More Emphasis Should Be Placed on Student Attitude When Evaluating the College Experience as this Affects Student’s Educational Performance and Future Career

Incorporating Attitudinal Questions to Assess the Undergraduate Experience at Rutgers University

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Summary:
Many colleges throughout the nation consider the experience of its undergraduates in classes, research, residence halls, dining, and community involvement. It seems that the standard method to collect data from the students is to have them complete surveys. It is the most efficient way to systematically collect information, especially with the size of some schools. It is believed that when evaluating the college experience, more emphasis should be placed on student attitudes. It is proposed that vetted attitudinal surveys be used to formulate survey items emphasizing attitude, and that these items be incorporated into the SERU survey at Rutgers University. Officials at Rutgers University will be contacted proposing this change.

Video Link: https://www.youtube.com/watch?v=bUGbZ9O2cf4&feature=youtu.be

The Significance in Measuring Attitude

Attitude and learning
One important question that has come up is whether or not a person’s attitude toward something can hinder learning. For example, a student that is taking part in a certain aspect of the college experience like a course, research program, a career exploration seminar, etc. If the student has a negative attitude towards whatever this student is participating in, will this hinder the student’s ability to learn?

Attitude towards Distance Education
A study by Gee, D.B. in 1990 was conducted that explored impact of student’s instructional settings to the student’s performance in the class. The study was conducted in a time where distance education was becoming more widely used. As the name implies, distance education refers to the type of teaching done in an instructional setting where the student and teacher are not physically present at a classroom together. The study found that if a student did not prefer the type of instruction they were subjected to, they did not learn as much. The students who did not learn as much as a result did not do as well as students who learned more by being in their preferred instructional setting [1]. In 1993 Smith and McNelis did a study very similar to the previous [2]. Also similar to the Gee study, this study found that students with negative feelings towards distance education got lower grades as a result [2].
The last of the studies to be discussed regarding attitude toward distance education is a study done by Sankaran et al. in 2000 [3]. This study looked at web instruction as distance education rather than video instruction on television in the two previous cited studies. Sankaran and her colleagues examined the “Effect of student attitude to course format on learning performance” [3]. The course formats used were either web-based instruction, or in-class instruction. They assessed learning performance according to final exam scores and found that students who scored higher preferred the instructional method that they were placed in. Students who preferred online teaching scored higher if they were enrolled in the online format of the class, and scored lower if they were enrolled in the in-class format. Similarly with the students who preferred in-class instruction, they scored higher in the in-class format than in the online format. The Attitude to Web subscale used in the study [3] contained 13 items that described a student’s preference to a website format, preference for independent work rather than in class collaboration, access and willingness to use technology, internet skills, and strength in the belief in effectiveness of web-based education. All these items together determined a student’s attitude regarding web-based education. The items on the survey were statements about the teaching format of the course that the student would read and then reply whether they agreed or disagreed. Sankaran et al. used an agreement scale of 1 to 5; where 1 is strongly disagree, and 5 is strongly agree. The survey had statements such as “Web-based education is a more efficient and time saving way of getting a degree”, and “More courses at the college should be offered as a web course” [3]. If students feel that web-based education is more efficient, they prefer it to in class education, and therefore have a more positive attitude towards it. It is clear from common sense alone that attitude correlates to performance, not only in a college class, but also in any regular activity. Furthermore, there is significant scientific evidence that shows that this is true; attitude indeed does lead to better performance. In this case, the performance is academic performance in a college course.

**Attitude toward SMET Education**

A paper by Springer et al. in 1999 conducts a meta-analysis to combine the research done on undergraduate science, mathematics, engineering, and technology (SMET) education [4]. A meta-analysis is a "quantitative statistical analysis of several but similar experiments or studies in order to test the pooled data for statistical significance" [14]. More specifically, the study examined the effects of collaborative learning on achievement, persistence, and attitudes. The study had various criteria for including a research paper in the meta-analysis. Springer et al. included 39 research papers that fit the criteria for inclusion. Their analysis found that small group (collaborative) learning had a statistically significant positive effect on achievement, persistence, and attitudes of undergraduates in SMET education [4]. Students working in groups showed more achievement than students not working in groups. Students working in groups also had a higher amount of persistence than students not working in groups, and finally students in groups showed better attitudes than students not in collaborative learning. These three findings are a result of many independent research papers by different researchers. The finding of this meta-analysis implies that students’ achievement, persistence, and attitude are very much related. For example, high achievement in not only a result of positive attitude, but positive attitude is also a result of high achievement. The implications of this study are very significant in showing the importance of attitude, as well as the importance of measuring it to further understand students’ experiences in order to improve them as much as possible.
Attitude in Learning a Subject

Finally, a study by Gal and Ginsburg in 1994 evaluated the role of beliefs and attitudes in learning statistics through a survey. Gal and Ginsburg state that a statistics class should teach students statistics, without stopping them from pursuing further education in statistics [5]. A student should leave the class with positive attitude. They also point out that a statistics class should understand how important statistics would be in their professional careers. If students do not have positive attitudes towards statistics classes, and if they think statistics is irrelevant, then students will not want to take another statistics class. The study found that "many students are likely to have trouble with statistics due to non-cognitive factors, such as negative attitudes or beliefs towards statistics” [5]. This finding provides more insight into the student atmosphere in general and how performance can be affected by it.

