Practical Constructivism: Teaching multimedia with a hybrid approach

Scott Bondurant Chandler   Peter E. Doolittle

Abstract

Constructivist pedagogy is difficult and time intensive. By combining traditional classroom teaching styles with constructivist principles, efforts have been made to maximize student learning in a multimedia class for graphic designers. Two courses, one taught using "pure" constructivist pedagogy and one taught using a hybrid of traditional and constructivist pedagogy, were examined. The goal of each class was for students to be given freedom in assignments and classroom activities while still having sufficient scaffolding to learn the breadth of visual topics. Implications for implementing a constructivist pedagogy are addressed.

Introduction

In the spring of 1998, seniors enrolled in the graphic design program at Virginia Tech were offered the opportunity to participate in a course on Motion Graphics to be taught using *constructivist* pedagogy. In the spring of 1999, a similar course was offered using *hybrid* pedagogy, concepts from both constructivist and traditional pedagogy. Both of these courses were offered by the first author and the resultant discussion is based on teacher research, or what is sometimes called action research or teachers as researcher (Cochran-Smith & Lytle, 1993). This paper seeks to (1) explain the basics of constructivism, (2) provide background on the two courses investigated, (3) examine how the hybrid course solves weaknesses with the constructivism course, (4) identify new and exciting developments in the hybrid course, and (5) provide useful insight to those wishing to undertake teaching these types of courses.

What is Constructivism?

Constructivism refers to how students learn, or come to know, and is grounded in the philosophy of Dewey, Kant, and Vico, and the psychology of Piaget, Bruner, and Bartlett. Succinctly, constructivism is the notion that learners construct their own knowledge from their experiences (Steffe & Gale, 1995). That is, constructivism acknowledges the learner's active role in the personal creation of knowledge and the importance of experience in this knowledge creation process.

As a philosophy/psychology of student learning, constructivism has more to say about the nature of learning and less to say about the specifics of pedagogy. While, as constructivism posits, students may be active in the learning process and creating meaning from experience, the nature of this experience is less than clear. The leap from a theory of how students learn to a theory of how one should teach is great and perilous, yet several have made the attempt (see Hendry, 1995 and Duffy & Cunningham, 1996). In general, pedagogy based on constructivism normally includes (Doolittle & Camp, in press):

- Learning should take place in authentic and real-world environments.
- Learning should involve social negotiation and mediation.
- Content and skills should be made relevant to the learner.
- Content and skills should be understood within the framework of the learner's prior knowledge.
- Students should be assessed formatively, serving to inform future learning experiences.
- Students should be encouraged to become self-regulatory, self-mediated, and self-aware.
- Teachers serve primarily as guides and facilitators of learning, not instructors.
- Teachers should provide for and encourage multiple perspectives and representations of content.

These constructivist pedagogical statements stand in stark contrast to traditional pedagogy where it is assumed that knowledge can be transmitted, in full, from the instructor to the student, usually by means of lecture or direct instruction. Is pedagogy based on constructivism a valid alternative for the teaching of multimedia course?

Historical Context

The 1998 course, based on constructivist pedagogy, provided very little a priori structure in an effort to facilitate student ownership of the course. Students learned in their own ways through self-directed experimentation. The course was successful, as measured by student learning and performance, and student satisfaction was high. However, there were many pitfalls encountered while implementing the constructivist course (Chandler, 1998). The 1999 course sought to minimize those issues by combining more traditional forms of teaching with the best of the constructivist approach to teach a hybrid course. The class content of the subsequent hybrid course was also expanded to include interactive multimedia development on CD-R in addition to motion graphics.

The Hybrid Course

The 1999 hybrid course was offered to twenty college seniors and three graduate students as an official, university course (unlike the constructivist course which as an elective) under the name "Applied Art and Design: Multimedia." Students enrolled in six credit hours, while the course reserved 12 contact hours per week and required large amounts of time outside of class to complete assignments. During the first third of the course, class was held twelve hours per week. Over the term, however, contact time was reduced until students were meeting collectively three hours per week.

