTRUCTIONAL STRATEGY 4: HOMEWORK AND PRACTICE

**Unit Topic: U.S. History – Homework
Technology Used: Document camera**

In *Chapter 5: Homework and Practice*, Tom found the “articulation of the different purposes for homework” most interesting. This articulation prompted him to list several questions for himself:

- What IS my homework philosophy?
- Why DO I assign homework?
- What do I already do to help students manage homework assignments, and what more could I do to make it easier for them to commit to doing it?
- What skills do I teach that lend themselves to homework practice?
- What incentives can I use to increase the number of students completing assignments?
- What do I do to help those who can't/won't do the homework to keep up?

The lesson Tom planned for the chapter was designed to teach students a homework process that would be followed in his classes throughout the new semester. The goal he wrote was, “Students will develop varying levels of understanding of the homework assignment and will understand the purpose of the homework. Students will know that different students interpret and answer questions differently, they will know how to craft a complete answer that contains important information for the next day's lesson.”

Tom described the lesson:

For this semester/chapter, I decided to focus instead on the kind of feedback I give to my students on their homework assignments, and to bring a little cooperative learning into the process of sharing different examples of homework. I put students in small groups and assigned them a single question from the previous night's homework. Each student had to share the answers they came up with, and compare their individual answers to the homework rubric I handed out near the beginning of the semester. Then, as a group they had to concoct the “perfect” answer to the question at hand, and be ready to share it with the class using the document camera.

I created two groups for each question, which, working independently, each came up with what they considered the perfect answer. Needless to say, when it came time to share their answers with

the class they saw differences between their own and the other group assigned the same question. And each group also modeled how to answer each question, while all other students in the class could glean from them more depth and detail than they might have come up with alone.

In his analysis, Tom reflected:

The lesson was quasi-successful. The “perfect” answers were much better than the average responses I typically get from students on their homework assignments, and the discussions we had on each answer’s subject (the true reason for the assignment in the first place) was much better and deeper than we usually have. But the amount of time we spent reviewing, refining, explaining, discussing, and otherwise beating the questions into the ground was pretty extensive....

That said, I do think it was time well spent, though not something I’d do too regularly. I think as an early semester activity with periodic (though infrequent) refreshers it would probably do well to increase the quality of everyone’s individual efforts. And it did provide a different kind of feedback than they usually get.

Student evaluation of the lesson was as follows:

- ◆ 72% said they absolutely or mostly understood the ideas of the lesson;
- ◆ 78% indicated that the strategy absolutely or mostly helped them understand the lesson ideas;
- ◆ 67% believed the technology used in the lesson absolutely or mostly helped them understand the lesson ideas; and
- ◆ 33% absolutely or mostly liked how they learned the lesson.

INSTRUCTIONAL STRATEGY 5: NONLINGUISTIC REPRESENTATIONS

Unit Topic: U.S. History – Woodrow Wilson, A Progressive?

Technology Used: Interactive whiteboard, wireless response system

Tom was an advocate of many of the ideas presented in *Chapter 6: Nonlinguistic Representations*, and he indicated that he frequently used diagrammatic representations. “More challenging for me,” he wrote, “...are the other ones: Making Physical Models, Generating Mental Pictures, Drawing Pictures and Pictographs, and Engaging in Kinesthetic Activity.” He continued:

I think of myself as a linear listener and note-taker, but I know not all students are, and, to be honest, I enjoy some of these activities that force me as a learner to get out of my seat, or use my hands to create meaning. I think those activities are more challenging to think of, from a teacher’s perspective, and more time-consuming to prepare for – in terms of collecting materials, managing what the students create, etc. – and so I tend to shy away from them. But I remember doing a lot of “visualization” and/or artistic representation when I was trying to learn Supreme Court cases way back in my Mass Media Law course, and some of the meanings still stick with me 20 years later. When I think of the names of the court cases, I get a mental picture that leads me to the important precedent set. So it must work, even for me.

Tom’s goal for the lesson was: Students will understand the actions of Woodrow Wilson during his first term as president, and be able to judge his effectiveness as a "progressive." They would know facts of Wilson's background and his approach to the economy, Congress, and business interests, as well.

