

# Constructivist learning

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## Promoting constructivist learning using ICTs

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### Problem

Creating an environment that promotes constructivist learning within a classroom can be a challenge (Brown, 2012). The challenges originate in translating constructivist theory into viable instructional strategies and practice, especially for novice teachers (Baylor & Kitsantas, 2005). Although teachers support constructivist learning, connecting theory and practice is a struggle (Brown, 2012). Offering teachers strategies to write a constructivist instructional plan is not enough (Baylor & Kitsantas, 2005). Increasing classroom size also creates an operational barrier and time to creating a student-centered, constructivist learning environment within a classroom setting (Hirumi, 2002).

In addition, students can have difficulty connecting classroom theory to real-world practice (Brown, 2012). Practical application of constructivist knowledge in a face-to-face learning context does not provide students with an opportunity to test their knowledge in diverse situations with real world applications (Gulati, 2008). Bahaddin et al. (2010) concluded that classroom learning environments are not real-life oriented, nor are they sufficiently able to provide students with autonomy in the learning process. Key elements of successful constructivist learning that are a problem to promote within a traditional classroom environment include the ability to “explore, experiment, construct, converse, and reflect”(Wang, et al., 2009, p. 81).

### Role of ICTs

Wen et al., (2003) found that students have a high satisfaction rates and a preference for constructivist Internet-based learning. Therefore, it is recommended that teachers increase the use of technology within the classroom to engage students and enhance constructivist based learning opportunities (Dils, 2004) by utilizing frameworks that have been created to support teachers in improving a constructivist-based online learning environment (Wang, et al., 2009). The integration of information and communication technologies (ICTs) can create knowledge using interactive activities at a pace that is determined by the learner, creating an opportunity for instructors to break away from conventionally scheduled class time and instructional designers to create more opportunities to vary the learning tools for diverse learning styles (Garcia, 2011).

Interactive lesson planners can assist teachers with increasing their comfort with constructivist instructional lesson planning (Dils, 2004). In addition, instructional models have been created as a framework for “operationalizing constructivist approaches to teaching and learning, and for creating student-centered learning environments that may be applied across disciplines” (Hirumi, 2002, p. 529). Additional tools provide teachers with easy access to web links that are designed to help engage students in the learning process by integrating multimedia and social media to support constructivist learning (Dils, 2004).

Structured and purposeful online discussion are an example of an ICT that can increase a student’s ability to “articulate ideas, negotiate meaning and collaboratively construct shared knowledge” resulting in a constructivist learning experience (Papastergiou, 2006, p. 602). Blogs are another example of an ICT that can enrich constructivist learning in an interactive structure that encourages public reflection and dialogue between students (Cuhadar, 2010). Like blogs, e-portfolios can promote constructivist learning as a tool to provide students with the ability to share knowledge and self-reflection with other students (Zhang et al., 2010). Constructivist learning also places emphasis on the importance of openly sharing knowledge. Talk 2 Learn is another form of online social sharing software that allows student to go beyond online text and instead speak with their peers within virtual learning communities

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(Allen, 2005). Computer-aided personalized systems of instruction offer students the ability to verbally compose and share knowledge within an online social context to gain multiple perspectives (Pear, 2002). Online social learning environments designed using constructivist framework allow students to “present their views and critically analyze the views of others” beyond a classroom context (Gazi, 2009, p. 69). Integrating ICTs with tools that support constructivist learning increases a student’s ability to participate in “peer interactions, group reflection and discussion” (Santally et al., 2012, p. 8) in a variety of social-web formats to support constructivist learning (Tsai, 2008).

## Obstacles

The implementation of ITCs and constructivism can create a steep and lengthy learning curve for teachers therefore school administrators should allow for this when planning workloads and class sizes (Garcia, 2011). Other administrative issues that will need to be reviewed include providing teachers and students with equal access to classroom technology and technical support in an effort to provide equal access to constructivist learning strategies (Bahaddin, 2010).

Prior to adopting new educational technology to support constructivism, teachers will need to increase their comfort with both the interaction of ICTs as well as the implementation of constructivist learning approaches (Dils, 2004). Unfortunately, many teachers lack self-efficacy regarding their ability to master ICTs, but cognitive self-reflective tools are available and have been shown to assist teachers to increase their comfort and knowledge of constructivist teaching (Baylor & Kitsantas, 2005). Luan et al. (2002) found that infusing constructivist learning with information technology can create a positive shift in teacher attitudes for using technology within the classroom. Dils (2004) determined that it would be even more beneficial to provide teachers with an opportunity to participate in the instructional design process, especially to develop fluency with constructivist teaching strategies with the integration of ITCs.

Continued research is needed to create new frameworks for ICT environments that incorporate constructivist approaches to learning and knowledge (Tenenbaum et al., 2001). In addition, research is needed to evaluate success and satisfaction rates of constructivist activities within online learning environments (Rovai, 2004).

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