A Review and Update of

Jonassen's (1998) Model of an Online Constructivist Learning Environment

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Introduction

Constructivist pioneers such as Dewey, Vygotsky and Bruner determined that knowledge is constructed by students as they interact socially, while Piaget focused on individual student constructions of knowledge through their interactions with the environment. Jonassen, Davidson, Collins, Campbell, and Haag (1995) brought these views forward and suggested that constructivism be applied in distance education and delivered through educational technology.

Jonassen's (1998) model for the development of an online constructivist learning environment (as cited in Holzl, 1999) consisted of the following components: 1) The Question/ Case/ Problem/ Project/ Issue, 2) Related Cases, 3) Information Resources, 4) Cognitive Knowledge-Construction Tools, 5) Conversation and Collaboration Tools, and 6) Social/Contextual Support. Within the context of this paper Jonassen's (1998) model will be reviewed to determine if the components are still relevant, and through a literature review, propose changes/additions to update the model. This focus of this paper is of particular relevance to the author as the findings will be used to guide the development of his future online courses.

The Question/ Case/ Problem/ Project/ Issue

Savery and Duffy (1995), Holzl (1999) and Savery (2006) stress the importance of problem-based learning in a constructivist learning environment where the *problem* stimulates the learning rather than being an example of what is taught. For this to work, the problem must be appropriate and take the form of a question, a case, problem, project or issue, but it must be designed to create the energy behind the learning and therefore be interesting, engaging, and relevant (Seitzinger, 2006). The goal is to choose a problem that would draw multiple perspectives for students to share while discussing the problem. The objective in this component of Jonassen's model is to promote differences of opinion while at the same time encourage the

development of a learning community and the co-construction of knowledge. In order for

students to take ownership of the problem it has to be set in a real-world context and have a

purpose beyond simply being a course assignment (Holzl, 1999; Savery & Duffy, 1995).

Research by Savery & Duffy (1995) beckons us to ensure that the goals for students in

the learning environment are consistent with the instructional goals. One way to do this is for the

instructor to solicit problems/issues from the students and use them as a stimulus for the learning

activities, or, another option is to establish a problem in such a way that the students will readily

adopt it as their own (Savery & Duffy, 1995). Whichever method is utilized, the most important

aspect is to engage the students in meaningful dialogue around the problem (Seitzinger, 2006).

Therefore, Jonassen's first component is still relevant and his "string of euphemisms"

continues to reflect the component appropriately.

Related Cases

According to Jonassen's model an instructor would draw upon related cases to scaffold

student learning by providing a set of *related cases* that would help students solve the problem,

and secondly, to promote cognitive flexibility by providing multiple interpretations of the issues

being examined (Holzl, 1999). Students need to draw upon their previous knowledge and

experiences, and/or the instructor must provide related cases in order for students to understand

the presented problem and construct their own solution (Seitzinger, 2006). Therefore, based upon

the continued relevance of this component it shall remain unchanged in this review.

Information Resources

The instructor or course designer must determine the types of information the learner will

need access to in order to understand the problem. Therefore text documents, graphics, sound

resources, video, and animations that are appropriate for helping students comprehend the

problem will need to be provided. However, Holzl (1999) determined that we also need to encourage students to learn how to find, evaluate and retrieve their own information and resources. In addition, if students do not have the necessary research skills then additional training will need to be provided to help them be successful.

In today's online learning environment the need to provide information resources is closely coupled with interactivity. Interactivity represents active engagement with course elements such as the computer environment, the student's own learning process, the learning materials and resources, classmates, and/or the instructor (Seitzinger, 2006). This online interactivity also provides the learner with a degree of control over their participation in the learning process. Interactivity should not only be measured by the frequency of interactions but also by the quality of thinking the interactivity demands from the student (Seitzinger, 2006).

Therefore, instead of Jonassen's third component being strictly bound to information resources, it could be updated and re-termed "Resources and Interactivity".

Cognitive Knowledge-Construction Tools

Swan (2005) stated that the most prominent component of constructivism is the active engagement of students with the various elements of their learning environment. Additionally, students are known to construct knowledge by filtering new information through their past and present experiences to develop a personal understanding of the world (Loyens, Rikers, and Schmidt, 2007).

Research indicates that threaded discussion boards used in online learning environments strongly support the construction of knowledge as students formulate their ideas into words and build on these ideas through responses from others (Kilgore, 2004; Rovai, 2004). A variety of discussion board activities can be used to facilitate a constructivist learning environment such as

topic-based discussions, peer critiques, and role-playing. In addition, the use of cognitive

knowledge construction tools such as computer conferencing, blogging, podcasts and wiki

development, which require students to interpret and organize their knowledge, have been

proven effective as knowledge construction tools in online learning environments (Seitzinger,

2006). Therefore, based upon the continued relevance of this component it shall remain

unchanged in this review.

Conversation and Collaboration Tools

Collaborative learning is an integral part of constructivist learning environments

(Seitzinger, 2006). Current literature indicates that constructivist learning is best done in teams

that are learner-centered. Collaborative learning environments promote shared information and

shared knowledge-building that can assist students in collaboratively constructing a shared

knowledge. Through online collaboration the students can share information, values, and goals,

carry out research, discuss the knowledge they construct, make shared decisions about that

knowledge, and reflect (Seitzinger, 2006).

