

Implementing Contextual Teaching and
Learning:
Case Study of Cindy, a High School Family and
Consumer Sciences Novice Teacher

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Abstract

The purpose of this study is to illustrate how Cindy, a first year Family and Consumer Sciences (FCS) teacher, used contextual teaching and learning (CTL) practices to enhance her teaching practice. Cindy teaches at a magnet school for International Studies which is located in an upper-middle class suburban area. Cindy's duties include teaching both "comprehensive" (i.e., family-oriented) and "occupational" (i.e., career-oriented) FCS classes. This study is based on observations and discussions of creative foods, a comprehensive class.

CTL preparation impacted Cindy's teaching in three main ways: More hands-on activities, lessons tied to the real world, and greater teacher-student interaction. For example, when studying lettuces, she brought in samples and had students observe, feel, and even taste the differences. She also emphasized to students that buying and cooking food would be a lifelong activity for them all. This was supported via trips to grocery stores, restaurants, and visits by local chefs. Her interactions with students were also unconventional. Rather than stand and lecture, she allowed students to engage in "discovery learning" by finding answers on their own or in groups. Additionally, she utilized the schools diversity by having students give cooking demonstrations based on their native foods. Cindy included meaningful assessments in many projects by presenting the class with the complete evaluation criteria and rubrics so that students could assess their own work. Finally, Cindy recognized that there were clear facilitators and barriers to her CTL implementation. Overall, Cindy was very successful in implementing CTL in her classroom. By focusing on hand-on activities, real-world projects, and student interaction, while taking advantage of the unique aspects of her school, Cindy proved herself to be an effective and well respected CTL teacher.

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Community and School

Riverwood High School has an Atlanta address, but is located in the small suburban community of Riverside. It is flanked by Roswell and Sandy Springs, well known and established suburbs of Atlanta. Riverwood High School is positioned in the northern part of Fulton County, which has access to many cultural and academic resources. The area has a plethora of opportunities and interests for students and community people. The major employers draw from professional backgrounds. Available to North Fulton County are private and public colleges in the area such as The Art Institute of Atlanta, American Intercontinental University, Atlanta College of Art, Georgia State University, and Georgia Institute of Technology to name a few. The community represents an upper-middle class status.

School

Riverwood High School opened in the fall of 1971. It is one of eleven high schools in Fulton County and one of four magnet schools; Riverwood's magnet designation is International Studies. Riverwood is known as a school that stresses academic rigor and internationalism. The International Studies magnet program is offered to students from all over the school/county district; students choose to come to Riverwood to participate in the international aspect of education. The International Studies magnet program is divided into four strands: foreign language, global studies,

international business, and international baccalaureate. Magnet students choosing one of the above four strands are eligible to take International Baccalaureate (IB) courses for certificate endorsement which functions in much the same way as Advanced Placement credit. Students are transported from all over North Fulton County, which means students can choose to come to Riverwood as a magnet school.

Since Riverwood is the international school, all English to Speakers of Other Languages (ESOL) students in Fulton County come to Riverwood. There are 53 different countries represented at Riverwood High School. Students come from every country; however, the majority are from Mexico or Brazil. The fact that students are from everywhere makes Riverwood international and extremely diverse. Every economic group is represented at Riverwood from the very high to very low income and everything in-between. It is probably one of the most diverse schools in the country.

Riverwood is the smallest school in Fulton County with a population of 1359. In the fall of 2002, there were 464 magnet students and 529 ESOL students. The ethnic enrollment was 623 Caucasians, 233 African Americans, 304 Hispanics, 116 Asians, and 83 classified as Multi Ethnic. Most high schools in Fulton County are designed to accommodate two thousand students. Yet, Riverwood is overpopulated according to the original structure and plan of the school; some teachers are floaters and do not have a classroom during planning period.

Riverwood encourages academic rigor. During the past school year, students ranked in the top 5% on the SAT with a mean score of 1326; the mean US score was 1020. The first attempt pass rate (excluding ESOL & special needs) on the Georgia tests required for high school graduation scores were as follow: Language Arts: 98%, Math:

97%, Science: 83%, Social Studies: 95%. On the Advanced Placement (AP) exams, 76% of the students scored a 3 or higher on exams taken covering the 12 Advanced Placement courses offered. There were 4 National Merit Semifinalists, 78% of seniors were Georgia HOPE Scholars, and \$3.2 million were awarded in scholarship money.

