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Designing A Constructivist Learning Environment- A Student Managed Investment Fund Course Experience

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ABSTRACT

Given the quickly and constantly changing landscape in university classrooms; instructors should look for ways to improve student satisfaction and enhance learning outcomes. One such approach that is being used extensively in areas outside of the business disciplines is constructivism. The natural science disciplines have been using the constructivist learning successfully for some time. We propose that the constructivist approach will work well in the business disciplines and will serve to improve the quality of learning and the general classroom experience for both students and professors. This manuscript provides an example of how the constructivist approach was introduced into a business investments course. The outcomes were favorable with high student satisfaction and performance results. Incorporating constructivist principles should be a basic and necessary part in higher education business classroom design.

Keywords: Course design, Constructivism, Investments, Student-Managed Portfolio, Student-Centered Learning Environment

INTRODUCTION

Instructional design is central to program and student success. Given the recent changes in technology and student needs, course design must embrace these vicissitudes and incorporate learning strategies that will lead to effective and impactful outcomes. In order to accommodate these changes in the learner and the learning environment, instructional design philosophies have been moving away from the traditional teacher-centered approach to a learner-centered approach (Zapatero et al, 2010; Vrasidas 2000) known as constructivism.
Constructivists believe that: (1) Knowledge does not exist independent of the learner. Scholars recognize that information can be conveyed, but understanding is dependent upon the learner (Casas 2006). (2) Constructivist course design proposes that knowledge should be generated by learners, in a real-life setting, through both personal experience and social interaction (Chen 2007). (3) There are multiple truths and realities. According to Vrasidas (2000), constructivism does not discard the idea that a real world exists. He merely contends that the world can never become known in one single way. The physical world allows for the construction of multiple perspectives. (4) Learning is meaning-making. Swan (2005) suggests that meaning-making rests with the students, and not in instruction. She asserts that even though it is possible to standardize instruction, it is not possible to standardize learning.

Constructivists stress the importance of the learning environment to enable the learning and knowledge construction process. Swan (2005) further asserts that the learning environment design is critical to effective course execution. According to Vrasidas (2000), constructivism education is aimed at guiding students to act and think like the experts in their field. In this regard, the learning environment should additionally provide the students with activities, tasks, and assessments that challenge them to select the most appropriate tools, tactics and strategies to assist in constructing feasible interpretations within the problem context. Vrasidas (2000) further points out that the educational emphasis is on the learning process and the learners’ self-reflective skills, not on the learner’s prior knowledge.

Using the constructivist approach in the classroom is far from new. In fact, instructional design based upon the constructivist learning model has been widely adopted as an inquiry-based pedagogy in the natural science disciplines (Bybee et al 2006). The model is referred to as the 5E Learning Cycle Model. The 5 E’s represent (1) engagement, (2) exploration, (3) explanation, (4) elaboration, and (5) evaluation.

The purpose of this manuscript is to promote the discussion of constructivist instructional design in the business disciplines and to demonstrate its use in a business finance course. The extant literature is almost void of manuscripts demonstrating the design and implementation of a constructivist approach in business investment courses. The exception is a manuscript by Cowen et. al (2011) describing a case study using scaffolds in a financial planning course. As such, this manuscript will attempt to fill this void by describing both the design and implementation of an investments course learning environment that reflects the constructivist philosophy to both teaching and learning. The implications for the instructional content, learning environment design, and assessment strategies are discussed in depth.
LITERATURE REVIEW

Developing an effective learning environment starts with sound planning in the instructional design process. Recently, with the focus on student achievement from governing and accrediting boards, along with the addition of online and hybrid paradigms, there has been a movement in instructional design practices towards constructivism and away from the traditional objectivist approach (Chen 2007, Vrasidas 2000).

According to Vrasidas (2000), objectivism is the view that there is only one given reality or understanding of a given topic. This view posits that learning occurs when there is a change in behavior or mindset. The understanding of the world and its properties exists objectively, independent of the human mind and it is external to the knower (Jonassen, 1992). As such, instructional design in the objectivist approach is a fragment to whole sequential reproduction of knowledge. The learning environment is very structured and sequenced, with assessment generally at the end of instruction.

