Creating Course-Based Undergraduate Research Experiences

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With many existing formats for research-based initiatives available, facilitating a meaningful research experience for students requires consideration of many variables including essential questioning, opportunities for original research, and methods of experimentation.

In a university such as Detroit Mercy with approximately 600 declared science majors and 11 active research faculty, CUREs (Course-Based Undergraduate Research Experiences) have successfully addressed the need for more authentic research opportunities. Characterized by the sustainability of practice, unique organizational structure, and most importantly for making a contribution to a larger scientific community, CUREs have made STEM research-based experiences more accessible to the University of Detroit Mercy community at large.

Establishing courses can be rigorous however, the effects of research-based experiences have proven to be invaluable, suggesting the impact of students in first-time experiences to be comparable with students that hold an extensive amount of research experience. Other

benefits for learners include the promotion of self-efficacy and self-identity as well as student retention, specifically with non-traditional or historically minoritized students.

Professor of Biology, Jacob Kagey helped to jump-start this initiative at UDM using his personal research. The problem of not having a lab for genetics studies would develop into a CURE called, Fly-CURE. Fly-CURE uses fruit flies to conduct original research to make conclusions about cell mutations. Although he will admit it was not always as admirable, today Fly-CURE is a national research initiative adopted within 20 universities and is published every semester.

Kagey describes his experience with CURE to be fulfilling as he views it as a means of, “knocking out two birds with one stone,” as many faculty are required to keep research ongoing otherwise. His advice for faculty pursuing research-based experiences is very straightforward. He emphasizes that those who wish to experiment with implemented CURES should not expect perfection from day one. “Allow yourself grace and time” he shares, noting that Fly-CURE is the product of ten years of trial and error and failure was a part of the process.

Even more recently Fly-CURE was awarded a National Science Foundation grant, but not before three proposals were submitted and the proposed leadership was modified. This example lends itself to the perseverance and occasional pivot that research-based experiences require. In addition, Kagey strongly encourages the joining of national groups and mentorship within and outside of the University community. These networks will support exposure to varying models, learning from similar research initiatives, and the ability to seek guidance as needed.