School Structure

There are four administrators at Riverwood, one principal and three assistant principals. The principal is female whereas the three assistant principals are male.

Riverwood has a total of 77 teachers, with 10 of those in the career technology department.

The school day at Riverwood starts at 8:30 a.m. and ends at 3:40 p.m. Teachers arrive at 8:00 a.m. and leave at 4:00 p.m. The school is set up on the alternative block schedule which is one year long, whereas the straight block is a semester. Riverwood has “A” days and “B” days, and there are four blocks in each day. Each block is an hour and forty minutes long except third block, which is an hour and thirty minutes (because of the 30 minute lunch shifts). Each teacher teaches three classes a day and then has planning for one block. Thus, teachers teach a total of six classes; three on “A” day and three on “B” day. Students take eight classes, four on “A” day and four on “B” day, which is more than most high school students take. If the week starts off Monday as an “A” day, then Tuesday is a “B” day and it keeps going “A,” “B,” “A,” “B,” and “A.” The following Monday starts “B” week, with “B,” “A,” “B,” “A,” and “B.” Thus, in some weeks, a teacher will meet a class twice a week and go from Thursday to Monday without seeing those students. The classes are structured as semester classes, but teachers see the same students all year.

Career Technology (CT) Department

There are several programs in the CT department including business, culinary arts, diversified technology, media arts, family and consumer sciences, and EXCEL. There are 4 business teachers who offer Word Processing I and II, multi-media graphics, programming using visual basic, computer applications, cooperative business education (CBE), and EXCEL (Extra Coordinated Educational Links). EXCEL is a program that helps students make a smooth transition from middle school to high school and from high school to work. Therefore, emphasis is placed on career preparation, leadership skills, learning life survival skills, and basic academic instruction.

In the culinary arts program, students have a choice of four full-year courses to meet the requirements for a career technology diploma. These classes also allow students to acquire job skills for commercial food planning and preparation. Additionally, this program prepares students to enter culinary chef school.

Likewise, four full-year credits are offered in media arts. Students who master the courses have competency in video equipment, editing, script writing, camera shoots, audio systems, audio technical application, music recording, FCC standards, licensing, graphics, reporting, and professional work environment.

Diversified technology is the former industrial arts program. Instruction involving wood shop, metal shop, and mechanical drawing has been replaced by DT, involving computer programs. However, practical skills are included such as electronics, home construction, home repair, and architecture.

Family and consumer science classes are open to any student in the ESOL programs in grades 9-12. Emphasis is placed on language development related to the

course content. Courses such as food fundamentals, creative foods, parenting, and interior design are available in FCS.

There is a para-professional who works only with the career technology classes. She is assigned to help with special needs students. She is informed in advance of class activities so she is able to determine where she is needed. In other words, she doesn't come to each class every day or every period.

Family and Consumer Sciences (FCS) Program

There are three teachers in the family and consumer sciences program: two in the comprehensive (family-oriented) program and one in occupational foods (career-oriented); the foods program is culinary arts. These teachers offer 18 classes during the school year. One comprehensive FCS teacher is mainly responsible for the foods classes, and the second teaches child psychology, parenting, interior design, and psychology for living. The two comprehensive FCS teachers offer semester classes. For example, one teaches food fundamentals first semester and creative foods during the second semester. One comprehensive FCS teacher also teaches one basic level of culinary arts.

The family-oriented FCS classes are reflective of the school; that is, comprised of an extremely diverse student body. Students are on every academic level from AP and honors students to those identified with the special needs and on every economic level from high to low and everything in between. There are many international students. The FCS program has such a large ESOL enrollment that separate classes are held for these students, ESOL FCS. Therefore, on "A" day or "B" day, the teacher has classes for ESOL students only. Both FCS teachers teach these classes because there are so many ESOL students.