Constructivism is an approach to teaching and learning that acknowledges that information can be transferred, but understanding and meaning making is dependent upon the learner (Casas, 2006). The author also states that constructivism concentrates on building real-life problem-solving skills. Constructivism focuses less on content and more on learner. (Gold, 2001).

Instructional design can be described as the process of aligning and arranging the appropriate resources and activities, in a systematic and efficient way, which leads to student learning. According to Chen (2007), instructional design principles are derived from a myriad of disciplines such as educational psychology, cognitive sciences, information processing, and systems theory. Specifically, constructivist instructional design principles promote learning in an environment that is open, flexible, and practical with the learner strongly involved in setting learning goals. Assessment is continuous and allows for numerous perspectives within a multifaceted real-world, problem/inquiry based environment. The principal challenges to such an active learning environment is that it requires a great deal of effort, time, collaboration, and motivation from all participants. Instructors must provide an extensive and highly relevant resource base, allow ample time for reflection, and continuously monitor and coach performance through assessments and foundational concept building. In order, to achieve the highest level of student success, Chen (2007) advocates a blended instructional design of objectivist and constructivist principles. This view suggests that constructivism may also embrace the active role of the teacher and the value of expert knowledge.

Constructivism adapts the instructors’ role to include assisting learners in the construction of knowledge rather than the reproduction facts and data. The goal is to move students from being a passive recipient of facts to an active participant in the learning process, while becoming expert
Constructivist Learning Model

Figure 1

The next section describes the implementation of the constructivist approach that is consistent with the learning model in Figure 1 in a business investments course. The investments course satisfies the constructivist principle that learning is best achieved if the environment provides motivation by using a real-world and practical setting. The course offers students the opportunity to analyze and select individual stocks for inclusion or exclusion from a $500,000 portfolio. The investments course provides motivation and engagement since all portfolio selection and revision decisions are made by the students. Additionally, portfolio results are public with a performance comparison against 24 other universities.

Implementation of the Constructivist Learning Model

Figure 2 shows the final course design components using constructivist principles. The first step in implementing the constructivist learning model is to involve the students in the design process and to assess their existing knowledge of the content needed to think and act like experts. The instructors' role is to act as a guide and a facilitator rather than the primary source of information and facts. In this regard, the professor is an integral part in the learner's construction of knowledge. Challenging the learner's existing foundational concepts and thinking is also a key
factor in the constructivist process of knowledge construction and deeper understanding of the material.

**Investments Course Design**

![Diagram of Investments Course Design](image)

**Figure 2**

The initial process of facilitating and determining the student’s current perceptions of the course context led to the articulation of the course goals. The students, guided by the professor, concluded that they aspired to be able to think and act more like experts in the field by the end of the term. Another major goal that emerged from the guided dialogue was that the students desired to acquire the ability to make investment decisions independently and to be able to work collaboratively to achieve common group goals. All of these course goals are perfectly aligned with constructivist principles. Involving the students in designing the learning goals of the course allows the students to know not only what is expected, but also why each step is important to the overall goal. Clearly understanding the whole process in advance should serve to reduce frustrations and increase motivation. Students should also gain an appreciation of how each step connects, builds upon, or integrates knowledge gained in previous mini-lessons. There should be no mystery in course design or expectations.

