UNDERGRADUATE RESEARCH

The student retention rate for STEM disciplines is a key concern for universities. BEST in its first two years of operation, and a living-learning community (LLC), have been introduced to address these challenges.

**Background**

The BEST program was initiated to benefit all students in six STEM disciplines where high rates of attrition were evident in gateway courses and where there was a capacity for more students to enroll in the program.

**STEM Programs Included in BEST**

<table>
<thead>
<tr>
<th>Biology</th>
<th>Chemistry</th>
<th>Physics</th>
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<tbody>
<tr>
<td>Computer Science</td>
<td>Geology</td>
<td>Mathematics</td>
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BEST identified four objectives, as shown in Table 1, to increase our graduation numbers. Also shown in Table 1 are the practices we implemented to achieve our outcomes, including outreach to undecided/undeclared students, use of peer course assistants in gateway classes, and faculty for transformative teaching innovation in gateway courses, undergraduate research support for students in their first two years of college, and a living-learning community (LLC).

**Table 1:** Program objectives and their alignment with BEST practices.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Current BEST practices to achieve the objective</th>
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<tbody>
<tr>
<td>Objective 1: We will increase the number of students who declare majors in STEM disciplines.</td>
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<td>Objective 2: We will increase the percentage of students who successfully complete gateway courses in STEM disciplines.</td>
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<td>Objective 3: We will assist STEM interested students to expect to succeed in STEM fields, both as students and in their future careers.</td>
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<td>Objective 4: We will increase the number of first- and second-year students who participate in STEM undergraduate research.</td>
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**Living and Learning Community**

The BEST living-learning community builds social capital for students and thereby supports their academic success. The students:

- Take classes together
- Participate in common study groups
- Host faculty dinner nights
- Attend campus events
- Take a field trip to Boston together

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**Peer Course Assistants**

Students who have just learned a subject are excellent teachers for their peers, and the Peer Course Assistant (PCA) program takes advantage of this knowledge.

- PCAs are students who have excelled in gateway courses the previous years
- PCAs attend class
- PCAs lead study sessions to help students succeed
- PCAs help to build community within the major
- Successful completion rates have increased after implementing PCAs

**Gateway Courses**

The National Survey of Student Engagement (NSSE) data indicates that KSC first-year students are engaged with faculty on research (Figure 3) BEST is funding students and faculty scholarship to support this high-impact practice.

**Support for Transformative Teaching**

- 7 Faculty supported once
- 5 Faculty supported twice
- 10 Individual courses covering lectures and labs

**Transformative Teaching Grants**

Provide faculty support to develop new materials or work on changing the pedagogy in gateway classes to better suit the learning styles of our current students.

**Summary and Next Steps**

The first BEST graduating class will be in AY 2018-19, allowing a clear assessment of our goal of increasing STEM graduates in these disciplines. This information will be useful in determining what programs can be institutionalized or continued through various funding mechanisms.

**Acknowledgements**

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