In the occupational program of culinary arts, there are three levels. By the time students get to the third level, their culinary skills parallel those of professional chefs. They often cater events for the school and county. Graduates are immediately employable at any restaurant or are prepared to attend a technical college and pursue an associates degree in culinary arts.

Family and consumer sciences class observed. The class reported in this study was creative foods. This class was held during third block, from 12:30 p.m. until 2:00 p.m. In this class, the teacher had a variety of students from different backgrounds and ethnic groups; the class was a combination of English- and Spanish-speaking students.

The Teacher

Cindy is a graduate of the University of Georgia, College of Family and Consumer Sciences, with a Bachelor of Science in FCS Education. She is in her first year of teaching. She teaches food fundamentals and creative foods courses in the comprehensive FCS program and Culinary Arts I in the occupational FCS program.

Cindy was among the first cohort of CTL trained students. Her first two education classes, Social Foundations of Education and Learning and Development in Education, were CTL focused. Everyone in those classes was part of the CTL focus in teacher education.

Cindy always wanted to do an internship that had something to do with the classes that she would teach. Her friends were in the business college and did summer internships. She realized that she could observe a teacher's class, but she felt the only way to receive real world experience was to do an internship. Cindy completed an internship with Trumps Catering in Athens during the summer of 2000, which helped

enormously to prepare her to teach foods classes at Riverwood High School. In culinary arts classes, students often cater events and must know everything that's involved in doing so. Cindy reported: "I just got a lot of the kitchen experience that I use in the classroom now from my internship....I learned presentation and garnishing techniques...." During Cindy's internship, she spent three weeks in each section of the restaurant: front of the house, back of the house, and the office. It was a good internship for Cindy as a student and now as a teacher.

I visited with Cindy via e-mail and then we visited face to face on campus. We later established, via e-mail, a day and time to observe her class. My first visit to the school was mid March in 2002. I returned again for visits a month later, in mid April, and again in November. This class was in the foods lab, which creates a challenge with space; tables are in the middle of the room with kitchen units on each wall. I noticed that Cindy utilized the space very well; books were on the top cabinet, counter tops were somewhat clean and neat, useful equipment such as a microwave and blender were on the counter, and the tables and floors were neat and clean. The agenda for today was on the board. During my visit, Cindy was relaxed and prepared. The classroom atmosphere was relaxed, yet focused.

Findings

Differences

The teacher perceived three differences between her classroom as a CTL-trained teacher and that of a teacher who had not been trained in CTL practices. Cindy identified interaction through hands-on activities, relevance to the real world, and her physical position in the classroom as traits that were not possibly or consciously practiced by non-

CTL teachers.

Cindy strongly believed in learning by doing as I gleaned from the course objectives and planned activities to achieve those objectives. She created and/or sought every avenue to get students actively involved in the class. She had students participate in such hands-on activities as projects and taste testing which created interaction with and among teacher and students. She facilitated learning by giving instruction and providing a structured format for activities. I observed, on several occasions, the teacher-student and student-student interaction. Students were given an opportunity to study for a quiz by working together at tables and moving from table to table in an effort to ensure correct answers and understanding. At first glance, this may appear to be disorderly, but it was not. For example, when the teacher noticed that learning was not taking place she quickly sought to interact with students. The teacher decided to become part of the interaction by verbally conducting the review for the quiz, teacher-student interaction. Concerning taste testing, the teacher reported, “instead of just reading about it (lettuce, convenience foods) in the book, or talking about it, I have them taste to compare.”

Cindy geared her class to the real world in two areas, content and context. For content, she applied the knowledge and skills gained from undergraduate education to her classes. Since she is the foods teacher, her classes were undergirded with science (chemistry) and economics (management). She stressed the food science for optimal nutrition during class discussions and for adequate preparation during laboratory classes. Optimal nutrition is applicable to students in every stage of their lives and that of their families (present and future). She made references to buying and cooking food now and when they are adults. She said, "You are going to have to always eat so you must buy

and/or cook well.” She taught students economics by comparing convenience foods in a field trip to a grocery store. For example, “we talked about convenience foods and instant type foods a couple of weeks ago based on comparing it to foods from scratch and we could taste them. We could make it and taste it and compare all those different factors that go into it.” Cindy indicated that taste tests would help students make informed choices about nutrition, the quality of food, and food preparation. She planned projects and other activities to enhance students working together in groups. She stated, “In college and [the] business world there are group projects and activities all the time.” Cindy liked for students to do projects and included a project with most curriculum units. She also promoted relevance through much career information. In her planning and delivery of information, she took her class on field trips to places like Pizza Hut, and had three chefs visit her class as guest speakers and to perform demonstrations.