Attitude in Career Goals

Goal setting is only the first step in accomplishing the things that we want to. Unfortunately, many of us cannot seem to get past this step. We tend to set goals for ourselves and forget about them by the end of the day. How much of this is related to attitude? A study by Ames et al. assessed students in a class setting goals, along with their motivation and attitudes towards completing those goals [6]. Students were selected at random to assess their perceptions, attitudes, and learning strategies among other things. To do this, various items in their survey began with "In this class..."[6], followed by a statement. An example of the items in their survey is "When studying ______(class subject), I try to decide what I'm supposed to learn rather than just read over the material" [6]. Similar to many other surveys regarding attitude, the students were given a 1 to 5 scale ranging from strongly disagree to strongly agree. The study found that the students who used more effective strategies to accomplish their goals, and preferred more challenging tasks happened to have a more positive attitude toward the class [6]. The students who focused on their lack of abilities attributed failure to their lack of ability, and thereby having a negative attitude towards the class. It is very important that learning experiences in college, such as classes and research programs, induce positive attitudes. This way, the student is more willing to perform and complete his or her goals rather than focus on lack of ability, which itself leads to failure of goal achievement. Career goals are particularly important in our effort to improve the undergraduate experience. Career goals are the reason why the undergraduate is in college in the first place. An experience that takes away from a student's positive attitude may also hinder motivation for completing career goals.

Emotion in Learning

Emotion is another thing that most of us already know can inhibit our ability to learn. Mostly, it inhibits our ability to want to learn, because with negative emotions, our attention is diminished. "Emotionally stressful environments are counterproductive because they inhibit the ability to learn" [7]. Sylwester, Professor of Education in the University of Oregon, states that emotion causes heightened attention, in turn increasing ability to learn and retain information. If a student is studying for an exam and feels stressed as a result, the anxiety from the exam actually makes it more difficult for the student to study because he or she cannot focus for a long enough time to get through the course material. The student's attention is reduced as a result of stress, which ends up countering the students’ efforts to study in the first place. If stress can be lowered, then emotion can be improved. An improvement in emotion, as implied by Sylwester, can work to enhance learning and therefore overall performance in a course. As discussed earlier,
overall achievement and attitude go hand in hand. Therefore it should be of great interest for schools to improve emotion in the educational atmosphere.

A study by Pritchard and Wilson aimed at using emotion and social factors to predict success of a student found that both emotion and social factors were related to student performance and retention [8]. This was the case regardless of traditional demographics such as gender, age, high school GPA, SAT/ACT scores, classification, and parents' educational background [8]. This implies that there is an unknown variable affecting these students. The unknown variable that is the link between the students' performances in college must be attitude. The high levels of positive emotion and social factors are creating a better attitude in the classroom, allowing more learning and retention.

Surveys at Rutgers University

There are many surveys at Rutgers. Of these surveys, the most commonly known is the Student Instructional Rating Survey (SIRS). "It is a university wide survey of students for their comments about their experiences in the classroom" [9]. Individual instructors, departments, schools, and the university, use the results for assessment and teaching improvement. The survey takes five to seven minutes to complete, and is done at the end of the semester online. One question asks if the student had prior interest in the subject matter of the course. This may seem to be directed at the students' attitudes, but it is directed towards assessing whether the instructor could effectively generate interest in the subject matter [9].

Student Experience in the Research University survey (SERU)

The Student Experience in the Research University survey (SERU) is a project that is a collaboration between many institutions in the Association of American Universities [10], including Rutgers University in New Brunswick, and Universities of Florida, Illinois, Indiana, Iowa, Michigan, Minnesota, North Carolina, Oregon, Pittsburgh, North Carolina, Southern California, Texas, and Virginia, plus Texas A&M and Purdue Universities [10].