The external observer sat in on one class period and wrote:

Observation #2:

As students entered the classroom after lunch, they picked up wireless response system remote and checked into class. Tom began the period by asking students if they had questions about their homework or what they did yesterday. Two students asked questions while the others listened quietly. Tom answered the student questions and provided analogies linking Wilson's presidency to contemporary issues. When no more students had questions, Tom gave a quiz using the interactive whiteboard which students answered using the wireless response system. Tom read the questions aloud before students clicked in their responses using their homework notes. When the quiz was finished, Tom asked students to use a rubric provided to rate their effort on last night's homework. Students clicked in their responses and asked to see their scores on the quiz. [Note: This observation also documents the strategy Tom devised for Chapter 5: Homework and Practice.]

Tom introduced the day's lesson by describing the lesson goals. Students were to judge Wilson's effectiveness as a "progressive" by examining the facts of his background and his approach to the economy, Congress, and business interests. Their task was to complete an Inspiration web diagram that they got from the classroom website – adding textual information and appropriate visual images. Tom then organized the students into groups by asking them to form groups of three or four. He moved students, who had not readily joined one, into groups. Students picked up one laptop computer for their group and decided how they wanted to go about completing the assignment.

Tom circulated from group to group, monitoring student work and giving assistance when needed. Some groups of students collaboratively worked on defining and creating all parts of the diagram, while others divided the topics and passed the laptop computer to each other to fill in their section.

Tom then explained the presentation and evaluation process. Students would use a rubric to evaluate the effectiveness of each group's presentation. Students were enthusiastic about the thought of using the interactive whiteboard for their presentations and prepared for them quickly.

Student groups took turns presenting their information while the other students listened, took notes and asked questions. It was apparent that they were familiar with the technology as they moved items around on the board.

Following the presentations, Tom displayed the evaluation rubric for the presentation on the interactive whiteboard and students evaluated each presentation using the wireless response system units. All students were engaged. Tom then asked students to reflect upon and score how well their group worked together.

Finally, the students were told to individually write a paragraph about how "progressive" Woodrow Wilson was, using evidence from their readings and presentations. When all students completed their paragraphs, Tom set up a lesson evaluation rubric on the interactive whiteboard and asked students to evaluate the lesson using their wireless response system units.

Tom was satisfied with the results of the lesson. He noted, "...I believe I used the non-linguistic representation lesson effectively, and the students left class with a better understanding both of Wilson's presidency, as well as the basic ideas and goals of the Progressive Era." Later in his journal entry, he noted:

Of course the purpose of the entire assignment was that the students understand, and then critically evaluate, Wilson's progressive moves while serving as president, and for that I assigned a brief evaluative written piece explaining whether they thought he deserved the reputation he has earned as a Progressive President. Most thought he did, but what was gratifying, in light of the lesson, was their ability almost across the board to identify key actions he undertook during his presidency to support their assessment. Those details were among the many represented on their own and others' webs, and I imagine would be less likely to appear had I not had the students engage in this lesson.

Tom also reflected on student use of the classroom audio system and the wireless response system in the lesson. About student use of the audio system, Tom wrote, “As expected, the students were reluctant to use the...audio system, but it really did/does make a difference. I need to make sure it’s a part of every student presentation.” Their use of the wireless response system was a little more complex.

I decided to use the [wireless response system] as a way to see if students could distinguish between their own work and the work of others, in terms of quality, accuracy, and usefulness. In my 4th period class, there was such a limited number of responses (only 9 total) and one third of those were evaluating their own web twice, that the data doesn’t really show much...The one piece that does give a sort of global sense of the students’ sense of success of the lesson is the final question: Rate how well your group represented the entire reading in your web. In the 4th period class, 4 students rated themselves Excellent, 3 Pretty good, and 2 Okay. What’s interesting about that is that all 3 members of the one group that ran out of time to complete the entire assignment rated themselves as Excellent. Either they were rating themselves on what they did accomplish, they felt they would have ended up there if given a little more time, or they simply did not self-evaluate accurately.