Cindy was visible in the classroom and monitored lab classes and group activities. She has a desk in the back of the classroom; however, she never used it during class time. Although minor, it is a strategy that a CTL-trained teacher acts as a facilitator of student learning. In order to do so, a teacher must be actively engaged with students.

These three differences — hands-on activities, pronounced relevance to the real world, and much interaction with students — were perceived by Cindy as major differences between extensive and little use of CTL strategies. However, the teacher thought that some of it (implementing CTL practices) depended on the teacher. In her words: “I think you have to be somewhat creative to be a CTL teacher, to be able to come up with the CTL ideas and how to adapt the curriculum to make it CTL. So I think in one way I do these things because I’m aware of the CTL and try and think of ways to adapt

my curriculum because I've been trained in it. I try and think of ways to do that. On the other hand, I almost feel like I would do it anyway because of the type of person I am, because I like doing projects and doing hands on." The teacher felt that CTL training would make a difference in the instructional delivery of a non-creative teacher.

Contextual Teaching and Learning (CTL) Strategies Implemented

Cindy reported using many CTL strategies, and I observed some of those strategies in use. This novice teacher used the following strategies in my presence: problem-based, project-based, authentic assessment, and collaborative/cooperative learning.

The first strategy I identified the teacher using was problem-based learning. According to Biley and Smith (1998), a partial explanation of problem-based learning is the elaboration of knowledge that occurs through discussion, answering questions, peer teaching, and critiquing. On one visit, the teacher was beginning a unit on salads. Two objectives for that unit included: identifying the different types of lettuce and distinguishing the characteristics of the eight types of salad greens (lettuce). To accomplish these objectives, the teacher arranged for a taste test of the salad greens for the students. She revealed that before students made Caesar salad, spinach salad, or chef salad, they needed to actually see the types of lettuce in order to be able to compare them so they could see the differences. According to the teacher, when you see each one (type of lettuce) separately, they all look the same. It all looks like lettuce. But, when you see them next to each other, it is obvious that one is really pale green and one is darker green. So Cindy thought it would be good for students to see the types of lettuce together, compare them, and fill out a chart that would serve as a reference. The teacher structured

the chart so that most of the senses would be used: taste, touch, and feel. Students had to determine the texture, appearance, and color of the lettuce by touching and tasting. I observed students as they participated in this taste test. The teacher stated, “Now they have a picture of the different types of lettuce in their minds.” The taste test on salads was an example of problem-based learning.

The second method used by the teacher was project-based learning. Project-based learning is characterized by student investigation of authentic problems, including an in-depth study of a topic worth learning. Cindy used project-based learning to create interaction among students, provide a hands-on activity, and also as an instructional technique. The teacher is an advocate of projects and turns most of the units of instruction in the foods class into a project. Two such projects were the units on breakfast and regional foods. With these units, instead of using traditional methods such as lecture and note taking, the teacher scheduled library time. This enabled the students to conduct research using the internet and other media. With the regional foods project, students researched details about their region such as the environment, people, and especially foods. They collected recipes of popular foods in that region. They made a poster that illustrated main facts about the region, popular foods, and people. Cindy structured those projects to maximize student learning.

The teacher was also a proponent of authentic assessment. There were several evaluative items within each unit or project. Cindy felt that students should be held accountable for their grade and thereby evaluate themselves. Students are given the evaluation criteria when the project is assigned and then evaluate their work as they complete the project. The teacher stated that the evaluation form “lists a bunch of

different things they evaluate themselves on.” Cindy stressed the importance of informing students on everything that they will be evaluated on. She indicated,

When they go through and have to evaluate it they can think about it
...and then when I give them their grade back it’s not a big surprise...
when you don’t give them everything that they’re going to be evaluated on
it’s always a problem of we didn’t know this was a part of our grade. You
didn’t tell us this is what we’re going to be graded on, we did know that
we had to do this...here it’s spelled out and now it’s clear.

