Critical-Thinking Summary

Program: Information Technology & Supply Chain Management
Faculty: Andrew Ciganek, Christina Outlay, Alana Platt
Courses: ITSCM 385 (Project Management), ITSCM 425 (Mobile App Development), ITSCM 451 (Capstone)
When: Fall 2014
Students: 77 students among three (3) courses
Findings: Students were much better at both explaining and reporting the critical-thinking skills they performed in the course. The UW-Whitewater critical thinking rubric was appropriate (without refinements) to assess IT critical-thinking skills. The ‘prompt’ developed by IT faculty was refined to minimize misunderstandings among some students.

Critical-Thinking Description

Objective: Information technology (IT) students will participate in a series of activities designed to foster critical-thinking skills. Students will apply these skills while engaged in a course project.

Motivation: IT students engage in dynamic experiential-learning projects rife with uncertainty in their upper-level coursework. The projects typically involve both the solution of one or more problems and generating a product. For these projects, students’ ability to problem solve is vital as the absence of critical thought often leads to poor decisions. However, students also must be able to work together in teams and/or assume leadership roles to accomplish one or more tasks towards creating the final product. Currently, students have difficulties responding to challenges in their projects that are context specific. When working on the project, students seem to revert to prior experience and instinct, rather than applying the class learnings when completing a task. Students also have difficulty integrating the phenomena they observe while working on the project with the concepts and skills taught in the course.

Problem: The IT faculty integrates critical-thinking activities in various project-based courses. The critical-thinking activities have evolved in format and in how they are evaluated over time though a closing-the-loop process which actively responds to the needs of various stakeholders (e.g., students, faculty, and advisory board). However, the critical-thinking activities are not employed consistently across the curriculum or even across sections of the same course. In some cases, these critical-thinking activities are not explicitly tied to major course activities (e.g., the final project) in which students are given the opportunity to apply critical thinking skills. As an example, for a full-semester project, student teams submit a one-page ‘lessons learned’ post-hoc project report that does not adequately describe the experimentation or creative actions undertaken by individual team members representative of leadership and critical-thinking skills. This is a significant concern because critical-thinking skills are an important course outcome that can be better assessed in a consistent manner across multiple courses.

Method: The IT faculty implemented a process adapted from an approach used on campus involving.

1. Initial Activity. Students work in teams in each course on the same activity early in the semester. The activity takes 20 minutes to complete and students must work collaboratively to produce an outcome. Upon completion of the activity, the instructor de briefs the class on the critical-thinking behaviors (or the absence of) observed during the activity. This allows the instructor to both introduce/define critical thinking and generates a common experience to refer back to in subsequent course activities (e.g., team project, etc.).
2. **Prompt.** Students complete a teaching prompt a few weeks after the ‘initial activity’ to both assess current critical-thinking skills, but also reinforce critical-thinking behavior. The prompt was adapted from the campus ‘meal program’ prompt in which the focus is a student considering an appropriate project solution given multiple alternatives. Students respond to five questions which are each directly tied to the UW-Whitewater derived critical thinking rubric. The IT faculty developed a scoring guide to consistently evaluate student responses. The instructors administered the prompt both as a take-home activity and as an in-class online survey to complete (full class time available to work on). Instructors reviewed the answers with their students after individual responses were assessed, emphasizing responses that illustrated critical-thinking, or the lack of critical-thinking.

3. **Reflection.** Upon completion of the team project at the end of the semester, students must complete an individual reflection activity. Students are prompted a variety of ways to identify specific examples of how he/she applied critical-thinking completing the team project.