Community College Undergraduate Research Initiative

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1. From your perspective, what are the two things that your disciplinary professional organization or discipline-based NSF-funded project does particularly well in support of your work as an educator? Please be specific about how this activity works and why it is effective. Add web links if available.

The Community College Undergraduate Research Initiative (CCURI) employs a model of incorporating undergraduate research (UR) into community college curricula in order to engage students from the moment they enter the classroom. The model employs a case study method of instruction in freshman coursework. The CCURI writing team develops cases that instructors can use to teach basic scientific concepts within the context of an ongoing research project. Students are then given an opportunity to explore those projects as either a CURE (Course Undergraduate Research Experience), a SURE (Summer Undergraduate Research Experience) or PURE (Program Undergraduate Research Experience). The growing CCURI network has become a rich source of collaboration on both the curricular and research side of the CCURI model. This network represents the third level of the CCURI model. In this level, students are connected to research opportunities and opportunities to transfer their experience to a four-year institution as they continue to pursue their STEM career.

CCURI is effective because it uses a model that is based on a holistic approach to curriculum reform. Instead of focusing on a specific course or program, the model incorporates other aspects of reform, including infrastructural and human resources. The change being proposed within the CCURI model has depth and breadth and impacts a large number of institutional elements that might not be found in a focused classroom reform effort. In working with our 26 partners, the project helps teams of faculty and administrators incorporate this multi-dimensional approach to developing a strategic plan for implementing an undergraduate research program. The CCURI project has also incorporated an iterative process where a quantitative analysis of the barriers associated with this implementation is conducted. The results of the analysis are used in a formative way to inform both the current partners, and partners that come online as CCURI disseminates its results.

As educators, we are convinced of the pedagogical power of undergraduate research. Undergraduate research represents one of the more powerful teaching tools available for use in higher education. The challenge for community colleges has been focused around barriers that are specific to this institution type. The primary strength of the CCURI program is its focused approach to program development that addresses those barriers.

2. If you could propose (and obtain funding for) one new activity to engage community college instructors in professional associations and other discipline-based projects related to teaching and learning, what would it be? Describe the activity; explain why it is needed and why it is not currently available.

In 2003, faculty at Finger Lakes Community College (FLCC) conducted a Root Cause Analysis (RCA) in order to explore the primary reasons why our attempts at developing an undergraduate research program were failing. While our focus was on undergraduate research, the results of this analysis apply to a variety of discipline-based projects. The results of the analysis showed that one of the primary limitations in place for community college faculty who are looking to pursue innovations in teaching and learning is a lack of access to networks of individuals who share a common goal.

The example provided in our analysis included the professional networks that exist within specific scientific disciplines. For example, a faculty member at a four-year research institution working in the area of microbial genetics would consider not only their institutional colleagues as part of their "professional network" but also the microbial genetics scientific community. The latter represents a much larger external network that has built-in networks of individuals working together on specific scientific questions. Research on networks is extensive, but clearly one of the results of network development is the synergy that is produced, and the accelerated pace at which new innovations, questions, and discoveries are generated.

As our analysis showed, community college faculty do not have the level of access to networks that exist at four-year research institutions. This paucity of network membership represents a serious barrier to community college faculty as they look toward developing innovations, curriculum reform, and discipline-specific scholarly activity. Funding for activities that engage the community college STEM faculty would help to create those networks—this is one of the primary deliverables of CCURI (http://www.ccuri.org).