Collaborative/cooperative learning is the use of small groups of students working together to maximize their own and each other's learning. Collaboration focuses on the process of working together and cooperation stresses the product of such work. Both strategies were present in the teacher's class. Cindy focused on the process of working together with the unit projects, laboratory classes, and other hands-on activities. She often reminded students that they needed to know what was included in each project before submitting. In her words, “I was telling them today that I wanted everybody to read over their stuff and make sure that it’s the way they wanted it to be when they turned it in....I think it’s something that high school students really need to work on because I know that they have trouble with it and I’ve noticed that this year certain groups have trouble working together and they place blame on other people.” She makes them aware that when you’re working in a group, it is the group’s responsibility to divide and share the workload and not just one person’s.

The product from each project represented the grade and Cindy emphasized the group grade. A perusal of her regional food project assignment revealed the group grade

phenomenon. Cindy reported that she “tell[s] them that it’s a group grade, its one grade for the whole group and everybody should make sure that they’ve read it and that they agree on it before it gets turned in.”

Facilitators to Implementing CTL Strategies

In implementing CTL, some facilitators were based on the climate and environment of the school as perceived by the teacher. Some of those facilitators were: the diverse environment, block scheduling, the physical arrangement of the classroom, and the budget. Riverwood is a magnet school and it’s also an International Baccalaureate school which makes it extremely diverse, representative of many cultures and countries. For Cindy, this was a blessing and enabled the implementation of CTL. Cindy used the diversity as a backdrop to enrich her teaching by capitalizing on the experiences of her students. For example, in the foods class, she has students from other countries perform cooking demonstrations. According to Cindy, she has everyone in her class, "from AP and honors students to the Special Ed[ucation] students." She used the range of students to implement a variety of teaching methods such as cooperative learning where the emphasis was on the product.

In foods classes, the block schedule was a facilitator to CTL, in both the laboratory and non-lab classes. Cindy proclaimed, "The block schedule definitely helps. It gives us the time to accomplish a task especially when we’re doing cooking labs or when we’re doing different projects and we have to get out supplies." During my visits, I saw that the block schedule was advantageous. For example, on the day of the lettuce taste test, students had enough time to taste, fill out the information sheet, and then assess their learning in class with the teacher. Thereby, the lesson on lettuce was not disjointed

by starting the lesson one day and completing it the following day; students were able to see the big picture on salad greens in one class setting. This would not have been possible in a 55-minute class period.

The physical design of the classroom was unusual, but good for implementing CTL practices. The class was in the foods lab rather than an actual classroom which created a challenge with space. Tables were in the middle of the floor with kitchens on each wall. The room was originally designed to have the space in the middle open for student movement. However, the teachers felt that the tables were good for CTL. Cindy stated, “ I don’t necessarily like the set-up of my classroom, but it’s good for working in groups...or doing activities in groups.”

Cindy reported that she had a very nice budget her first year of teaching. The budget afforded her field trips and consumable supplies. She was able to purchase supplies for the upcoming year. Her budget provided resources beyond the textbook. Therefore, she was able to do projects and other activities. From my observation and research on the community and school, Cindy’s department received adequate funding. Aids and materials were available to her. I especially noted that funds were available to purchase supplies for such activities as taste testing. This is not available in some schools.

Barriers to Implementing CTL Strategies

The teacher stated earlier that it was time consuming to implement CTL strategies. However, there were two other barriers: a lack of access to her classroom during her planning period and the general apathy of students.

After my observation of Cindy's class, we had to actually find a place to conduct the conference. The teacher's room was used by the other FCS teacher during her

planning period. The school has outgrown itself, and there was not a vacant room in the school. Therefore, planning for the delivery of CTL strategies and group activities was difficult for the teacher. Cindy needed to be in her classroom where materials and resources were available to her.