Student evaluation of the lesson indicated that:

- ◆ 78% of the students said they absolutely or mostly understood the lesson ideas;
- ◆ 78% believed the instructional strategy helped them absolutely or mostly understand the ideas;
- ◆ 89% believed the technology absolutely or mostly helped them understand the lesson ideas; and
- ◆ 67% absolutely or mostly liked how they learned the lesson.

INSTRUCTIONAL STRATEGY 6: COOPERATIVE LEARNING

Unit Topic: U.S. History – Social History of the 1920s
Technology Used: Interactive whiteboard

About *Chapter 7: Cooperative Learning*, Tom wrote in his journal, “It was good to read the chapter; if not only to confirm where I’m already going, but to also give me good reason to keep going there.” Later, he reflected, “Reading the chapter was a good refresher/reminder for me; I need to pay attention to the things that make cooperative learning work when I use it, and not rely on a casual approach to ‘group work’ instead.”

The experimental cooperative learning lesson Tom developed was on Social History of the 1920s. His goal was:

Students will be exposed to a range of different social trends of the 1920s. They will explore how apparently contradictory trends can exist simultaneously. They will know the social trends that helped define the decade - feminism, consumerism, nativism, fundamentalism, etc. They will develop skills working with electronic tools (Web browser, PowerPoint) and will work with students with diverse opinions and perspectives. They will present material to a small audience and do a comparative analysis of different trends.

Students were divided into groups of three or four to learn about different aspects of their assigned topic. They researched print and electronic resources collected by the teacher and then created a PowerPoint presentation that they shared with the rest of the class on the interactive whiteboard. Following the presentations, the students in each group evaluated their group processes and the product they created.

Although the preparation for the lesson was more time consuming than he had anticipated, and the accessible and understandable materials available for some topics were limited, Tom was satisfied with the lesson. He wrote:

Still, it was a successful activity. Most students were positive about the process, and what they learned. As part of the closing activities, I asked students to score themselves on how well they

understood (A) their overall topic (B) their own case study (C) the case studies of others in their group, and (D) the topics of other groups. As expected, most students best understood the material they spent the most time with (their own case study reading), but most thought they understood the material of other students very well, too. By embedding a series of multiple-choice questions in the PowerPoint template, students knew they would be “quizzed” periodically as groups presented, and this may be one reason they seemed to be more in-tune with the presentations as they progressed.

When the students evaluated the lesson:

- ◆ 76% believed they absolutely or mostly learned the key ideas in the lesson;
- ◆ 70% thought the instructional strategy absolutely or mostly helped them learn the lesson ideas;
- ◆ 91% thought the technology absolutely or mostly helped them understand the lesson ideas; and,
- ◆ 70% absolutely or mostly liked the way they learned the lesson.

INSTRUCTIONAL STRATEGY 7: SETTING OBJECTIVES AND PROVIDING FEEDBACK

Unit Topic: U.S. History – Historical Detail and World War II

Technology Used: Interactive whiteboard, document camera, wireless response system

Tom found several ideas in *Chapter 8: Setting Objectives and Providing Feedback* worthy of note. He noted, “While the chapter does make clear that the ultimate decisions regarding curriculum matters should lie with the teacher, students need to have the ability to follow their own interests within teacher-set objectives.” He developed the idea:

One point that surprised me at first, but less so when I re-read the chapter, was the claim that when teachers set a specific learning goal, student learning of related but untargeted information goes down. I suppose this is similar to driving down an unfamiliar road looking for a particular landmark; you watch carefully for the red barn – or whatever the landmark is – but only briefly notice, then discard, all the non-red barn landmarks you see.

While this sounds like an argument for teachers NOT to set learning goals, I think it’s just an argument for being careful about what goals we identify for our students. If we tell students we want them to know the names of the presidents in the 1920s, that may be all they learn. If we tell students we want them to understand how the presidents’ philosophies and policies shaped the events that unfolded in the 1920s and after, they will have to know the presidents by name AND a lot of other stuff, much of it tailored to their own interests and understandings. Of course, our assessment of student attainment of this larger goal must change to accommodate student choices and interpretation.