The purpose of the SERU survey project is to “develop new data sources and policy relevant analysis to help broaden our understanding of the undergraduate experience and to promote a culture of institutional self-improvement” [10]. It does this by covering topics with a university focus instead of a focus on any one aspect of the undergraduate experience. Topics such as academic engagement, time use, academic and personal development, overall satisfaction, and evaluation of the educational experience. The Rutgers Office of Institutional Research and Academic Planning has released an analysis on the data titled Possible Insights on Why Students Leave Rutgers [10] using the data from SERU surveys from the start of the SERU project at Rutgers in 2009, to 2012. The students who participated in the SERU survey and then did not complete their education at Rutgers University in New Brunswick were compared to students who have completed their degrees at the school. Figures 1-3 below show reported levels of satisfaction for students who stayed at Rutgers versus those who left Rutgers.
As the above figure shows, there is a difference between the two groups when it comes to satisfaction. In all of the three terms for satisfaction used by the SERU survey, students who stayed at Rutgers were more satisfied than the students that left. This is an obvious conclusion, and asking these questions on the SERU survey may seem redundant. However, when attempting to improve the experience, it is important to understand what part of the undergraduate experience is dissatisfying. Other data from the survey that was used to explain why students might be leaving the university includes: time spent on academics, frequency of being unprepared for class and skipping class, and analytical and critical thinking ability gains.

It quickly becomes clear that SERU survey does not ask about students' attitudes or feelings regarding the student experience. Also, in the years for which data is available, there does not seem to be any improvement in undergraduate perceptions of their experiences at Rutgers. We have seen from the above-mentioned studies that attitudes and emotions play an important role in learning and career goals. Learning is the reason for going to school, and we learn to prepare ourselves for the careers we are pursuing. By incorporating survey questions that emphasize attitude and emotion to standard surveys at Rutgers, we can gain some insight as to how they are related to educational performance and future career possibilities. From this insight, changes that the university feels are necessary can be made to finally show more positive experiences of undergraduates.

**Measuring attitude**

The ultimate goal of this project is to formulate questions that can be added to the Student Experience in the Research University survey (SERU) at Rutgers University. These questions will help with the enhancement of the college experience by allowing Rutgers to understand
more about the students they are accommodating. An attitudinal survey, also called an affective survey, is a survey that can provide information of someone's perceptions of an experience while providing information about attitude toward the experience, and learning from the experience [12]. Attitudinal surveys can be used at different times throughout the students’ undergraduate experiences. This way, one can compare attitudes and emotions of students before, during, and near the end of their experiences to track improvement or declination. Also, if attitudinal questions are incorporated into the SERU survey, the attitudes of all students who take the surveys can analyzed alongside other data retrieved in the SERU survey such as academic engagement, time use, academic and personal development, overall satisfaction, and evaluation of the educational experience [10].

Positive attitude cannot only promote learning and motivation, but its measurement itself may change the students' views. Students who see their schools taking more interest in their thoughts, emotions, and attitudes, will feel more positive about their schools. If Rutgers shows that it is determined to understand more of students’ experiences through the incorporation of attitudinal questions, students will feel more involved in the University’s decisions, boosting morale. Attitudinal surveys, when completed, can cause a student to think about learning and motivation, causing better self-awareness of learning style and attitudes [12]. The benefits from adding attitudinal survey type questions to current Rutgers surveys are vast.

Community Action: Proposing to Incorporate Attitudinal Questions into the SERU Survey

Attitudinal Survey Questions

There are not any single attitudinal surveys that would be a perfect match for the SERU survey. A list of survey questions will be compiled using a collection of vetted attitudinal surveys in the literature, and the SERU survey at Rutgers as a reference for items that Rutgers is interested in learning more about, such as academic engagement, time use, academic and personal development, overall satisfaction, and evaluation of the educational experience. A set of attitudinal survey items below can be edited slightly to incorporate them into the SERU survey. Officials at Rutgers University will be contacted, and these changes will be proposed.

A paper by Lewis and Seymour in 1997 describes attitudinal surveys and provides sample survey items in a laboratory class setting as an example [12]. Similar to the surveys mentioned in the previous sections, these items include a general statement such as “I learn well by…”[12], followed by statements such as “doing homework assignments,” or “using diagrams and other visual media” [12]. The survey items are found in the appendix A. It is believed that all items shown can be used to develop items for the SERU, as they provide information about student preferences and learning styles, which in turn allows changes to be made to better meet the students’ preferences, ultimately encouraging learning through better attitude. Each item in this sample would be rated from 1-5, with 1 being strongly disagree and 5 being strongly agree.

Another attitudinal survey that is vetted, where the published paper has been cited numerous times in the literature is a survey by Rogelberg et al. in 2000. This survey emphasized attitudes of employees in the workplace. The survey asked employees to respond describing whether the words or phrases describe their feelings of the situation. There were many items on the survey, but a sample item from each category is provided. These have been edited into full
sentences since the paper lists them as words or phrases only. Similar to the Lewis and Seymour paper, this survey used the 1-5 scale, as well as a yes or no system for other items. Employees answered yes if they agreed and no if they did not agree. If they were not sure, they answered “?”. Item 1 can be used as is, Item 4 can be changed to ask about faculty, Item 5 can be changed to reflect school instead of a job, Item 6 can be changed to ask if the student intends to leave Rutgers, and finally in items 7 and 8, “organization” can be changed to “university”.