The goals for the course were stated in broad terms. Although many assignments and tasks were prescriptive in nature, students were encouraged and expected to set the majority of goals and standards for themselves. This type of empowerment is consistent with constructivist goals which suggest that students should follow their own interest and negotiate knowledge goals. The broad goals for the course assert that students should:

- Gain a visual literacy of temporal design;
- Learn to create two dimensional animations using digital tools;
- Build professional quality interactive multimedia for delivery on CD-R; and
- Develop basic video and time-based editing skills.

The university administration was much more receptive to the hybrid approach than the pure constructivist course. Advisors and deans were better able to pigeonhole the course into student's plan of study, for instance. Other faculty members in the Department were more supportive of the learners since the program became more codified. Further, the course was included in my teaching load as a regular class as opposed to the previous year when the class was treated as a series of independent studies.

Issues with a Pure Constructivist Approach

The 1998 constructivist class revealed a number of issues and problems with implementing constructivism in the college classroom.

Time to teach

The constructivist course required immense amounts of time to teach. Each student raised issues individually and often needed one-on-one help. Although a class listserv and peer tutoring helped, teaching a course in this way was similar to conducting an individual study with each student.

The hybrid approach managed the situation better. Having a set class time allowed for information to be distributed more efficiently and provided a forum for "teaching" in a group setting instead of one-on-one. Students often raised questions during class instead of using the more labor intensive listserv. Grading was also easier. Requests for feedback were reduced dramatically from almost daily contact to a more constant, regular schedule. All of these factors made teaching the class less time consuming.

Student comfort

At the beginning of the constructivism course, students were very uncomfortable with the lack of structure. Over the course of the semester, however, students learned to trust the experience and to define their own boundaries and comfort levels with regard to faculty / student content, but the level of initial displeasure was palpable.

Students in the hybrid course did not experience the same discomfort. The basic structures such as meeting twice a week at the beginning of the semester, provided the same support students were used to in other courses while still allowing the content to be constructive in nature.

Missed content

Some students in the constructivist course reported that they missed some important details. Students learning on their own resulted in learning only what was needed for the current project or their direct interest. As a result, students did not learn vicariously from peers or from the instructor.

The hybrid course prescribed some activities. In this way, all students shared in fundamental tasks and shared the same basic understandings. Students also demonstrated their projects to other students. Although this peer sharing could have taken place in the constructivism course, it was easier to facilitate with a set class time.

Debriefing sessions were also held under the hybrid approach. Once students completed specific tasks, "best" practices and common techniques were shared. This created a "peanut butter sandwich" approach to learning. Students were provided with declarative and basic procedural skills before going off on their own. After completing a task, they were brought back together to demonstrate solutions and to experience common solutions. In effect, the constructivist elements occurred between more traditional education events. The net result was a complete lesson that is easier to swallow than the constructive elements alone in the same way that peanut butter is easier to eat between bread.

Interesting Developments
Build It, But Will They Come?

A series of videotapes, CD-ROM based training, and recorded demonstrations were developed for use in the

hybrid course. It was thought that students would benefit from additional infrastructure. Students in the constructivism course often used non-lecture based resources for support of their learning. These resources were expanded for the larger enrollment of the hybrid course. It was thought that these resources could be used at the students' convenience, allowing them to determine when instruction should occur.

Roughly half of the hybrid students reported that they did not use the asynchronous learning options. Of the students who did use the tutorials, most reported that the tutorials were boring, hard to understand or less desired than live instruction. Students provided feedback such as they would "rather learn it directly from the *source*" (student emphasis) and "you could have just told us how to do it in person. Sorry, I know you spent a lot of time on [those] for us."

It is interesting to note that this group of students had a strong preference for live, lecture-based instruction. The feedback from these students should cause us to evaluate the rapid trend to distance learning technologies.

