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Chapter 11

Using Constructivism as an Alternative to Teacher-Centered Instruction



Introduction

Constructivism is the idea that learners “actively try to organize and make sense” of information (Ormrod, 2012, p. 154). To do so, students “must individually discover and transform complex information” (Slavin, 2012, p. 218); they compare new information with what they already know and revise their understanding. This chapter will help you to understand constructivism through two teacher-centered case studies, and it will discuss alternative teaching methods that align with constructivism.



Key Terms to Know

Cognitive apprenticeship
Cooperative learning
Scaffolding
Student-centered instruction
Zone of proximal development

Constructivism
Project-based learning
Situated learning
Teacher-centered instruction



Constructivism

Jean Piaget (1952, 1959) and Lev Vygotsky (1978) are the central figures who influenced constructivism (Slavin, 2012). Based on Piaget's theory, cognitive constructivism emphasizes a person's attempt to make meaning or construct knowledge as a separate process within each learner (Ormrod, 2012). This occurs as learners "interact with the environment and test and modify their existing understanding" (Eggen & Kauchak, 2013, p. 189). The attention is on learners' thinking as they participate in experiences or discovery-based activities. These opportunities for social interaction with others provide needed information to revise their thinking (Ormrod, 2012).

Vygotsky is associated with social constructivism. His notion was that "learners first construct knowledge in a social context and then individually internalize it" (Eggen & Kauchak, 2013). The focus is on "how people work together to create new knowledge" (Ormrod, 2012, p. 155). Both Piaget and Vygotsky suggest that students can learn a great deal by talking with other people about various topics (Ormrod, 2011). These two perspectives should be integrated to achieve constructivism.

Vygotsky's ideas are central to current thinking about constructivism and include the following principles (Slavin, 2012):

- *Learning is a social endeavor* where students can hear "their peers' thinking processes" especially in small groups (p. 219).
- The *zone of proximal development* is defined as those skills that students cannot perform by themselves, but can do with the help of a more experienced person, e.g. the classroom teacher. For Vygotsky, social interaction with adults or more experienced people is the foundation for thinking (Ormrod, 2012). Vygotsky's theory also focuses on deep understanding of fewer concepts within the zone of proximal development. The emphasis is on learning concepts in great depth.
- *Situated learning* occurs when students have real, authentic tasks. Learning abstract concepts is more effective when learning them within a real-world context (Rogoff, 2003). An

important principle of learning is to connect the content to students' real experiences (Lave, 1997). For transfer from one context to another, it is important to apply knowledge in a wide variety of contexts (Eggen and Kauchak, 2013).

- *Cognitive apprenticeship* is when beginners or individuals with less skill work alongside experts to cultivate their cognitive skills. Four components include:
 1. modeling skills and thinking aloud,
 2. scaffolding where teachers initially ask questions and provide support but withdraw support as students become more skilled,
 3. having students verbalize their thoughts so that student understanding is made obvious, and,
 4. increasing the complexity of tasks as students' skills (Eggen & Kauchak, 2013).



Constructivist Instructional Strategies

Active learning is a focus of the constructivist classroom, so the instruction is most often student-centered. Students construct their knowledge instead of soaking up or only recording information (Eggen & Kauchak, 2013). This means that teachers help students to make sense of new information rather than merely lecturing or controlling all of the learning activities (Noddings, 2008).

Some instructional strategies commonly associated with constructivism include cooperative learning, project-based learning, and discovery learning such as conducting experiments in a foods lab. Constructivist strategies first introduce students to a challenging, authentic problem (Slavin, 2012). Students then discover the skills that are needed to solve the problem. The problems "are not parts or simplifications of [real] tasks" (p. 220).

Constructivist theories have important instructional implications for teaching, such as:

- New learning is based on an individual's prior knowledge. Instruction should enable students to make connections between what they already know and the subject matter.

- Student learning is an active process. Lessons should contain learning activities that place students in an active role.
- Social interaction facilitates understanding. Students need many opportunities throughout instruction for social interaction with their peers and the teacher.
- Real-world or authentic tasks promote learning that is necessary in everyday situations. The instruction should make connections between the subject matter and out-of-school contexts.

As you read the following case studies, be mindful of these implications, and see if you can identify them throughout.



