Lesson Study in TCS-103 Information and Communication Technologies: Futuring Techniques

PART 1: OVERVIEW

Lesson Title: Futuring Techniques/Tools: Understand and Demonstrate the use of Futuring Techniques/Tools in Technology

Discipline or Field: Information and Communication Technologies

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Course Name: TCS-103 Information and Communication Technologies (ICT)

Course Description: TCS-103 Information and Communication Technologies: Examine the impacts of information and communication technologies on individuals and the global society and how its utilization affects personal, educational and professional growth.

TCS-103 is an introductory course that examines the areas of information and communication technologies. It is a freshman level course taken by majors in Information Technology Management, Business Administration, Business and Marketing Education, and Information and Communication Technologies and it is also open to all students as a Technology General Education course. In this section of the course there were 27 students, the majority being freshmen majoring in Business Administration. The class met three times a week for 55 minutes each class period.

The topic of the lesson, Futuring Techniques/Tools, is related to the objectives of the course. The lesson was the last major topic (objective) covered in the course. The lesson took place during the 14th week of a 16 week term.

The class met from 8:00 to 8:55 on Mondays, Wednesdays, and Fridays. Attendance was in general very good and students were in class on time. Some students seemed to struggle with the reading assignments and a minority seemed to struggle with the hands on activities but the majority seemed to be keeping up with the material in the course. The class atmosphere was open with students feeling free to express their opinions and ideas with the class as a whole.

The class used many hands on activities as well and lecture and group activities to instruct. Because the students were accustomed to in-class exercises, working in groups and in-class writing assignments the Lesson Study lesson plan did not differ significantly from the everyday activities in the course.

Executive Summary: The lesson topic Futuring Techniques/Tools is important to this course because the role of technology has a dramatic impact on many aspects of our lives it is important to study the effects it creates within individuals and in the global society. In order to do this not only do we need to look at the past but also we need to understand what directions it may take in the future. If we are to use the power of technology to
improve lives of people then we must know what technologies will be commonplace and how to best apply them. Therefore, we must learn how to study and prepare for the future.

**Learning Goals.** The immediate academic learning goal of the lesson is to develop students' ability to predict the future of technological advances by using futuring techniques/tools. A broader goal of the lesson was to develop students' ability to understand technologies ripple effect on their lives, education, professions, and society.

**Lesson Design.** The Lesson Study is designed to use several different methods to try and comprehend if the students understand the concepts of futuring techniques/tools. The methods used include a quiz, a pre and post study question, an individual hands-on activity, and two hands-on team activities.

**Major findings about student learning.** The findings were mixed. The quiz and the team activity of creating a future wheel shows that students have an understanding of the importance of futuring techniques/tools. However, the individual activity shows a big disconnect between the goals of the Lesson Study and what the individual student retains about the futuring techniques/tools. The pre and post study question was indifferent in providing clear evidence of student understanding.

**PART II: THE LESSON**

**How to Teach the Futuring Techniques Lesson**

**Pre-Lesson Study**

**STEP ONE**
Prepare for the lesson. (The class period before the study)
- Assign reading Chapter 11 “The Future of Technology” in “Communication Technology” text by Hendricks and Sterry. This chapter covers the six futuring techniques/tools that are covered in the course. (One week prior to the Lesson Study)
- Have them take the online quiz for Chapter 11 (the class period prior to the Lesson Study)
- Pre-Study Question. Have them answer the online question “Why is it important to understand Futuring Techniques?”. (After taking the online quiz)
- Explain Lesson Study and set the stage for the next class period.
- Material needed for the Lesson study: Pencils and colored paper (white, yellow, and blue)

**The Lesson Study**

**STEP TWO (5 minutes)**
Individual Activity.
- Give the students a pencil and blue paper and have them individually name and define 4 of the 6 futuring tools discussed in Chapter 11.

**STEP THREE (5 minutes)**
Team Activity
- Give each team a piece of yellow paper and have them name and define all 6 of the futuring tools discussed in Chapter 11.

**STEP FOUR (15 minutes)**
Future Wheel Activity
• The instructor will demonstrate the use of the future wheel tool. (5 minutes)
• Each team will be given a white paper and will create a future wheel from a pre-determined scenario. (10 minutes)

**STEP FIVE (20 minutes)**
Have the teams share their future wheels with the class as a whole
• Each team will pick a spokes person and present on the overhead (about 3 minutes each)

**STEP SIX (10 minutes)**
Post-Study Question
• Have the students go online and again ask the question “Why is it important to understand Futuring Techniques?”.