Freedom and Empowerment

Students reported that they appreciated the academic

Figure 1
METSYS Crop Circles CD-ROM

freedom afforded by the constructivist nature of both courses. Some found the freedom to be synchronous with the nature of the arts as is indicated by this student (the piece he created outside of class can be seen in Figure 1), "I love academic freedom, that's why I became an art major!" The student appreciated the flexibility of the class because it allowed him to work at his own pace and around other classes. The "extra" time allowed him to practice making crop circles using Adobe Photoshop until the effect he wanted was achieved. Another student said,"I think it helped with keeping up with the other classes I had." Clearly, the flexibility of deadlines can allow students balance their workload between classes.

The hybrid class was deliberately designed without a rigid structure. Students were welcome to add or remove whatever elements they found fit. New ideas were discussed in class with limited involvement from the instructor. The class generally developed a clear majority and opponents of the new idea usually capitulate to group will. In the rare case where consensus was not reached, the status quo was left intact.

Through this group decision making process significant levels of structure were added to the class. Students elected to have daily quizzes, to have a final exam and to add a variety of deadlines to the course. As one student indicated "I need to have assignments and such so that I retain the information." Students also provided significant impact on how frequently class would meet.

Self-Directed Projects

Beyond the required components of the hybrid course, students were asked to develop a variety of informal "self-directed" projects. The projects were almost entirely at the discretion of the students. Sample projects were provided that went beyond the level of learning expected in the class, explored a related area not covered by the class, and that allowed the students to try something new. Students proposed topics and standards of completion for approval. Most proposals were accepted without revision although some were increased in scope and some were decreased in scope. Students completed the self-directed tasks during the semester. Projects were shared with the rest of the class at the end of the term.

There was tremendous variation in the work although some trends did emerge. Some students reworked a project from this class or another design class. In these cases the students refined the existing project by taking it to a more professional level and presented the work using skills in new media.

Another group of students studied topics not in the course. For instance, several students learned MacroMedia Flash. These students re-purposed existing material in this format or created new designs using Flash. Figure 2 shows content from a required assignment used
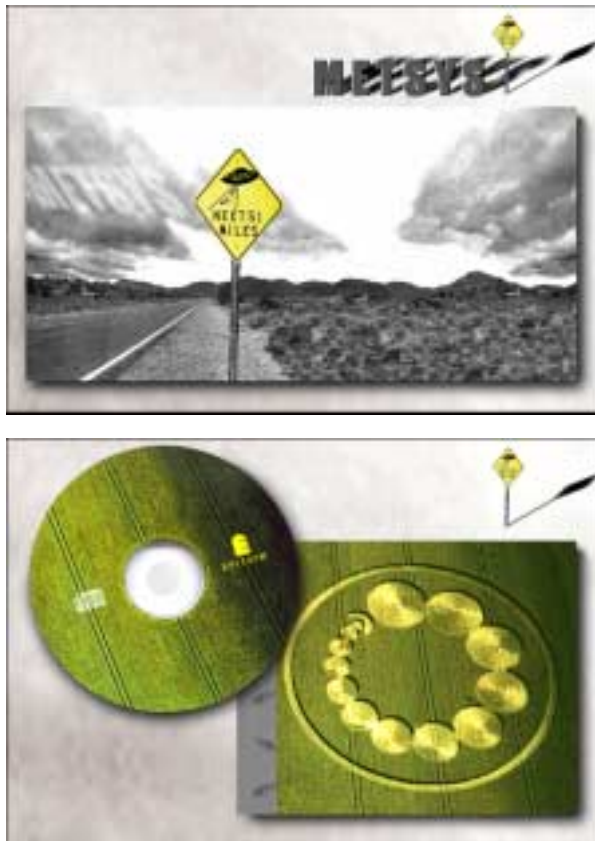
Figure 2
Self-Promotion Created In MacroMedia Flash

developed in the course, they completed additional projects. Customized screensavers were one example of tasks not explicit in the class.

