Problem of Practice: Improving Career Readiness & Development for Life Science Students

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Context & Participants

**By the Numbers:**

- **76**: Percentage increase in SOLS’ undergraduate enrollment from 2017 (2,628) to 2018 (4,624)
- **74**: Percentage of individuals in the U. S. who have a STEM degree that were not employed in any role that utilizes their degree
- **11**: Number of undergraduate academic programs in SOLS

The **School of Life Sciences (SOLS)** is the largest academic department housed within the College of Liberal Arts and Sciences (CLAS), Arizona State University’s largest academic division. The **11 undergraduate majors** span topics relating to biological sciences, microbiology, and molecular bioscience and biotechnology.

Since SOLS’ inception in 2003, the size of the undergraduate populations grew from 1,375 to 3,360 in 2017, an increase of over 144%. From 2017 to 2018, enrollment for the fall semesters increased from 2,628 to 4,624 undergraduates, a **75.95% increase in only one year.**

Programs of comparable size (i.e. psychology) and discipline (molecular sciences), use ASU’s career services almost twice as much compared to SOLS students, suggesting there is an opportunity and need for more career-focused programming within the school’s curricula.

Overall Research Questions

**RQ₁** How and to what extent did participation in a career development class affect students’ (a) construction of their coursework and (b) their use of advisement?

**RQ₂** How and to what extent did the intervention affect students’ (a) perceptions of their ability to pursue a job, (b) their perceived “career readiness,” and (c) and time to attain a desired job for those graduating?

Theories Guiding the Research

- Holland’s **Theory of Vocational Choice (RIASEC)**
  - I need to know who I am and what I like to find an ideal work environment to thrive and feel I belong.

- Sampson, Peterson, Reardon and Lenz’s **Cognitive Information Processing Theory**
  - I need to know myself, my options, and how to make good decisions; then I need to process that information in a way that is positive and systematic for executing a plan for an optimal career decision.

- Lent, Brown, and Hackett’s **Social Cognitive Career Theory**
  - My beliefs about my abilities, expectations of my action’s outcomes, and personal goals affect my career development and career choices.

Upcoming Innovation

Design and instruct a **career development course** specifically for SOLS students. Assignments and assessments collected within the course will serve as data points related to career readiness and career decision self-efficacy. SOLS students not enrolled in the class will also be contacted for surveys/interviews/assessments to serve as a **comparison group.**
Cycle 1 Research Questions

**RQ₁** How and to what extent did participation in a career development workshop affect students’ (a) perceived career readiness and (b) intended career pathways?

**RQ₂** What topics do SOLS stakeholders (alumni and current students) recommend be covered in a career development course?

## Intervention

In preparation for the future innovation of a for-credit life science career development course, **two concurrent studies** are being conducted in Cycle 1:

### Study 1

On March 12, 2019 a career exploration workshop was held for life science students. **There were 24 life science students in attendance.** Students will be invited to participate in a follow-up interview.

**Study 1:** In February 2019, the entire School of Life Sciences undergraduate population (n=4,700) was notified about the upcoming Life Sciences Career Exploration Workshop. The intent was to offer an opportunity for students to learn about the career development process, as well as a promotion for the 1-credit course coming fall 2019: BIO 394 Career and Professional Development for Life Sciences.

The 24 students in attendance were given a pre-intervention survey, modeled after Florida State University’s Career State Inventory (CSI). This survey asks students to provide all occupations they are currently considering, how satisfied they feel with the list of occupations, and an assessment on the following items:

- If I had to make an occupational choice right now, I’m afraid I would make a bad choice.
- Making up my mind about a career has been a long and difficult problem for me.
- I am confused about the whole problem of deciding on a career.

The workshop introduced Sampson, Peterson, Reardon and Lenz’s Cognitive Information Processing Theory, focusing on the base levels of the theorists’ Decision Making Skills Pyramid of “Knowing about myself” and “Knowing about my options.” An activity based on Holland’s Theory of Vocational Choice (RIASEC) was executed to facilitate a discussion on understanding the students’ personalities, abilities, and preferences. The workshop was video recorded for distribution for students unable to attend the event, including those in the online program.

After the workshop, the post-survey included the CSI, the Career Decision-Making Self-Efficacy Scale (CDMSES), as well as survey items relating to the students’ thoughts on and experiences related to career development, career readiness, and the proposal of a for-credit career development course. The CDMSES measures the participants’ confidence on 50 items including:

- Make a career decision and then not worry about whether it was right or wrong.
- Change occupations if you are not satisfied with the one you enter.
- Select one occupation from a list of potential occupations you are considering.

The students will be invited to participate in a follow-up interview to assess participants’ understanding of career exploration and career development and the effectiveness of the workshop.

### Study 2

SOLS alumni and current students are invited to participate in a survey on matters related to career development. **This survey closed April 1, 2019.**

**Study 2:** Current students and alumni from SOLS are invited to participate in a survey to gather feedback on what content should be offered in the forthcoming career development course, as well as if they even support this kind of course.

The current students (n=4,700) have received the same post-survey that was distributed to the Study 1 participants minus the CSI. The students who participated in Study 1 were not included in the distribution list for this study to prevent duplication of results.

Alumni from the past 5 years (n=1,900) are invited to participate in a survey with very similar questions to the current student survey about their thoughts on and experiences related to career development, career readiness, and the proposal of a for-credit career development course. Furthermore, survey items on their current job role such as the following are included:

- What is your current job title?
- How long did it take you to find a job after earning your bachelor’s degree?
- Would you say your job is in the life sciences?

All of the surveys distributed include both qualitative and quantitative items. The self-efficacy and decision-making assessments will also reveal where our current students are at with their perceived job readiness, career ambitions, and other similar topics that will be able to be analyzed using statistical methodology. The surveys closed on April 1, 2019.

### Coming Fall 2019: “BIO 394 Career and Professional Development for Life Sciences”

Serena Christianson has been approved to design and instruct a career development course specifically for SOLS students. This 1-credit course is slated for the Fall 2019 Term; it will last 7.5 weeks in Session A. The plan is to offer this class in the Fall 2019 and Spring 2020 terms as an opportunity to practice and refine the logistics for the official innovation term of Fall 2020.