A letter will be sent to Tina Gryvenkov, who is the Senior Research Project Manager in the Rutgers Office of Institutional Research and Academic Planning. This is the office in charge of overseeing the SERU program at Rutgers. The letter will explain the significant of attitude in learning and in career goals, then will list several survey items that could potentially be added into the survey.

**Appendix A-** Attitudinal survey by Lewis and Seymour in 1997
1. Often in lab I didn’t understand the concept behind the lab experiment.
2. I like labs where I get to help design an experiment to answer a question.
3. This course provided opportunities for me to help design experiments and answer a question
4. It was clear how the lab experiments fit into this course.
5. Doing labs in this class was like following a recipe in a cookbook.
6. The lab manual for this course was well-written (easy to understand)

*I learn well by:*
7. Doing homework assignments
8. Using diagrams and other visual media.
10. Reading a (good) textbook
11. Working with my lab partner
12. Getting good help/tutorial aid
13. Doing hands on activities
14. Listening to lecture
15. Completing lab notebooks or lab reports
16. Reading and re-reading materials

*I know I understand when:*
17. I can work problems in the book
18. I can apply ideas to new situations
19. I get a good grade on an exam.
20. I can explain the ideas to someone else.
21. I can see how concepts relate to one another.

**Appendix B**
1. My work is fascinating
2. I am well paid
3. I have a good chance of being promoted
4. My supervision is intelligent
5. My job in general is enjoyable
6. I intend to quit my job.
7. This organization has a great deal of personal meaning to me.
8. Overall, my organization takes the data collected from employee opinion/attitude surveys seriously.

References
“Rutgers survey should evaluate student attitudes”

Since 2009, Rutgers has been issuing the Survey of Student Experiences at the Research University (SERU). The university has joined the Universities of California, Minnesota, Michigan, Pittsburgh, Oregon, Southern California, Virginia, Iowa, Indiana, and Washington as well as Texas A&M and Purdue University in a combined effort to improve the educational experiences of students. The survey allows students to provide their opinions on what they are or are not satisfied with. The SERU, as well as other surveys, do however lack an emphasis on attitude. It is believed that simply asking about satisfaction of various aspects of the student experience is not enough, and that more emphasis on attitude should be placed when evaluating the college experience.

Students are attending Rutgers University to acquire an education to prepare them for careers. Attitude has been found to have significant effects on learning, and on career choices as a result. Students with negative attitudes toward a class have significantly lower performance than students with positive attitudes. This attitude can be caused by preference of teaching styles of professors, class structure, difficulty, and even the class subject. A student’s lack of performance in a class then is not simply a result of lack of effort, there is much more to it. Putting an emphasis on evaluating attitude provides a more in-depth explanation for educational performance. This emphasis on attitude and its evaluation can shed light on some new ways for the University to improve students’ experiences, by fixing the root of the issue. One significant cause of negative attitude toward any experience is emotion. Experiencing negative emotions like stress and frustration during a college class or any other activity will inherently force the student not to want to participate in the stressing activity, therefore causing a negative attitude. A student who faces much stress and frustration in a class one week will have a negative attitude about the class the next week, and perhaps the student may even skip the class as a result. We naturally want to avoid the things that bring stress into our lives, which is why we cannot simply attribute poor performance to lack of effort. We must find the specific reasons behind this lack of effort and fix them one by one.

It seems to me that many colleges use the possibility of better careers to interest prospective students in choosing their college as opposed to others. Statistics for example have been used to show how many students found jobs in their preferred careers after graduation, and how quickly they did so. So it is clear that career choice is important to think about throughout college. It has been found that students who used more effective strategies to accomplish their goals in a class, and preferred more challenging tasks, happened to have more positive attitudes toward the class. Students who were fixated on their lack of ability attributed failure to their lack of ability, as a result of negative attitude. This can ultimately affect not only attitude toward a specific class, but also attitude toward the college as a whole, resulting in poor overall performance and low GPA, which ultimately lowers the likelihood of the student achieving the goals he or she set out to achieve by enrolling in college to begin with.

Attitudinal surveys are those which place an emphasis on attitude when making an evaluation, and the proposed solution to this problem is to incorporate attitude related questions on the SERU survey. These questions will help with the enhancement of the college experience.
and improving career options, by allowing Rutgers to understand more about the students they are accommodating. The SERU survey is dedicated to retrieving data on academic engagement, time use, academic and personal development, overall satisfaction, and evaluation of the educational experience. Evaluating this data alongside attitude will significantly increase students’ overall experiences at the University.

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