Collaborative Research: CNS Core: Medium: How to Scale Up DNA Storage?

BPC Plan

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Learn about Student Recruitment and Retention (NCWIT 101) and encourage female students majoring in biological sciences to pursue computing degrees

In year 1, the PI will lead the Co-PIs and graduate students funding on the project through a 16-hour self-paced course with 6 face-to-face meetings. This self-paced will guide the team to identify impactful recruitment and retention activities for their context. The team will pursue these activities in years 2, 3 and 4. Moreover, the PI will try to attract/recruit more female students involving in the computing community.

1. Context & Goals

Context: According to the IPEDS data from https://bpcnet.org/statistics/, I investigate the women computing degree recipients in Oklahoma State University among three degrees (including Bachelor's, Master's, and Doctoral degrees) along with state and national data as shown in the table below.

According to the table, the situation of women computing degree recipients in Oklahoma State University is worse than the state wide and national wide among the bachelor's and master's degrees.

Gender	Race/ Ethnicity	Inst. Awards (N)	Inst. Awards (%)	State Awards (N)	State Awards (%)	National Awards (N)	National Awards (%)
Bachelor's degree							
men	all	588	84.6	1782	79.91	141802	80.39
women	all	107	15.4	448	20.09	34600	19.61
Total	-	695	100	2230	100	176402	100
Master's degree							
men	all	281	73.37	372	72.51	45930	68.73
women	all	102	26.63	141	27.49	20899	31.27
Total	-	383	100	513	100	66829	100
Doctoral degree							
men	all	10	71.43	10	71.43	2041	80.45
women	all	4	28.57	4	28.57	496	19.55
Total	-	14	100	14	100	2537	100

Goal:

1. The self-paced course will help the project team, and colleagues in the department, understand how underrepresentation of certain groups in computing occurs, how to make both individual- and departmental-level changes to increase the representation of historically marginalized groups in computing and ensure the classrooms, labs, and overall department are welcoming and inclusive places. The project team will participate in the majority of meetings and will complete all "assignments" within the course.
2. Based on the course contents, the PIs will recruit more female students involving in the computing community.

Activity Motivation:
1. The project leadership for this activity does not have extensive prior BPC experience, but is interested in contributing to BPC. The NCWIT 101 course will provide the project team with the foundational knowledge they need to broaden participation in computing in their departments, within their sphere of influence.
2. The project is highly related to the biology area, which has relatively balanced in terms of gender. The project builds a good connection between biology and computing so it can provide an opportunity to attract female students involving into the computing community.

2. Intended Population

Activity Participants: All PIs and graduate students funded on the project.
Participant Recruitment: PIs will invite other departmental faculty and staff to participate, but the PIs and graduate students are the intended participants.

3. Strategy

Activity Content:
1. By the end of the first year, the participants will complete the self-paced 16-hour course "NCWIT 101: Introduction to Diversifying Undergraduate Computing Programs." The participants will meet 6 times during the year to discuss each module in the course. Modules all have "homework" (such as collecting enrollment data in the major by demographic) which will be distributed equally amongst the PIs and then discussed. Year 1 will include going through the modules as a team. Year 2 will include deciding on a focus for BPC activities that suit the project team's time availability and sphere of influence. Year 3 will be implementation of an agreed-upon intervention with basic evaluation of preliminary results.
2. From year 1 to year 4, the PIs will do presentations about the projects to different departments at Oklahoma State University (OSU) such as department of biology. Also, the PIs try to recruits female students who have both interests on biology and computing.
Activity Budget: Year 1 is cost-free. Years 2, 3 and 4 may have costs, depending on the goals and strategies the team decides upon. For example, if redesigning the departmental website is decided upon as a strategy, then a web designer may need to be hired. If faculty recruitment is chosen, then there may be costs associated with advertising in different places.
Responsibilities of PIs: The PI will coordinate all meetings and do presentations in different departments of OSU. The Co-PIs will participate fully and lead the discussion of an individual course module.

4. Preparation

The participants will be able to follow the structure of the course and meet regularly at a schedule that suits their team.

5. Evaluation

In Year 1, the PI will document attendance at each meeting and self-reports from participants, including reflections on the course and the completion of each module's tasks. The fifth module

of the course provides a way to evaluate the BPC activities the team decides to do upon completion of the course. Thus evaluation activities such as departmental student data collection, surveys, observations, or interviews can take place in Years 2 and 3 and will assess the effectiveness of the BPC activities the team has chosen for their context. Participants will also complete the course evaluation to provide feedback to NCWIT. Moreover, the activity of female students on this project and their future positions (especially positioning in computing programs or jobs) will be documented. Evaluation results will be reported in each annual NSF report.