As such, constructivist principles call for the student to be made aware of the whole of the course content and expectations in the initial course phase. In order to achieve the final course content goals, the students are tasked with answering two basic questions for any firm that is to be included or excluded from the portfolio. The first question is: “Is the firm a good company?” The purpose of this question is to provide a comprehensive assessment of the entire firm, including its operating environment. During this stage, the professor provides scaffolds that guide students to various stock analyst sites. After the students have reviewed the material they are asked to synthesize and evaluate the major elements that were discussed in the various research reports shown in Figure 2.
A class discussion draws out the critical areas that must be examined to fully answer the question of whether the firm is a good candidate for further investment selection. A class agreement from a guided dialogue results in the structure that forms the basis of our comprehensive firm report. The spirit of the final firm report is essentially to produce an executive summary that can be useful to any potential investor. In light of this purpose, the class decided that a reasonable analyst final report should not be longer than three pages. In order to meet this requirement, only the most relevant and impactful information for each area will be included. The resulting critical areas to be included in a comprehensive report are: (1) a description of exactly what product(s) and/or services the firm delivers, (2) a discussion of how the firm operationally accomplishes their function from start to finish (what makes them unique), (3) a description of the sources of revenue (by product/service as well as geographically), (4) a discussion of management quality, (5) a discussion of the competitive landscape, (6) an examination of the firms past financial performance, (7) a description of the firms growth plans and prospects, and (8) a discussion of the majors risk factors that the firm will face in the near term.

Once the macro structure of the report has been articulated, the specific micro structure of each of the eight areas must be established. Prior to any discussion of a structure for each of the eight areas, scaffolds must be used to build a foundational level of understanding. The specific areas requiring scaffolding are identified in Figure 2. Scaffolding is the primary means of supporting students to be able achieve the final course goals.

The second major course content area question was: “Is the firm a good investment?.” The professor provides the necessary scaffolding through expert modeling. The students are asked to explore various models and select the most efficient and relevant one to use for all firms. Once the valuation model has been selected, further class discussion requires additional scaffolding for all model inputs. The inputs include items such as required rate of return, growth rates, and earnings forecasts.

**Scaffolding Course Content**

As noted, constructivism principles call for shifting the responsibility for learning to the student. This implies that students must be motivated and willing to work collaboratively. The professor must be careful at this point not to overwhelm the students with too many or too complex choices at any given time. Examples of basic choices that promote course ownership are: who they work with, what sources they will use, how assignments will be presented and due dates.

The discovery process of the students' prior knowledge typically dictates that an introduction and/or a review of key investment principles, concepts, and vocabulary are necessary. Even though learning is the responsibility of the student, the student must be guided in the appropriate knowledge construction process. Lajoie (2005) states that it is the responsibility of the professor...
to identify the content that requires scaffolding, the appropriate time to implement the support, the method to follow, and determine when the scaffold should be removed. It is also essential to embrace and value the students’ viewpoints as an indication of their existing reasoning skills and suppositions. The technical name in the literature for guiding students to build the necessary foundation for transitioning to more complex concepts is scaffolding (Wood, Bruner, and Ross 1974). Lajoie (2005) asserts that scaffolding is a temporary support mechanism used during interactions between the professor and student. The scaffold helps students accomplish a task that is beyond their independent efforts and skill set, breaks a complex topic into smaller bites, and assists the learner in reaching their potential. Brush and Saye (2002) state that “scaffolds are tools, strategies, and guides that assist in achieving a deeper understanding of a concept or task” According to Mckenzie (1999), scaffolding provides: “(1) clear direction and reduces confusion, (2) clarifies purpose (why work is important), (3) clarifies expectations, and (4) reduces uncertainty, surprise, and disappointment.”

There are different types of scaffolding techniques. The most common scaffolding techniques are: hard, soft, and reciprocal scaffolding. Hard scaffolds are stationary structures that can be planned in advance. Modeling is an example of hard scaffolding that is used extensively in the investment course. The students are presented with a structure(s) that illustrates how experts have approached similar problems in multiple ways. Web-based links showing different expert models are used extensively in this regard. The professor’s role is to explain the problem solving strategies used by the experts and why the selected models may be appropriate for the given context. The students are then engaged in guided activities that promote knowledge construction and skill set development, which should result in learning independence. Examples used to achieve an understanding of the foundational material in the investments course are the use real world databases that are available after graduation. The Valueline Investment Survey and Morningstar provided the students with top rated expert firm specific operational and valuation information and opinions.

