Supplemental Material

CBE—Life Sciences Education

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Supplementary Materials: Measures

I. "Student EPIC" Instrument Measuring Student Engagement

This instrument will be administered to students to measure their level and process of engagement in class activities.

II. Motivated Strategies for Learning Questioner (MSLQ)

This instrument will be administered to students to measure their motivational beliefs and ability to use self-regulated learning.

III. Student Demographic Questions

These questions will determine basic information about respondents.

I. Student EPIC

Was this practice used in your Class?

[N] *This was **not** used in my class* {-E}
[NC] *This was used in my class but it was not clear to me* {-E}
[Y] *This was used in my class* {E}
[IF YES ONLY]
1- *I was convinced that this is good {P}*
2- *I liked doing this as a way to learn {I}*
3- *I am committed to embracing this as a way of learning* {C}
4- *I only did this because I had to* {-C}
5- *I did this because I believed it would contribute to my learning in a positive way* {C}

1. Having learning goals (i.e., what you are expected to know and be able to do) for the course that you know you are expected to master.
2. Providing feedback on course structure and content.
3. Completing supporting activities when assessments reveal a problem area.
4. Relating scientific concepts to everyday phenomena or human experiences.
5. Developing hypotheses, and then making predictions based on your hypotheses.
6. Designing and conducting experiments.
7. Reading and evaluating scientific literature, including peer-reviewed and popular media articles.
8. Presenting your scientific ideas in writing.
9. Completing in-class activities (e.g., worksheets, problem sets, case studies) in groups of two or more.
10. Providing feedback to your classmates on projects, assessments, or other activities.
11. Answering questions in class using a clicker or other polling method.
12. Considering the contributions of diverse people and perspectives in the realm of scientific discovery.
13. Working in diverse groups.
14. Applying knowledge of other subjects (e.g., mathematics, computer science, biology, chemistry, physics, or other disciplines) in this class.
15. Adjusting your thought process when solving problems or answering questions.
16. Reflecting on the effectiveness of your study habits.

II. Motivated Strategies for Learning Questionnaire (MSLQ)

Please rate each of the following statements from 1-Not at all true to 4- Completely true.

1. When I study the readings for this course, I outline the material to help me organize my thoughts.
33. During class time I often miss important points because I'm thinking of other things. (REVERSED)
34. When studying for this course, I often try to explain the material to a classmate or friend.
35. I usually study in a place where I can concentrate on my course work.
36. When reading for this course, I make up questions to help focus my reading.
38. I often find myself questioning things I hear or read in this course to decide if I find them convincing.
41. When I become confused about something I'm reading for this class, I go back and try to figure it out.
42. When I study for this course, I go through the readings and my class notes and try to find the most important ideas.
43. I make good use of my study time for this course.
44. If course readings are difficult to understand, I change the way I read the material.
45. I try to work with other students from this class to complete the course assignments.
47. When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.
49. I make simple charts, diagrams, or tables to help me organize course material.
50. When studying for this course, I often set aside time to discuss course material with a group of students from the class.
51. I treat the course material as a starting point and try to develop my own ideas about it.
52. I find it hard to stick to a study schedule. (REVERSED)
53. When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions.
54. Before I study new course material thoroughly, I often skim it to see how it is organized.
55. I ask myself questions to make sure I understand the material I have been studying in this class.
56. I try to change the way I study in order to fit the course requirements and the instructor's teaching style.
57. I often find that I have been reading for this class but don't know what it was all about. (REVERSED)
61. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.
62. I try to relate ideas in this subject to those in other courses whenever possible.
63. When I study for this course, I go over my class notes and make an outline of important concepts.
64. When reading for this class, I try to relate the material to what I already know.
65. I have a regular place set aside for studying.
66. I try to play around with ideas of my own related to what I am learning in this course.
67. When I study for this course, I write brief summaries of the main ideas from the readings and my class notes.
69. I try to understand the material in this class by making connections between the readings and the concepts from the lectures.
70. I make sure that I keep up with the weekly readings and assignments for this course.
71. Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.
73. I attend this class regularly.
76. When studying for this course I try to determine which concepts I don't understand well.
77. I often find that I don't spend very much time on this course because of other activities. (REVERSED)
78. When I study for this class, I set goals for myself in order to direct my activities in each study period.
79. If I get confused taking notes in class, I make sure I sort it out afterwards.
80. I rarely find time to review my notes or readings before an exam. (REVERSED)
81. I try to apply ideas from course readings in other class activities such as lecture and discussion.

III. Student Demographic Questions

1. **Class Status:**
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Other (please specify): _____

2. **Major(s)**? : _____
    a. I am undecided

3. **Which of the following is true for this course?**
    a. It is an elective
    b. It is part of my major credit requirement
    c. It is part of a general credit requirement

4. **I am:**
    a. Male
    b. Female
    c. I choose not to identify my sex

5. **Age:**
    a. Under 18 [discontinue if selected]
    b. 18-19
    c. 20-21
    d. 22-24
    e. 25 or above

6. **Race/Ethnicity:**
    a. African American/Black
    b. Asian/Pacific Islander
    c. Hispanic/Latino
    d. Multiracial
    e. Native American/American Indian
    f. White
    g. Not Listed (Please specify): _____
    h. I choose not to identify my race/ethnicity