Tom reflected on the section on feedback, “The feedback section really made me think about how and what I assess from students. I spend a great deal of time correcting students’ daily homework, and I don’t know that it’s particularly useful for me to do so.” He summarized:

At any rate, reading this section made me realize that A) to address larger, student-tailored learning goals, my assessment can’t rely on quick-to-grade, multiple choice assessments, but B) increasing the number of essays and projects students create requires a lot more time, either B1) mine, after hours, with red pen in hand, or B2) in class, with students evaluating and providing feedback to their peers and themselves. Each direction requires a new way to think about what I teach, how I teach it, and why.

Tom decided to focus on students setting their own objectives for the experimental lesson. Interestingly enough, he wrote: “What I ended up doing, focused on the “setting objectives” portion of the chapter, also managed to change how I “provide feedback,” and I think both are positives for the learning experiences my students are having in class.”

His lesson goals were to “connect students’ understanding of various aspects of WWII to one of eight lenses with which to view history, based on students’ own questions. Students will know the relationship of a variety of historical details to a larger understanding of the war as a whole.” He developed the lesson as he described below:

I had my students start the WWII unit with a KWL chart (actually, just the K and W parts) before we’d started any homework or assignments. The range of knowledge, individually, was startling. One student’s list read “it was after WWI” while other students’ lists filled the page with information, statistics and data about weaponry, battles, and people of the times. However, it was the W columns I was most interested in, as the students’ “wants” would be used to set learning objectives for the unit. I created groups of three or four students to serve as “base groups” for the unit, and allowed students to share and evaluate their individual KWLs in groups to share what they knew and wanted to know collectively. Using the 8 Themes of History from our textbook, I had groups establish at least one question (learning goal) for each theme that they wanted to learn during the course of the unit. These lists of questions will form the backbone of their unit projects, and formed the basis of the lesson plan that I conducted as part of the book study.

Once the lists of questions were established, students began the experimental lesson. Tom wrote:

In that lesson, students from each base group took one question from their group lists in one of the first 4 themes; then we did a jigsaw so all the Economics students/questions were together, all the Geography & Environment were together, and so on. The students shared questions, ideas, and resources to collectively answer all their new group’s questions. Students wrote their own questions on 3 x 5 cards, and their answers on the back, and then returned to their base groups to share what they’d learned. All the 3 x 5 cards were posted on the wall, clustered around their theme titles, for all the students to see. This lesson will be repeated tomorrow with the other 4 theme areas. When finished, each group should have been able to answer all the questions they set out to answer at the beginning of the unit.

In his assessment of the lesson, Tom had comments about several outcomes. He noted the following about the student-created learning objectives:

While these student-created targets for learning range far and wide in focus and content, and many of them focus on topics we’d never get around to dealing with in the regular course of class activities, they have created a different kind of learning “vibe” in class. I’ve had a number of conversations with students in the days since the unit began centered on genuine questions they have about the time period we’re studying.

And, he later reflected:

While we’re still in the midst of this “experiment” and I’m still not 100% sure how I’ll assess the divergent directions students have taken their learning, I’m impressed so far with how this strategy is working out. I think my difficulty figuring out how to create a lesson plan around it was based on the idea of a day or two in which to implement the plan. The way it’s working out for me is to make it a much longer term plan, and weave it into the learning culture of my classroom.

This learning strategy impacted how Tom provided feedback and had a surprising outcome in that it made its way into the cooperative learning and the homework strategies studied earlier. Tom observed:

In addition to the setting objectives portion of the lesson, the base group approach has also led to a new way to provide feedback, and while I haven’t quite figured out how to remove myself from the grading picture, I am finding the homework assignments turned in are better, more complete, and more completely understood by students than the way I did it before. Each day, base group members preview their homework assignment and divide the questions they need to answer as they see fit. Some groups divide and conquer; some agree to do all the questions on their own. The next day, the first 10 minutes of class are devoted to reviewing homework questions and answers before I collect the assignments and/or give a quiz. With students in groups of three or four, it’s

easy for them to bring up questions they have and to share their group understanding to come to an answer. I'm available to be called in, but most groups function without my intervention, and do a good job of it. The number of students who are now turning in complete assignments, containing answers with good depth and detail, has gone up, and I think a lot of that is due to the feedback provided in these small groups.

