Discussion Group Questions for Staff, Faculty, and Administrators

This document is intended to provide a scaffold for conversations about the implications of Talking About Leaving Revisited in your department, campus, or community.

Context of Discussion

- Are there ongoing discussions in your institution about attracting and retaining talented students within STEM majors and/or in related disciplines?
- If so, at what level are these discussions taking place: departments, Colleges/Schools, or at the institutional level?
- What concerns are prompting these discussions? (e.g., loss of talent; loss of diverse talent; costs associated with failure to retain students; other)

Guiding Questions

1. What is known in your institution about the extent and student profile (e.g., sex, race/ethnicity, first-generation, foreign student, financial aid recipient, grades, SAT/ACT scores) of losses from STEM courses and majors?
   a. Are data regularly collected and analyzed to understand the characteristics of students who:
      i. Enter both STEM majors and majors that include STEM courses
      ii. Graduate from STEM majors and from majors that include STEM courses
      iii. Switch into non-STEM majors
      iv. Relocate to majors within STEM disciplines
      v. Leave college without graduating in any major
   b. After which STEM courses do students move or leave?
   c. Who analyzes these data? The institutional research and records staff or departmental staff?
   d. Which STEM departments are most successful in retaining students? What data are needed to account for their success?
   e. What is known about practices in STEM departments with poorer records of student retention that can account for this?
2. If “exit interviews” are conducted, what information is being collected, what is learned, and what changes do they lead to?
   a. Who conducts these?
      i. Are interviewers internal or external to STEM departments?
      ii. Are interviewers trained in interview and qualitative research techniques?
      iii. Are interviewers near peers of the leavers or individuals who hold positions of power?
   b. Is interview data recorded and analyzed for patterns that explain student decisions?
   c. What is learned about:
      i. why students move majors or leave college
      ii. the reasons student decisions vary by sex, race/ethnicity, performance history, or other variables?
      iii. students’ intended destinations?
   d. How is the exit interview used?

3. Given what you understand about what prompts student decisions to leave STEM majors and STEM-related majors (whether from the TALR research findings, or from evidence collected at your own institution), what improvements in the following areas would you propose:
   a. Addressing inadequate K-12 preparation in mathematics and science
   b. Navigating college
   c. Academic support
   d. Support with issues related to diverse statuses, health and personal problems
   e. Financing college/ accommodation for working students
   f. [Add other areas for improvement that are important in your context]

   For each area of intervention, what policies, resources, staffing, and funding are available and/or needed?

4. What is known about STEM teaching and learning in your department, campus, or community?
   a. What strategies, structures, and rewards can leverage improvements in STEM curriculum structure, pedagogy, assessment and grading methods, class culture and instructor understandings about how students learn best?
   b. How can the weed-out tradition and its negative consequences be addressed?
   c. What structures, policies, and rewards are in place, or are needed, for the professional development of graduate students, faculty and instructors in learning theory, curriculum design, pedagogy, and learning assessment?
   d. What course assessment instruments are available that provide better feedback on how much students gains from the STEM curses that they take?
   e. What changes:
      i. in beliefs and attitudes will be required to bring about the improvements you propose?
ii. in rewards and resources/resource distribution will be required to bring about the improvements that you propose?

5. How can institutions help bring about the changes needed to improve retention?

a. What leverage can your institution bring to bear on departments and colleges that encourages, supports and rewards them for demonstrated improvements in student retention to graduation in STEM majors and in majors that include STEM courses in their degree programs?

b. What forms of practical help can institutions offer in this endeavor:
   i. financial rewards to departments/college for demonstrated improvements
   ii. institution-wide policies, programs and facilities (e.g., professional development policies and programs, bridge programs, catch-up courses)
   iii. support staff to service implementation of changes
   iv. faculty time-out for further education, leadership of improvement initiatives, PIs for research and project grants, etc.

6. How would you describe diversity, equity and inclusion in STEM in your department, campus, or community?

a. What is the “climate” in STEM at your institution. i.e., How welcome do students feel? Do students feel that “I belong here”? How do you know? What data are collected to show students’ level of comfort on campus, in STEM departments, and in STEM classrooms? With whom are these data shared?

b. What discussions have occurred, and among whom, about issues of diversity, equity and inclusion? How are these terms operationalized and implemented in practice, and by whom, i.e., departments, Colleges/Schools, or at the institutional level?

c. What discussions have occurred around what constitutes a diverse, equitable and inclusive curriculum? For example, do faculty include examples of contributions to STEM made by women, scientists of color, and the LGBQT+ community in their course content?

d. What discussions have occurred around faculty members’ responsibility for student learning?
   i. What discussions have occurred on grading? Is grade curving used? If so, for what reason? Do you know which courses in your department have high DFWI’s and what is causing these student outcomes? Has your institution/College/department discussed alternative forms of assessment, i.e., student portfolios, oral presentations, written reflections, etc.
   ii. What are faculty members’ “stance” on teaching? i.e., “I teach chemistry” vs. “I teach students chemistry.” What attitudinal and behavioral changes are necessary to shift faculty members from the view of “I teach chemistry,” to that of “I teach students chemistry”?
   iii. What are faculty attitudes and beliefs about intelligence and students’ ability to learn, i.e., fixed versus growth mindset? How might the idea of fixed intelligence be perpetuated by grading practices?

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