3-22-2019

Transitioning from Waterfall to Agile: Shifting Student Thinking and Doing from Milestones to Sprints

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ABSTRACT

Delivering an information system is the project in most MIS capstone courses. Students use a methodology to accomplish their project. According to Dima and Maassen (2018), Waterfall and Agile design methodologies are the two main models for software development. Waterfall follows a sequential set of milestones that leads from concept to implementation. The process does not move to the next step until the current step is complete (Kasser, 2002; Balaji & Murugaiyan, 2012; Mahalakshmi & Sundararajan, 2013). According to Lu and DeClue (2011) agile methodologies are "lightweight, short cycled, less wasteful, and focus more on the human aspect in software development" (p. 295). Agile methodologies are cyclic and iterative rather than focused on completing individual milestones. By nature, an academic course is set up to assess assignments. Most MIS courses that use a design methodology usually use the Waterfall methodology. While Waterfall consists of several milestones making it easier to assess, agile also lends itself to being assessed as well. Allowing students the opportunity to use the agile methodology while developing an information system provides an experience and skillset that they can use to market themselves when seeking employment (Lu & DeClue, 2011). Focusing on the instructional techniques of using agile in the classroom and providing students the opportunity to practice agile on their capstone project is looked at for best practices.

This study addresses challenges inherent in developing a structure to assist students in using agile as the design methodology for an MIS capstone course. Through SCRUM activities, students have the opportunity to shift their thinking from a milestone mentality to a sprint mentality. This shift allows them to learn the differences between a Waterfall design methodology and an iterative cyclical methodology when developing an information system for an organization. This experience is beneficial by providing them two lenses to look through when developing an information system.

Keywords

waterfall, agile, SCRUM, iterative design methodologies, instructional strategies, milestones, sprints

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