In the student evaluation of the lesson:

- ◆ 88% thought they absolutely or mostly learned the lesson ideas and, also, thought the instructional strategy absolutely or mostly helped them learn the ideas;
- ◆ 83% thought the technology helped them absolutely or mostly learn the lesson ideas; and
- ◆ 75% absolutely or mostly liked the way they learned the lesson.

INSTRUCTIONAL STRATEGY 8: GENERATING AND TESTING HYPOTHESES

Unit Topic: U.S. History – Major Trends in the 1950s

Technology Used: Interactive whiteboard

One of the key ideas Tom picked out in *Chapter 8: Generating and Testing Hypotheses* was that the student-generated hypotheses should be grounded in information. Whether that information is gained inductively or deductively, Tom said, "...the key is to make sure that the hypotheses are connected to the historical evidence, and sometimes that's the hardest part." He went on to reflect, "Students often generate the hypothesis and can't / won't use available data to support it. Sometimes that's just a result of not knowing how to access it, and that's something the teacher can and should provide support with."

The other important ideas Tom gleaned from the chapter was that emphasis needed to be placed on students' explanations of their hypotheses and their conclusions. He opined, "Whether these explanations are written or verbal, the articulation of ideas is very important in clarifying what the students think, and why they chose the solutions and interpretations they did."

The lesson Tom developed was observed by the outside observer and is reported below.

Observation #3:

The major goal of the lesson was to allow students to discuss and discover meanings within five major trends during the 1950s and compare various elements of each trend. Students were expected to know individual facts and information about each trend, note interrelationships between them and find ways to evaluate the importance of each trend to the lives of Americans of the time.

Tom began the class by posting an in class quiz question on the interactive whiteboard: "Which aspect of the postwar world had the greatest impact on the lives of Americans in the 1950s?" Students voted for one of the five trends using the wireless response system.

Tom told them they would come back to this question later and popped a decision chart for students on the interactive whiteboard. He asked students where they thought he should take his summer vacation. He gave them three alternatives and asked what things he should consider when making the decision. Students offered suggestions while Tom filled them into the chart and discussed the parameters of each. Students offered more suggestions and ranked the three choices. When they had finished, Tom discussed the process they had just gone through and told students that it was a model for what they would be doing in class that day – students would decide on a criteria for judging the importance of each trend on history.

Students were assigned to five small groups (three students each), and one person from each group picked up a laptop computer. Each group was given hard copies of packets with the assignment for the day. That assignment contained a four-step process for setting a criteria and judging the relative importance of each trend. Tom told students the packets were available on the classroom website, as well, and displayed each step on the interactive whiteboard as he walked them through the information and how to develop criterion using superlatives and questions, etc. Students pulled up the information on their group computers and began considering the questions and entering responses. Tom circulated among the groups, providing assistance as needed and probing student thought processes. Students justified their responses with information from fact sheets, books, websites, etc.

When most students had completed their packets, Tom constructed a decision chart on the interactive whiteboard and entered the criteria most often used by students in all groups. The students wrote in their ratings and provided facts they used to support their decisions. Tom reiterated the importance of using historical evidence to support their hypotheses and not to think in terms of right or wrong. As he debriefed the project, Tom told the students that the question for today would be the essay question on the next day's exam.

Finally, to end the lesson, Tom brought up the question he had asked at the beginning of class and asked students to again respond using their wireless response systems. Both sets of responses were displayed and students examined how opinions had changed.

Tom wrote in his second journal entry for the chapter, "All in all, I'd have to judge the activity only partially successful in accomplishing what I set out to do." Then, he expanded in his assessment:

One fear I had going in to the activity was that students would base their scoring on impressions and whims, not on a true understanding of the events of the time. One of the reasons I provided the fact sheet (a sort of "Harpers Index" of statistics from the 1950s) is so they'd have the information at their fingertips to support any conclusions they came up with. Some groups and individuals did, but many did not. Perhaps they needed more time to work with the data first, or a more direct instruction to "Use at least 5 pieces of info from the sheet to support your decisions." Perhaps if the results of their judging had to be defended against other groups' results in the form of a quasi-debate they would be more likely to ground their decisions in fact.

