Appendix 12

Evaluation Plan
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*Primary Research Method:*

A quasi experimental nonequivalent control group design with pretest and posttest will be used to compare retention, completion, and attainment rates between control students and UD PSEO class enrollees. The counterfactual will be age- and gender-matched students who were eligible to enroll in the UD courses but who elected not to participate. We will compare their retention, completion, and attainment rates with students who enroll in the UD classes.

*Secondary Research Methods:*

A quasi-experimental one-group pretest-posttest design will be used to determine if experimental students make statistically significant gains in content acquisition.

Linear regression analyses will be used to determine what variables are most predictive of student success.

Response to Intervention: The research team will develop, test, revise/improve and retest the online courses, medical simulations and food science exercises. Usability testing will involve tracking the level of remediation required for students to progress through course materials and achieve passing grades on formative and summative assessments.

*Key Outcomes:* Student test score performance; student remediation data; retention, completion, and attainment data for students and controls; prognostic indicators of certification exam score.

*Analytic strategy:* Repeated measures (RM) multivariate general linear model (GLM) tests will determine if there are significant differences in retention, completion, and attainment rates between experimental and control subjects and if students are making significant content and skill gains from pre- to post-test. Linear regression analysis will be used to determine what variables are most predictive of student success.
ASSESSMENT DETAILS

Evaluation of the teaching materials:

The online courses: Formative assessment

Beginning in January 2014, we plan to complete usability testing of the two courses with eligible online high school students.

We will give pre-tests for content knowledge in both courses. The UD faculty will collect data regarding the level of remediation required for each section of each course via student performances on embedded quizzes and presentation style associated with each section.

We will revise the course materials in response to the student usability data The course content cannot be made less rigorous so revisions will include changing presentation style to accommodate more learning preferences, different chunking of information, and others.

We will provide remediation for students who struggle with the coursework. Our goal is for 80% of the students to proceed through the courses without requiring special intervention. We are prepared to accept that 1-5% of the students may require intensive remediation and several may never be successful.

After administering posttests, we will calculate gain scores, which will be used as a way to control for different baseline levels of content knowledge between students when assessing student learning in response to an intervention. However, a final level of mastery must be met regardless of how much a student gains during the course.

The online courses: Summative assessment

We will administer pre-tests in all courses. We will continue to collect data regarding student performance, quantification of interventions required to pass tests, and the usability of the courses. We will compare the number of college credits earned and the high school graduation rates between a control group and the experimental group (students enrolled in the UD classes).

The counterfactual will be comprised of age and gender matched students who were eligible for the certificate program but who elected not to participate. We will use univariate or multivariate GLM tests to determine if students are making significant gains from pre- to post-test. We will run Repeated Measures GLM tests to determine if students are performing differently on summative assessments between classes (within subject design).
The SBME: Formative

Medical simulation has the capacity to serve as the ultimate model for responsiveness to intervention (RTI) to bridge the gap between didactic training and live patient care.

The pre-programmed remediation comes at two levels: first as a normal part of the learning process (formative) and second as a summative measure to identify the marginal student will require instructor-led remediation in order to succeed.

The simulation mannequins are programmed to provide feedback so students can repeat skills and assessments as required for skill mastery.

We plan for 80% of the students to reach a level of skill mastery by using only this pre-programmed level of remediation. If students are not able to master the skills using simulated feedback, they will be guided through an instructor-led remediation process.

It is anticipated that 10-20% of the students will require instructor-led remediation. We are prepared to accept that 1-5% of the students may require intensive remediation and several may never be successful.

The SBME and Mobile Foods Lab: Summative

We will record student performances with the simulators and determine average time required to master skills. We will monitor student progress in applying food science principles in the mobile food laboratory.

Every effort will be made to improve our teaching methods to increase learning efficiency because that will equate to more students getting to use any one mobile classroom (scalability).

We will be attentive to our successes and failures in teaching the skills so that we may maximize the skill mastery and instructional efficiency. Student data regarding the number of practice attempts required to master skills will be monitored to determine if changes in our approach are reducing the input required for a given level of student proficiency.

Online Courses and Mobile classroom experiences:

We will determine if there is an association between student performances in online classes and hands-on mobile classroom experiences. From this information, we will be able to determine the best combination of the two for maximizing student achievement. For example, if we learn that students who perform below a B level in didactic work, are not able to master hands-on skills in a timely manner, we may need to increase remediation efforts in the online courses so that more students reach that level before they are scheduled to work in the mobile classroom.
Evaluation as a mean to Predict student success:

Rigorous data collection and analyses can provide valuable information about our students. For example, as we try to learn what predicts success and failure for our students, prediction analyses of prognostic indicators of student performance can be developed and repeated as new predictors are identified and as we collect additional data.

At the end of semester1, the research team will develop a linear regression model for predicting student performance in the 2 classes based on the remediation data collected within the courses and mobile classroom experiences, previous grade performances, ethnicity, number of risk factors, years over grade level, demographics, time on task, etc.

The prediction models can be used to identify students at risk for failure so early interventions can be implemented (U.S. Dept. of Ed., Pathways to Success, 2012). As predictors for student success are identified, online faculty can help students adopt these successful strategies.

As more data are available over time, eventually the prediction equations can be used to identify students who have exceptional aptitude for certain areas of study in the health sciences so these students can be encouraged to pursue those academic and career pathways.

The current project team has experience with developing and using prediction models to help determine what prospective students are most likely to be successful in our programs. As such, students who are most likely to succeed in a program can be identified and informed of their potential for success. Online programs also collect useful student usage and performance data that are not available from face to face classes.

Data regarding student test score performance and quantification of remediation required in this second offering will be compared to that from the first offering. We will determine if our course revisions have resulted in a significant decrease in the amount of remediation required to achieve passing scores as well as a reduction in the number of students who required remediation.

By virtue of applying for the Straight A Fund, all applicants agree to participate in the overall evaluation of the Straight A Fund for the duration of the evaluation time frame. The Governing Board of the Straight A Fund reserves the right to conduct evaluation of the plan and request additional information in the form of data, surveys, interviews, focus groups and any other related data to the General Assembly, Governor and other interested parties for an overall evaluation of the Straight A Fund.