The teacher felt that a negative point to implementing CTL was the attitudes and apathy of students toward everything. In Cindy's words, "That's just how high school students are. But sometimes it's hard to get them motivated to get up and move around and do labs and do projects and be excited about it." I saw this during my visit. Students had their heads on the desk. In my opinion, the taste test was interesting and unique; however, some students did not want to participate. During a lab class, several asked, "Do we have to cook?"

Student Engagement/Students On Task

The teacher employed several techniques that assisted her in keeping students on task including peer teaching/demonstrations, discovery learning through structure, and group activities. Cindy incorporated international foods into her foods classes. She reportedly asked students to select a food from their country and demonstrate it to the class; the student is actively engaged and simultaneously teaching his/her peers through the demonstration. According to the teacher, "A girl from Russia did a Russian cooking demonstration and a girl from Mexico did a Mexican cooking demonstration. They (students) feel like they are part of the class when I incorporate their country." From my observation of this class period, students were attentive and engaged when a student reported.

The teacher had an innovative manner of keeping students involved and on task

by providing structured activities. Students discovered a plethora of information/facts about salad greens (lettuce) by following the structure the teacher established, the taste test, and the information sheet. The teacher noted that students remain on task as long as they have something to be doing. Therefore, she structured each activity tightly. For example, with the taste test, students had to fill in their charts for each lettuce by writing the names down. They had to taste it, touch it, look at it, and compare it to the other lettuce. The teacher observed, “As soon as they are done with whatever I assign them they go directly to working on work for another class or talking or getting up and walking around.” I noticed that the teacher’s activities required students to get out of their seats, move, and perform. According to the teacher, “When they are moving and doing something they don’t think of it as class. They are on task. But I think it also takes longer to complete an activity, which isn’t necessarily a bad thing.”

Mastery of Subject/Student Learning

The teacher felt that creative outlets such as project-based learning and group grading helped students not only master, but retain the subject matter. Based on the teacher’s experience with testing and projects, she had this to report,

Because of the ESOL population, if I gave students a test over a chapter on regional foods, salads, or breakfast a majority of them would do very poorly. They have a hard time reading and understanding such a large amount of English. However, they learn a lot by doing the project. I have them outline the chapter, select five main facts of their region, and answer main questions. It’s not reading and memorizing a chapter because they are constantly working on the different aspects of the project. It’s

repetition, and they are learning.

A review of the teacher's grades showed that, in comparison, students' grades were better on projects than they were on quizzes and tests. Regarding students retaining the subject matter, during my first visit, students were communicating to each other about the breakfast projects that they had completed the week earlier. Students alluded to the breakfast project technically (food science) and knowledgeably about economics and management. Cindy said,

Doing the projects really help them remember the subject matter over the long run because they can picture in their minds what we did...if I would say, 'remember that second test we had' they would think to themselves, what are you talking about, but I could say remember when we did the breakfast project and would immediately recall the project.

In my professional judgment, students are not simply cooking and eating in Cindy's food classes. Her laboratory classes can be categorized as science laboratory experiments.

Cindy also utilized group grading to improve the achievement of students. In the teacher's class, projects count as a test grade and it is also a group grade (one grade for everyone in the group). Group grading was an instance where the teacher stressed cooperative learning and good product completion to benefit all students.

Discussion

During my observations, many of the assumptions and practices of CTL were noticed. The students were actively engaged through research on projects, laboratory experiences, and taste testing. The research and development of posters on the regional foods project afforded students the opportunity to interact, collaborate, and learn from

each other. It also showed teamwork.

In Cindy's class, she uses the students' diverse life context and prior experiences to benefit the class. In one of her foods classes, a student from Russia did a Russian cooking demonstration and the following week a student from Mexico did a Mexican cooking demonstration. According to Cindy, it is especially meaningful to students when she incorporate their countries and backgrounds into the class structure and learning experiences. Cindy reports that students like it when she uses Spanish words.

Students are assessed in multiple ways. According to the teacher and from my observations, assessing students in ways such as quizzes, projects, and oral reporting promoted student learning. That is, students' grades improved and they had higher scores to report.