Schweizer, Whipp and Hayslett (2002) and Lock (2002) identified the importance of

students forming into learning communities centered on a commonly shared task to increase

collaboration and strengthen their sense of control over their learning. Luppicini (2003)

identified the need for online learners to share a common purpose and sense of responsibility

with their peers for the learning. Brown (2001) determined that building a sense of community is

an evolving process that requires student engagement in in-depth communication over time.

Brown (2001) and Swan, Garrison, and Richardson (2009) determined that constructivist

approaches, community and collaboration are all necessary for creating and confirming meaning

online.

Some of the many tools that promote communication, a sense of community and collaboration include both synchronous and asynchronous methods. Synchronous tools promote face-to-face and/or real-time interaction and include tools such as video/audio conferencing, online chat, forums, and sharing a desktop. Asynchronous tools may include email, blogging, texting, surveys and streaming video. Within a diverse group, the use of these tools can sometimes be more effective than face-to-face communications because some of the barriers to communication, such as time and/or distance, are removed (Holzl, 1999). In an online discussion it is also easier for a facilitator/moderator to make certain that particular individuals do not dominate, while at the same time assisting the quiet student to be given equal opportunity to make a contribution.

Therefore, instead of Jonassen's fifth component being strictly about conversation and collaboration, it could suitably be updated to a more accurate reflection of modern-day constructivist components and be re-termed "Community, Communication and Collaboration".

Social/Contextual Support

In an online constructivist learning environment students are required to engage in critical thinking, conflict resolution, negotiation of meaning and justification of their findings to their peers and instructor. Seitzinger (2006) termed this type of interaction as *social presence* and defined it as being the online relationships and connections that students make with other students and their instructor as they work in the online constructivist learning environment. Seitzinger (2006) reported that social presence can positively influence the quality and quantity of interaction, enthusiasm and participation online and that it is no more difficult to have relationships online than in a classroom. Holzl (1999) and Seitzinger (2006) noted that some students and staff may be less comfortable with online social interactions and care should be

taken to support them in the online learning environment. Jonassen (1998) (as cited in Holzl, 1999) indicated that instructor supports are equally as important for successful implementation.

Therefore, instead of Jonassen's sixth component being about social and contextual support, it could be updated and re-termed "Social Presence and Online Support".

The Authentic Task (an addition)

Early research by Savery & Duffy (1995) identified authentic tasks as being focused on the link between learning and curriculum. Savery & Duffy (1995) identified three elements that would contribute to authenticity: collaborative work, interaction with the real world, and reflection and application of what was learned (Savery & Duffy, 1995). More recently Seitzinger (2006) and Schweizer et al. (2002) reiterated these earlier beliefs and commented that authenticity is necessary for constructive learning to be effective and can be achieved by providing real-life tasks and making content and skills relevant to the learner.

Although Jonassen's (1998) model includes references to "real life applicability", it was determined through this review of literature that the concept of an authentic task needed to be brought to the forefront as being an integral and separate component of the model. Therefore, a seventh component is added to Jonassen's (1998) model and it is termed "The Authentic Task".

Learner-Centered (an addition)

Throughout this review it became apparent that students need to be self-directed in their learning and the course design needs to be learner-centered through each and every component. Seitzinger (2006) determined that a learner-centered course requires that the instructor be a facilitator, not a lecturer, and the learner be active in the learning process. EDUCAUSE (2005) researched and identified strategies contributing to active learning and listed the following as being key items in the process: the student a) identifies the topic to be studied, b) solves

problems, c) makes informed judgments/decisions, d) presents work publicly, e) teaches others, f) gives peer feedback and support, g) chooses how they complete activities, h) applies the content to their own context, and i) contributes to discussion, before, during, and after the class (either online or face-to-face).

The learner-centered online course has a flexibility that allows students to work anytime, anywhere, provides accessibility, convenience and freedom, and the learner is encouraged to transfer the new knowledge to another problem or to their world of work (Seitzinger, 2006).

Jonassen's (1998) model did include references to the necessity for online learning to be *learner-centered,* however, the past decade of research has identified the learner-centered environment as such a central component to the model that it is believed that it also needs to be highlighted. Therefore an eighth component is added to Jonassen's (1998) model and it is termed "Learner-Centered Environment".

Conclusion

This paper is based on a review of Jonassen's (1998) model of constructivist learning in an online learning environment. Current literature was reviewed to determine if the components of the model remain effective, and, through this process, changes/additions were proposed to the model to bring the model up to date.

Within the context of this paper three of the six component titles were updated and two additional components were added to bring Jonassen's (1998) model to a total of eight components. The two additional components include the incorporation of the authentic task and highlight the importance of the learning environment design being learner-centered.

Therefore, the updated model would include the following eight components:

1. The Question/ Case/ Problem/ Project/ Issue
2. Related Cases

3. Resources and Interactivity
4. Cognitive Knowledge-Construction Tools
5. Community, Communication and Collaboration
6. Social Presence and Online Support
7. The Authentic Task
8. Learner-Centered Environment

These eight components are believed to be the most effective in the development of an online constructivist learning environment. It is believed that through using these eight design components the author of this paper will have the best chance of creating effective constructivist online learning environments for his students.

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