**Student Learning Goals**
As a result of the lesson students will:
1. Understand basic futuring techniques and there importance.
2. Demonstrate use of futuring tools

The primary academic goal of the lesson is for the students to understand what futuring techniques are and why it is important to use them to help forecast where technology is going. This lesson uses the last chapter in the course text to help illustrate the techniques, thus the lesson falls in the last quarter of the semester. Throughout the course the instructors have been emphasizing the ripple effect that technology has on individuals and the greater society. What may be perceived as positive for one group may reflect negatively on another.

One course objective is to “utilize a variety of digital information and communication technologies for personal, educational and professional growth.” This lesson is also designed to illustrate how understanding where information and communication technologies are going it will have a positive effect on the students personal, educational and professional growth.

Along with the primary goal a secondary goal of demonstrating the use of the futuring tools was decided upon. The students should not only have the understanding of the reason for futuring techniques but also the ability to use them.

**How the Lesson Works**
The lesson engages the students in several formats:
1. Using a pre and post test
2. Using a chapter quiz
3. Using individual work
4. Using team work

By using several methods of recall it was predicted that the student would have a better opportunity of retaining the goals of the lesson.

**Instructional materials.** UW-Stout is a laptop campus (meaning all undergraduate students are provided laptops) which utilizes Desire 2 Learn as an online course management tool. It is know on campus as Learn@Stout or simply “Learn”. TCS-103
maximizes these tools (laptops and Learn) within the course and all the students had access to the materials for the lesson through their laptop on Learn.

The students were to read Chapter 11 from the “Communication Technology” text, which could be download as a PDF file from Learn. They were then to take an online (on Learn) 10 question multiple-choice quiz over the chapter. Before class discussion the students were to answer the online question “Why is it important to understand futuring techniques?” also found on Learn.

The instructor provides materials needed for the lesson study. Paper of three different colors and pencils are provided for the students. The first color is need for individual response, the second for team response, and the third for a team activity.

For the team activity each team is given a different scenario in which to demonstrate the future wheel technique. The scenarios for this lesson included the following:

1. Cell Phones are made illegal to have in cars
2. Fiber optics to the home becomes a reality
3. GPS are active in all cell phones
4. Telephone companies are allowed to regulate the use of the internet
5. The University restricts what can be downloaded and installed on the laptops
6. More education opportunities become available online
7. Surveillance cameras are put up on Main Street to monitor Thursday night activities

An overhead projector needs to be available so each team can present their future wheel to the class as a whole.

**Instructional and learning activities.** The learning activities consist of: 1) a pre-test 2) an online quiz, 3) an individual analysis, 4) a team exercise with class discussion, and 5) a post-test.

**PART III: THE STUDY**

**Approach**
The major focus of the lesson is on students understanding and ability to use futuring techniques. However, there are some secondary issues we were looking at, such as are students engaged in the text reading, how do they interacted with one another, and whether they were interested in the topic. The data collection involved two forms of evidence:

1. Team observations of the students. Members of the lesson study team observed the Lesson Study and recorded notes during the lesson. Each observer is given a section of the classroom and will focus on two teams during the team exercise. The observational notes will allow the team to examine many different areas of the classroom during the lesson and allow better understanding of the team work dynamic.
2. Written work. Written work includes: a) the pre-test and post-test, b) the online quiz, c) individual work, and d) team work. The written work focuses on the students understanding of futuring techniques.
**Findings.** The team met to discuss the class observations and written work of the students. The observations followed the class timeline (meaning that observers mark the time of their observation next to their notes).

**Analysis of the Class Observations.**

1. *Have the student individually name and define 4 of the 6 futuring tools discussed in the reading.* The notes reflect a gamut of observations, including students appearing to be in deep thought, students making very little attempt, and students not understanding the activity.

2. *Team activity, have each team come together to name and define all 6 of the futuring tools discussed in the reading.* Once again the notes indicated a wide range of engagement by the students. Comments include team working very well together, some members are dominating discussion, and the team is off task. The common theme in the notes was that the teams are working on the task but notes indicate the certain members of each team were disengaged or quite.

3. *Team activity, Future Wheel Activity.* The notes from all team members indicate that for the most part all students were engaged and enjoying the activity. One theme that was consistent from all members indicated that after about 5 minutes teams would start talking about unrelated issues.

4. *Presentation of the Future Wheel Activity.* Notes reflected that students became more disengaged the longer the presentations went.