Case Study One: Mrs. Knight's Culinary Lab

Mrs. Knight teaches a high school culinary class to students who have already taken two nutrition and foods courses. The school resides in a central Kentucky community of approximately 9,000 people and is several miles from a larger city (population 300,000). In class sessions prior to today's lab, Mrs. Knight systematically demonstrated with direct instruction or explained with PowerPoint presentations various techniques for icing and baking cakes. She asked questions throughout the lessons to keep students' attention and monitor their learning. Following is a 60-minute lesson that is part of an instructional unit on cake preparation and decorating.

The teacher preheats the ovens before class begins. Most students start working in their lab stations prior to the tardy bell. Half of the class is baking cakes and the other half is practicing icing techniques. Mrs. Knight has students come up to the front for supplies. She gives a time cue, so they know when to put their cakes in the oven. When the cakes are in the ovens, the teacher reminds students to get pastry bags and to label them and to get a cooling rack and hot pads. She says, "Make sure your hand mixer has the beaters in it when you're done washing the beaters."

Mrs. Knight walks around the room, checking students' work who are practicing icing techniques.

They are seated at tables. She provides individual students with feedback. Mrs. Knight tells them what, if anything, they need to do to improve. She also does demonstrations for small groups of students. Mrs. Knight refers the class to a student who has perfected making roses. After about 45 minutes, the students practicing with icing are instructed to clear their wax paper and do several techniques as an assessment or "exit slip." Mrs. Knight walks around checking the students' examples of basket weaves, their names written in cursive, and stars. All students are instructed to finish their work and begin cleaning their respective areas. Based on a lab duties wheel, some students are cleaning up the table area and others are cleaning up the kitchen areas as well as washing dishes. Mrs. Knight states, "You have to have your bags, your tips, and couplers all in your own kitchen pile. Make sure they are clean." Near the end of the class period, she checks the kitchens to ensure that students have finished cleaning.



Discussion of Case Study One

The lesson presented in case study one was part of a direct instruction lesson. The demonstrations and explanations prior to today's lesson encompass the first phases of direct instruction lessons. The teacher introduces the skill and its importance. She also models the techniques or skills and explains how they work. The lab provides an opportunity for students to practice the techniques under teacher supervision to ensure high success rates. Monitored practice also allows the teacher to identify problem areas.

While a portion of the lesson is very teacher centered with the direct instruction approach, elements of constructivism are apparent with the zone of proximal development and the cognitive apprenticeship between teacher and student.


One alternative to using direct instruction could be to use the jigsaw method of cooperative learning, which would make the lab more of a social process. Mrs. Knight could divide students into five groups

with six students in each group. The assignment is “to learn to make cakes.” This assignment is divided into smaller topics such as (a) baking basics and techniques, (b) properties of cakes, (c) icing and decorating, (d) fondant and gum paste, (e) single tier cake decorating, and (f) multiple tier cakes (L. Hulsey, personal communication, September 2, 2014). Individual students within each group select one of the smaller topics to investigate or research.

The idea is for each student to become an expert on his or her smaller topic. Mrs. Knight would provide students with specific resource lists depending on the smaller topic, e.g., DVDs, websites, books, teacher demonstrations, etc. (Leighton, 2011).

Each student has a counterpart in other groups learning about the same topic. Before meeting with their group members to report findings, students meet with their counterparts from other groups. Thus, experts on properties of cakes

share what they have learned and discuss how they will present their findings to their jigsaw group. Eventually students return to their jigsaw group and present a well-organized report. Students are then tested on what they have learned about . . . [making cakes] from their fellow group members. (Cruickshank, Jenkins, & Metcalf, 2012, p. 263)



Case Study Two: Ms. Dirk’s Communication Lesson

Ms. Dirk teaches a life skills course to freshmen and sophomore students in a small town, with a population of about 8,000, near the Kentucky-Tennessee border. With the exception of a “bell ringer assignment” and a role-play activity that took place midway through the lesson, discussion was the dominant teaching method in the first of several lessons. Following is a description of the first 45 minutes of a 90-minute class period.

