An Annotated Bibliography:

Using Theories of Self-Regulation to Understand How Adults Learn in Various Contexts

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November 21, 2007

Whipp, J. L., & Chiarelli, S. (2004). Self-regulation in a Web-based course: A case study. *Educational Technology Research and Development, 52*(4), 5-22.

The authors, an assistant professor and a doctoral student at Marquette University, conducted a descriptive case study of six graduate students in an online technology course. Using a social cognitive model of self-regulated learning, the researchers investigated how students "used and adapted traditional self-regulated strategies to complete tasks and cope with challenges" (p. 5). They also explored how motivational and environmental factors influenced students' strategy use. The authors used three transcribed interviews from each student conducted over the course of the semester as their primary data sources. Following the interviews, the authors completed a content analysis and found that while students used many traditional self-regulated learning strategies, they also adapted several strategies in ways that were unique to the online environment. Furthermore, the authors found that several motivational characteristics (e.g., self-efficacy, goal orientation, and interest), as well as components of the learning environment (e.g., instructor support, peer support, and course design) also influenced students' strategy use. In total, this case study was rigorously conducted and provides readers with many useful implications for research, theory, and practice. In particular, the study highlights the need to develop more robust theories of self-regulation that include unique features of the online learning environment that may ultimately affect if and how learners utilize various self-regulated learning strategies.

Van Eekelen, I. M., Boshuizen, H. P. A., & Vermunt, J. D. (2005). Self-regulation in higher education teacher learning. *Higher Education, 50*, 447-471.

The authors, researchers at three universities in the Netherlands, investigated the work-related learning processes of experienced higher education teachers from the perspective of self-regulated learning theory. Specifically, the researchers were hoping to discover "whether teachers actively self-regulate their learning experience (as their students are expected to do) and to examine how this regulation takes place in the workplace" (p. 447). Using two semi-structured interviews and the digital diaries of 15 experienced college teachers, the authors collected 86 examples of teacher learning episodes. Results from a phenomenological analysis revealed that teachers were not as self-regulated and did not plan and reflect on their learning as much as some might assume. Furthermore, the authors found that although teachers did not always self-regulate their learning, they did self-regulate their teaching practices. That is, teachers reported that they "constructed instructional strategies based on specific goals for their students, they enacted them in their classrooms, they monitored the outcomes, they solved problems and they made resolutions in order to revise instruction accordingly" (p. 467). Taken together, this study was extremely novel (and enlightening) in that it examined self-regulation in *adults* everyday learning activities, as opposed to *students* in academic settings. Moreover, these findings are important because they indicate that during their own learning activities, teachers may use only *some* of the self-regulatory skills identified as critical by theorists (e.g., Pintrich & Garcia, 1991; Zimmerman, 2002).

Justice, E. M., & Dornan, T. M. (2001). Metacognitive differences between traditional-age and nontraditional-age college students. *Adult Education Quarterly, 51*, 236-249.

The authors, an assistant professor and a doctoral student at Old Dominion University, investigated aspects of metacognition and motivation that they hypothesized would distinguish the learning processes of adults (24-64 years) in college from those of traditional-age students (18-23 years). Using three different survey instruments, 37 adults (mean age = 29.27 years) and 58 traditional-age students (mean age = 20.57 years) rated themselves on various metacognitive and motivational variables in the context of several undergraduate courses in psychology. Statistically significant differences were found; in particular, "older students reported more use of two higher level study strategies: generation of constructive information and hyperprocessing" (p. 236). The authors concluded that the learning processes of nontraditional students differ in important ways from those of their traditional-age peers, suggesting that "developmental changes in metacognitive awareness of study strategies appears to continue into adulthood" (p. 248). Furthermore, the authors recommended that postsecondary educators consider modifying their teaching practices in response to the self-regulatory differences of nontraditional students. On the whole, these findings support the hypotheses of several leading scholars (e.g., Greene & Azevedo, 2007; Pintrich, 2003) who have suggested that there may be important developmental differences in students' self-regulatory skills, differences that may require differential support and scaffolding from instructors.

Zimmerman, B. J., & Lebeau, R. B. (2000). A commentary on self-directed learning. In D. H. Evensen & C. E. Hmelo, C. E. (Eds.), *Problem-based learning: A research perspective on learning interactions* (pp. 299-313). Mahwah, NJ: Lawrence Erlbaum Associates.