In a more positive vein, Tom continued:

Despite the fact that many groups seemed to breeze through the actual decision-making process without a lot of data to back up their judgments, many individuals really picked up on some of the data and broader information, as seen in their essays the following day...Many of the students earned their highest test-essay scores of the year, and it may have been because they had had to really think about and discuss the various options ahead of time.

Student evaluations of the lesson indicated that:

- ◆ 85% believed they absolutely or mostly learned the key ideas in the lesson;
- ◆ 63% thought the instructional strategy absolutely or mostly helped them learn the ideas;
- ◆ 81% believed the technology absolutely or mostly helped them learn the lesson ideas; and
- ◆ 74% absolutely or mostly liked the way they learned the lesson.

INSTRUCTIONAL STRATEGY 9: CUES, QUESTIONS AND ADVANCE ORGANIZERS

Unit Topic: U.S. History – The Equal Rights Amendment

Technology Used: Interactive whiteboard, document camera, wireless response system

As with many of his colleagues in this project, the techniques found in *Chapter 10: Cues, Questions and Advance Organizers*, were not new to Tom. “We learned them all in our ed-prep classes,” he wrote in his journal, “and probably use them frequently in our teaching.”

Tom described the lesson he developed for this strategy in his second journal:

I was inspired by the Socratic Seminar method of teaching, and ended up choosing three primary sources dealing with the passage of the Equal Rights Amendment and the struggle to have it ratified by the required number of states. Then, I augmented the historical documents (news articles from 1971, '72 and '73), with opposing viewpoints about the need / desire for the ERA in today's world. The five documents formed the basis of our class discussion, just like a Socratic Seminar, except the students didn't have the documents to read ahead of time...Also, since the challenge was also to incorporate technology into the teaching/learning experience, we never really got our Socratic Seminar up to speed. I ended up orchestrating the activities more than I normally would in a Seminar, but it worked well. It enabled me to use a few other Marzano strategies (cooperative learning, graphic organizers, and summarizing) as I tackled the Cues and Questions.

We started with a review of the women's liberation movement as part of the variety of Civil Rights movements of the late 1960's (Cue) then used a series of Analytical Questions to focus students' attention as they read the documents. I also repeated a single opinion question (Should the U.S. Constitution be amended to guarantee women the same rights as men?) which students used their CP[wireless response system] remotes to answer after each segment (document and discussion) of the activity.

Tom evaluated the lesson:

Once I came up with the lesson concept and worked out how to structure it, it was pretty easy and fun to teach. Students got genuinely interested in the nuances and ramifications of a constitutional amendment's impact on people's lives. They also appreciated how the arguments for and against ratification of the amendment have shifted over time. Some issues raised in 1972 seem to be inconsequential now, while others (such as same-sex marriages and federally funded abortions) were completely off the radar back then, but are now hot-button issues used by some who argue against the amendment.

All in all, it was a successful lesson in my eyes. I'm interested to see which students had their opinion shift regarding whether or not a constitutional amendment is needed.

Student evaluation of the lesson indicated that:

- ◆ 91% believed they had learned the lesson ideas absolutely or mostly;
- ◆ 83% thought the instructional strategy absolutely or mostly had helped them learn the ideas;
- ◆ 79% thought the technology absolutely or mostly helped them learn the ideas; and,
- ◆ 77% absolutely or mostly liked the way they learned the lesson.

CHAPTERS ELEVEN AND TWELVE: COMPLETING THE STUDY

Tom viewed Chapters 11 as important in providing additional ideas and pulling together the various instructional strategies studied during the past year. He saw Chapter 12 as being timely in placement at the end of the school year. He wrote:

This week's chapter talks about how to use the strategies when planning instructional units. Coming as it does with just a week left in school, it's perfectly timed to take advantage of my thoughts about successes and failures in this year's instructional decisions, and my enthusiasm for all the new courses I'll be teaching next year. It presents ideas that are close enough to the way I currently plan units that I can easily adapt it to fit my style of planning and teaching.

Summing up his experience in the Sustainable Classroom Project, Tom wrote,

I believe...that with the experiences of this year, and the thoughts about Marzano, along with the technology from the grant, I'll be a better prepared, more intentional, and more effective teacher than I've been in the past. And my students will be the richer for it.

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