Effect of Student Autonomy and CURE Duration on Student Perceptions of Research Practices

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Scientific Synthesis (Beck and Blumer, 2016)

During biology lab this semester, I worked on projects…

Not at all, Very little, Somewhat, A great deal

- That allowed me to figure out what the information means
- Requiring me to learn and use skills that are expected of practicing scientists (e.g., technology, teamwork, problem solving).
- Requiring me to justify my results with evidence from my experiments.
- Requiring me to apply knowledge from one or more disciplines or content areas.
- Requiring a significant investment of time and intellectual resources.
- Requiring me to use various methods, media, and sources to conduct an investigation.
- Grounded in real life and work.

Science Process Skills (Beck and Blumer, 2016)

How often were the following true about your biology lab course this semester?

Never, Seldom, Often, All of the time

- You made presentations to explain what you have learned.
- You participated in whole-class discussions where your instructor talked less than the students.
- You worked on projects requiring you to develop your own experimental procedures.
- You worked on project using research methods from one or more disciplines.
- You were asked to apply prior knowledge to new tasks.
- Your instructor graded students through methods such as presentations, portfolios, and exhibitions.
- You used project criteria (rubrics) that you helped establish to gauge what you were learning.
- You worked on activities that had a range of possible outcomes and solutions rather than a single correct response.

Collaboration (LCAS: Corwin et al., 2015)

In this course, I was encouraged to …

Never, One or two times, Monthly, Weekly, I don't know, Prefer not to answer

- discuss elements of my investigation with classmates or instructors
- reflect on what I was learning
- contribute my ideas and suggestions during class discussions
- help other students collect or analyze data
- provide constructive criticism to classmates and challenge each other's interpretations
- share the problems I encountered during my investigation and seek input on how to address them

Discovery & Relevance (LCAS: Corwin et al., 2015)

In this course, I was expected to …

Strongly disagree, Disagree, Somewhat disagree, Somewhat agree, Agree, Strongly agree, I don't know, Prefer not to answer

- generate novel results that are unknown to the instructor and that could be of interest to the broader scientific community or others outside of class
- conduct an investigation to find something previously unknown to myself, other students, and the instructor
- formulate my own research questions or hypothesis to guide an investigation
- develop new arguments based on data
- explain how my work has resulted in new scientific knowledge

Iteration (LCAS: Corwin et al., 2015)

In this course, I had time to …

Strongly disagree, Disagree, Somewhat disagree, Somewhat agree, Agree, Strongly agree, I don't know, Prefer not to answer

- revise or repeat work to account for errors or fix problems
- change the methods of the investigation if it was not unfolding as predicted
- share and compare data with other students
- collect and analyze additional data to address new questions or further test hypotheses that arose during the investigation
- revise or repeat analyses based on feedback
- revise drafts of papers or presentations about my investigation based on feedback

Literature Cited

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