5. *Discussion on Activity and Post-Test.* Not many notes on this part of the Lesson Study. Notes taken reflect that students were quick to complete the post-test question.

**Analysis of written work.** We analyzed four pieces of written work.

1. *Online Quiz over Chapter 11.* The online quiz was taken the class period before the Lesson Study and consisted of 10 multiple choice (from a pool of 11). The class average on the quiz was 89% with 12 students receiving a high score of 100% and one student receiving the class low score of 40%. There was one student who did not complete the quiz. The team felt that this indicated that the students had a good understanding of the overall chapter.

2. *Pre-Study Question.* The pre-test question asked “Why is it important to understand futuring techniques?”. This question was posed to them after the students completed the quiz (the class period before the Lesson Study). This activity proved difficult to measure. In general the answers show a general understanding of why futuring techniques are important.

3. *Individual Activity.* The students were asked to individually name and define 4 of the 6 futuring tools discussed in the chapter reading. This activity showed that there was a major disconnect from what the quiz scores reflected. One student correctly name and defined all 6 futuring tools and one additional student was able to correctly name and define 4 of the 6 futuring tools. The rest of the class really struggled. Only one additional student was able to correctly name and define just 1 futuring tool, the rest were either incorrect or left blank. This activity illustrated a major failure in understanding of the goals of the Lesson Study and contradicted the quiz scores.
4. **Team Activity (Listing the 6 futuring Tools).** The students were asked to work in their teams and name and define all 6 of the futuring tools. Of the seven teams only one team was able to correctly name and define all 6 futuring tools. One group was able to name and define 5 of the 6. Four groups were able to name and loosely define 3 of the 6 tools and one group was only able to name 1 tool. Once again this showed a major disconnect with the goals of the Lesson Study.

5. **Team Activity (Future Wheel).** The students were asked to work in their teams and create a future wheel based on a scenario given to them by the instructor. All teams were able to complete this activity.

6. **Post-Study Question.** The students were once again asked to answer the question “Why is it important to understand futuring techniques?”. The Lesson Study team was looking for the difference in the student’s answers to see if there was evidence of better understanding of the subject. Once again this activity proved difficult to measure as a pre and post instrument. The answers remain general in nature with one student answering the question exactly the same in both the pre and post activity. In all twenty-two students answered both the pre and post study question.

**Discussion.** The team had a lively discussion about the findings of the Lesson Study. The team reviewed the Lesson Study objectives which were to have the students; understanding basic futuring techniques and there importance, and to demonstrate use of futuring tools. The team agreed to a point that the Lessons Study reached the objectives set upon but discussed if the objectives were worded strong enough. The results of the Lesson Study were almost bi-polar with the chapter quiz showing understanding of the subject and the individual and team work activities showing almost the opposite. The pre and post study question ended up not showing either competence or ignorance of the lesson. The team used these issues as teaching moments for ourselves. The team realized that our intentions, as well being as they were, suffered from a lack of consistent methodology.

In summation, the team had mixed feelings about the success of this Lesson Study. The objectives as written were accomplished but could have been more challenging. The instruments used to gather evidence of student learning will need to be reexamined to create more conclusive results of student learning. Finally throughout the Lesson Study process it was agreed upon by the team that we have become better educators by sharing our philosophies and methods with each other. Although we have different paths our goal of educating the student is the same.

**References**

Appendix

Lesson Study, Research Lesson.
Lesson Study TCS-103 S07

Goals
1. Students will understand basic futuring techniques and their importance.
2. Students will demonstrate use of futuring tools.

Monday’s Class (Set up for Lesson Study)
- Take Online Quiz for Chapter 11
- Have them answer the Discussion Question “Why is it important to understand Futuring Techniques”
- Show them two videos illustrating some possible scenarios of technology in the future

Wednesday’s Class The Lesson Study
- Give the students pencil and blue paper and have them individually name and define 4 of the 6 futuring tools discussed in the reading (5 minutes)
- Give each team a piece of yellow paper and have them name and define all 6 of the futuring tools discussed in the reading (5 minutes)
- Introduce and demonstrate the Future Wheel Activity (5 minutes)
  The instructor will use an example form one of the videos viewed on Monday
- Give the teams a piece of white paper and have them perform the Future Wheel Activity (10 minutes)
- Have the teams share their future wheels with class as a whole (20 minutes)
- Have the students once again answer the discussion question “Why is it important to understand futuring techniques” (10 minutes)