In this chapter of an edited book about problem-based learning (PBL), the authors explored the role of PBL in fostering self-directed learning. The authors, researchers at the City University of New York and Temple University, accomplished this goal by summarizing the findings from several of the preceding chapters on PBL, and, more importantly, by comparing and contrasting self-directed learning with the concept of self-regulated learning. Specifically, the authors stated, "definitions of self-directed learning, such as those adopted by the authors of these chapters, are highly similar to what has been termed self-regulated learning in the educational psychology literature" (p. 299). The authors also proposed that although PBL is often considered a type of discovery learning, they felt it might better be described as a mix of discovery and social cognitive learning. What makes this chapter extremely valuable is the authors' ability to elucidate the connections between self-directed and self-regulated learning. Moreover, this chapter is significant because it calls for "greater cross-fertilization between these two literatures" to improve future research in PBL and other learning contexts.

Hartley, K., & Bendixen, L. D. (2001). Educational research in the Internet age: Examining the role of individual characteristics. *Educational Researcher, 30*(9), 22-26.

In this research commentary, the authors, professors at the University of Nevada, Las Vegas, discussed the importance of considering learner characteristics in studies of new instructional environments such as the Internet. In particular, the authors argued that at a time when all learners are being asked to utilize online learning tools, "it is critical that we have a better

understanding of how different learners can benefit from their use" (p. 23). The authors then provided a short overview of research on self-regulation and epistemological beliefs, "two burgeoning areas of theory and research that illuminate the individual learner in hypermedia environments" (p. 23). According to the authors, self-regulatory skills are likely to be extremely important in online learning environments where learners have more control over their academic progress. Moreover, the authors contended that students' epistemological beliefs (i.e., their beliefs about the nature of knowledge and knowing)—which correlate strongly with achievement in traditional classrooms—are also likely to be even more important in open-ended, online learning environments. This opinion piece is particularly noteworthy because it appeared in an extremely well-respected journal and was one of the first commentaries to openly call for more research on how learner characteristics might influence success in online settings.

Richardson, J. C., & Newby, T. (2006). The role of students' cognitive engagement in online learning. *American Journal of Distance Education, 20,* 23-37.

The authors, researchers at Purdue University, investigated the degree to which graduate students were cognitively engaged with their online courses. Using a survey that measured students' motivation and strategy levels (i.e., surface, deep, or achieving motives and surface, deep, or achieving strategies), the researchers studied 121 graduate students in engineering- and education-focused programs. Statistically significant differences in motivation and strategy levels were found for age, gender, prior online experience, and degree program. The most important findings were (a) as students gained experience with online learning, they tended to utilized more deep processing strategies and appeared to be more self-regulating and (b) younger students were more likely to use surface processing strategies and surface motives. Overall, results from this study support other self-regulated learning research in online contexts (e.g., Artino, in press; Artino & Stephens, 2007; Williams & Hellman, 2004), suggesting that students' online learning experience and level of academic development are important predictors of self-regulatory skill and academic success.

Azevedo, R. Cromley, J. G., & Seibert, D. (2004). Does adaptive scaffolding facilitate students' ability to regulate their learning with hypermedia? *Contemporary Educational Psychology, 29,* 344-370.

The authors, researchers at the University of Maryland, studied a group of undergraduates learning a complex science topic within a hypermedia environment. The purpose of the study was to determine if adaptive scaffolding helped students regulate their learning activities. The researchers randomly assigned 51 students to one of three computer-based scaffolding conditions: adaptive scaffolding (AS; i.e., a tutor who continuously diagnosed students' understanding), fixed scaffolding (FS), and no scaffolding (NS). Using a mixed-methods approach, the authors found that AS facilitated positive shifts in students' mental models (as assessed through the coding of student diagrams) significantly more than FS and NS. Furthermore, the researchers analyzed verbalizations of students' learning activities and found that more participants in the AS condition planned their learning, monitored their progress, and used learning strategies. Although this study utilized traditional-age undergraduates and not adult learners, per se, results were particularly noteworthy because the authors used both qualitative and quantitative methods to analyze both performance and process data. Ultimately, these results

support other self-regulation research (e.g., Kauffman, 2004; Kramarski & Gutman, 2006), indicating that adaptive scaffolding can be an effective means of supporting and/or enhancing students' self-regulatory skills.

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