At the beginning of the class period the teacher reminds students about the routine for beginning a new page in their notebooks and instructs them to answer several focus questions and look up vocabulary for the week. After a few minutes, the class debriefs the questions and vocabulary. Ms. Dirk introduces a series of lessons on communication by connecting the topic to the previous unit. She then asks, “Can someone define communication?” Two students respond, and she paraphrases each answer. The teacher then asks students why they think communication is important. Again, two more students reply, and Ms. Dirk paraphrases their responses. Further, her comments connect student answers with new information, and she pinpoints the information she wants students to write in their notes.

The next question focuses on the “means” people use to communicate. Ms. Dirk calls on six more students and paraphrases their answers. She asks how communication has changed in society across time. Once more, she calls on six additional students who each give an example. Ms. Dirk repeats the examples aloud, and her comments connect student examples with new information. Ms. Dirk then describes a humorous television commercial familiar to all students to illustrate that, even with advances in technology, people still experience communication problems. A transition focuses student attention on two subordinate concepts- verbal and non-verbal communication. Ms. Dirk asks a question and elaborates on student responses to more thoroughly define the concept.

Her next question is too broad, and students’ answers reflect this. Ms. Dirk’s comments connect student answers to the lesson, and she rephrases her question to refocus the discussion. The pattern where the teacher asks a question, paraphrases student responses, and connects them to new information occurs several more times. Finally, she gives multiple examples of how emotions are portrayed through nonverbal communication and has eight student volunteers exhibit various emotions at the front of the classroom.



Discussion of Case Study Two

Foremost throughout the lesson, the teacher's questions capitalize on what students already know, and her comments connect new information to that knowledge. If the teacher had done all of the talking, she would have had no clue as to student thinking. Social interaction with the teacher is the primary characteristic of the lesson that facilitated understanding.

Ms. Dirk is keenly aware of what she wants students to learn. She understands the structure of ideas, and she wants students to understand it, too. Nevertheless, she is aware that learning is based on the knowledge students bring and that students can misinterpret the content. Open-ended questions help her to focus or guide the discussion. It is apparent that she listened intensely to students by her paraphrasing and in the way she builds on student comments. At the point where her question is too broad and students' responses are likewise too broad, Ms. Dirk's listening abilities enable her to integrate student comments and modify or restate her question.

Although the discussion capitalizes on prior knowledge and places students in an active role, it is largely teacher-directed. The lesson also does not allow students to engage in situated learning with authentic or real tasks.

One alternative to Ms. Dirk's questioning approach would be to use the project method in small groups. Family and Consumer Sciences (FCS) teachers often use project-based approaches in all areas of FCS. Projects are long-term activities where students investigate real-world problems and create a final product. Attributes of using projects include "self-direction, initiative, freedom, responsibility . . . and learning by doing" (Cruikshank et al., 2012, p. 237-238). Ms. Dirk would first pose troubling questions or "practical problems" to her students. The questions could be based on applying concepts and resolving issues related to verbal communication, nonverbal communication, listening, communication barriers, and resolving conflicts. Her role would then be "to pose problems, ask questions, and facilitate invest-

igation and dialogue" (Arends, 2012, p. 396). Providing scaffolding would be important, as well. Examples of student products include (a) papers, (b) role play, (c) digitally recorded skits, (d) models, or (e) presentations.



Conclusion

This chapter ties together a few theories that make up constructivism. Teachers often hear about theories in isolation rather than seeing them as components of constructivism. The two case studies should help you to understand how constructivism is used in the family and consumer sciences classroom.

It is not realistic to integrate constructivism in every lesson. Many kinds of lessons within FCS classrooms can, however, include a number of instructional strategies that fall within a constructivist framework. The case studies, discussions, and alternatives highlight how teacher-centered instruction can be changed to utilize constructivist (student-centered) strategies.

The goal of every teacher should be to foster a deeper understanding of ideas. Constructivism can be a useful approach to do so. Students can benefit when the subject matter is connected to their prior knowledge, puts students in active roles, facilitates social interaction between peers and the teacher, and integrates use real-world or authentic tasks.



Check for Understanding

1. In Case Study Two, determine which aspects of the lesson support Vygotsky's four principles. How would you refine the lesson to ensure that all four principles were present?
2. Reflect on a learning experience that facilitated deep understanding for you as a learner. Describe what happened. What aspects of constructivism were present? What aspects could have been added to make the lesson more meaningful?
3. Reflect on a lesson you have planned or taught. What strategies were consistent with constructivism? How could you improve the lesson to incorporate constructivist principles?



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