Many of the self-directed projects demonstrated humor and personality on a level not found in other graphic design classes. This was especially true of students who were less likely to participate in class discussion. The self-directed component apparently gave these students an outlet for their more daring and clever side. In Figure 3, the student used humor in a self-directed assignment to explain that he didn't have a good idea and wished a monster would come eat him.

Equity

Despite the fact that students enjoyed the self-directed assignments, several raised issues of equity either publicly or in the informal course evaluation. These learners expressed concern that the negotiated nature of the hybrid course undermined fairness. A few students felt that they worked harder than other students worked and therefore warranted a higher grade. The idea that each student should be judged individually was less comfortable than

Figure 3
Monster Animation

in a self-directed form. The student dramatically compressed the artwork and animations for use on the world wide web using MacroMedia Flash. The original version was created in Adobe Photoshop, Adobe After Effects and MacroMedia Director. The work repurposed in Flash was exemplary. Not only did students adapt the content but they also took full advantage of the benefits of the other packages. Some students pushed their skills to new limits. Using the same software and skills

a universal standard. Efforts were made to explain the constructivist framework of the class and to assure students that grading need not be on a bell curve.

Students were often asked to assess themselves and each other. In general, students were kinder than the instructor, but within acceptable limits of integrity. Several students assessed themselves lower than the instructor and even noted severe deficiencies in the work.

Lack of a Lexicon

Learners made significant gains over the course of the semester in regulating and facilitating their own education. The value of this empowerment should not be understated. After college we can expect that most students will oversee their own learning. One benefit of student empowerment is the development of self-regulation, self-mediation, and self-awareness. These three processes relate to the broader constructs of metacognitive skills (Brown, 1978; Zimmerman, 1995) and a locus of control (Rotter, 1966; Skinner, Chapman, & Baltes, 1988). Metacognition refers to students' self-knowledge of what they know and what they can do. In addition, metacognition includes one's ability to mentally plan future behaviors, to monitor those behaviors, and ultimately to be able to evaluate one's success or failure relative to one's plan. When students determine the best ways for them to learn and consider how to think through learning problems, they are using these metacognitive skills.

Students were also expected to take a great deal of responsibility for their efforts and work products in both courses. The term locus of control is used to describe whether students believe that they have control over their environment and whether they are responsible for outcomes or whether outside sources are responsible. Generally, those individuals who have an internal locus of control (i.e., the belief that one has control over one's environment) tend to work harder and thus are more successful (Davis & Phares, 1967). Constructivist experiences may increase locus of control by placing much of the decision making on the student. In fact, students in both courses reported that they experienced improved metacognition and felt more control of the experiences than they felt in other classes. However, the students often lacked the appropriate vocabulary to discuss their decision making process and self-regulation, in cognitive terms. Further effort to provide students with these skills and an appropriate nomenclature could further improve the benefits of this type of course.

Summary

Although the hybrid course did not share all of the benefits of the constructivist course (see Chandler, 1998), it did retain many of those benefits in a structure that was much easier to teach. The important lesson from this case is that many of the benefits and individual experiences from constructivism can be incorporated into a hybrid course. This hybrid course appeared to result in more learning of the types we usually assess (e.g., declarative knowledge, skills, application) than the constructivist course; however, it could be argued that the constructivist course offered more opportunities for self-directed student growth.

In conclusion, the comparison of these two case studies demonstrated that:

- constructivism can be worked into traditional courses;
- a "hybrid" course can be less time intensive than "pure" constructivism course;
- student comfort is shaped over time and requires time to change;
- traditional and hybrid approaches cover breadth more easily than "pure" courses;
- students may have a preference for lectures over emerging educational technologies;
- many students will embrace academic freedom and choice;
- students may not understand "equity" in constructivist pedagogy.

The ultimate role of a constructivist approach is not yet clear, however, the present teacher researcher study reveals several benefits and pitfalls to using such an approach. With care and foresight, pedagogy based on the tenets of constructivism would appear to have a significant role to play in the teaching of multimedia and graphic design.

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