Soft scaffolding is dynamic technique since it may need to be adjusted and occurs real-time. Soft scaffolding can be used to check for understanding and misconceptions after the smaller mini lessons have been introduced and practice has begun (Simons and Klein 2006). In the investments course, the professor walks around during group time and discusses the previous course activity with each group. Hints or partial solutions are offered as cues to encourage student responses. Cognitive words such as “classify” and “predict” are utilized as well as the use of open-ended questions to encourage proper task structuring and student involvement, particularly within and across each group. This feedback mechanism is critical in moving the learner towards greater understanding of complex material that is subject to multiple explanations. The soft scaffolding process leads naturally into reciprocal scaffolding.
Reciprocal scaffolding is a method that involves group collaboration. It is proposed in constructivism that the group can learn from each other's experiences and prior knowledge. Students should be paired with others who have different perspectives. Any resulting conflicts or differences in approach give the students an opportunity to think constructively at a higher level. One application of reciprocal scaffolding is with multiple group presentations of the same topic. This technique gives students the opportunity to share ideas not only within groups, but across groups as well. This technique, along with appropriate feedback from the professor, should lead to higher level problem-solving skills.

As stated previously in the constructivist learning environment section, allowing time for effective reflection in problem or inquiry-based learning is critical (Gallagher 1997). According to Simons and Ertmer (2006) reflective thinking ensures students are better equipped to remember content, transfer and integrate skills, and use the language of the discipline. The authors further assert that students do not naturally reflect but are instead largely task focused. As such, appropriate reflection drives learners to consider how they are applying what they know and what they are being asked to learn. The specific reflection techniques suggested by Simons and Ertmer (2006) were used in the investments course. Prompting, in its various forms was the principal technique used throughout the course term. As noted above, students were tasked with modeling expert solutions from similar problems and compare and contrast their results with the results of the experts and other students. A "whiteboard" approach was also used collect students ideas and summarize where the class thinking was at specific points in the course.

The last points of discussion pertaining to implementation of the constructivist paradigm are evaluation and assessment. In the constructivist spirit, assessments are designed to be formative rather than summative. Again, the learning goal of constructivism is to provide learners with the tools to act and think like experts once they leave the confines of the academic setting. After many assessment iterations, all of the formal scaffolded content necessary to answer the basic course questions; has been finalized after two-thirds of the semester has transpired. The remainder of the term is devoted to practicing and refining answering the two basic course content questions. Each student selects six firms in this exercise. The firms are selected by the student to enhance motivation. Students present their findings to the class and are asked to rank their investment selections with specific reasons for the choices. A final written report is due for each student. The presentations and final written report are both graded based upon how well the student learned and applied the agreed upon structure. This process allows individual tasks to be iterative which should lead to improved knowledge construction and understanding.

The end of the semester is devoted to portfolio selection and revision and course evaluation. The students are tasked with preparing arguments for the particular securities they want to purchase and those they desire to sell. Once all students have presented, the entire class discusses and votes on the specific securities to include and exclude from the portfolio. The final day is used
to evaluate the course design. The students articulate what worked for them with respect to achieving desired course and personal outcomes. The students also gave insights into potential course improvements. The students are informed of past course revisions based upon student suggestions. This process of showing students that their opinions are valued should allow them to feel very comfortable in offering suggestions. A “safe” atmosphere has been fostered the entire term and is a major component of a constructivist approach in designing an effective learning environment.

Conclusions

Using a constructivist learning environment in the business investments course was a very positive experience for both the professor and the student. Students conveyed to the professor that they were very excited they were able to “have a say” in what was learned and how they learned it. The students were also appreciative that they gained a skillset that would prove valuable throughout their lives. They also felt that they were in a position to continue with lifelong learning in the field. The quality of the work was judged by the professor in this course experience, to have moved to a higher level after fully implementing the constructivist approach. The course objective results were also very high. The student portfolio ranked first with respect to performance out of twenty five universities during 2012.

Using the constructivist approach was found by verbal confirmation and by student course evaluations, to have promoted increased student performance and satisfaction. Implementing the constructivist approach requires a slightly different mindset for the professor as opposed to developing a traditional objectivist classroom design. The classroom experience can be somewhat “messy”. That is, the professor must be willing to make adjustments as needed and to value multiple perspectives. Regardless of any potential negatives, introducing the constructivist approach, even a little at a time, should yield positive outcomes for all participants.

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