Assessing Sustainability Literacy

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ABSTRACT

In this study, the test was administered to three separate classes: two Environmental Economics classes offered during the spring semester of 2015 and 2016 and one Seminar course in the fall of 2015. Environmental Economics is a 300 level upper-class course and the test administration to Environmental Economics students occurred in the spring of 2016 when 45 usable data points were recorded (94% of the class). The average for each test domain as well as an overall average score was calculated for each course. These scores were analyzed using a comparison of the means T-Test (one tail) to determine if any of the results were statistically significant. The first administration of the version 1.0 was given in the spring of 2015 to Environmental Economics class. A total of 41 usable data points were collected (91% in each class). A second administration for Environmental Economics students occurred in the spring of 2016 when 45 usable data points were recorded (94% of the class). To gauge the effects in a non-economics class, another administration occurred in a sustainability themed Freshman Seminar in the fall of 2015. This class yielded 13 usable data points (93% of the class).

METHODS

RESULTS

DISCUSSION

For the 2015 Environmental Economics (2015 EE) class, the post-test scores were higher than the pre-test score in 8 of the 10 domains with significant increases in 6 of these domains as well as in the overall total score. See Figure 2.

In the 2016 Environmental Economics (2016 EE) course, post-test scores improved in 8 of the 10 domains as well but significance was only achieved in one domain, the Inter/Supra National relations area. See Figure 2.

The Freshman Seminar (2015 FS) saw improvement in post-test scores in 8 of the 10 domains with statistical significance in the Environmental Trends/Sustainable Development topic area. See Figure 3.

When comparing the results between the Environmental Economics courses and the Freshman Seminar class, the Economic Trends had higher pre-test and post-test averages in every category.

The increases between pre and post-test scores across the courses was mixed. The 2015 EE course saw a greater increase in 7 of the domains than the 2015 FS with the exceptions being Environmental Trends, Social Justice and Human Rights. Overall, the 2016 EE course saw larger and much more significant gains than 2015 FS, improving by 7 points, which was statistically significant. The 2016 EE course, did not improve as much as the 2015 EE in the domains where 2015 FS improved by 4 points where the 2016 FS improved by 5. The 2016 EE course saw larger gains than the Freshmen in 4 of the domains: Inter/Supra, Social Trends, Economic Trends and Human Rights.

The courses showed the largest improvements in the following domains by rank: (1) indicates statistically significant) 2015 EE: Founding Principles*, Environmental Social Responsibility*, Environmental Trends* 2016 EE: Inter/Supra*, Founding Principles, Social Trends 2015 FS: Environmental Trends*, Founding Principles, Local issues This increase in test scores may have an impact on the future trends of sustainability to a larger degree than the other domains and the two courses showed greater improvement in environmental trends.

The following domains saw a decrease or no gain by rank: 2015 EE: Organizational, Human Rights 2016 EE: Organizational, Environmental Social Responsibility 2015 FS: Founding Principles, Environmental Social Responsibility, Organizational, Governmental

This illustrates a lack of knowledge and instruction in the organizational government and sustainable development domains. In order to compare to other institutions, the Sustainability Literacy Test provided the international average of 54% correct for the total score. Only the 2016 EE post-test score of 86 topped this average with the 2015 EE post test score achieving 51% and 2015 FS reaching 43% respectively.

ACKNOWLEDGMENTS/CONTACT

Measuring Sustainability Literacy: The Use of the Sustainability Literacy Test to Assess Student Learning in Environmental Economics and Freshman Seminar Courses

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An international tool called the Sustainability Literacy Test was developed in 2014 with the goal of providing an instrument for academics to assess student knowledge and skills on current social, economic and environmental challenges. This assessment was administered to a sustainability-themed Freshman Seminar and two Environmental Economics courses at the University at Albany between January 2015 and May 2016. The intention of the Sustainability Literacy test was improved as a result of the course and if there were differences in growth between the economic and freshman seminar courses. It was assumed that the Sustainability Literacy Test served as a valid measurement of sustainability literacy and provided a means to compare results across campuses. The first administration of the test to an Environmental Economics class yielded statistically significant increases in scores. Subsequent administrations to a Freshman Seminar course and second Environmental Economics class did not yield similar results.

OBJECTIVES

1. To use the Sustainability Literacy test in these courses was to answer the following questions:

   1. Did students’ overall sustainability literacy improve as a result of the course and was that improvement statistically significant?
   2. If there was an improvement, what areas did they improve the most?
   3. Are there areas where scores did not improve?
   4. Is there a difference between the gains (if any) made by the Environmental Economics students vs. the Freshman Seminar class?
   5. How did the University at Albany students compare to other students taking the exam?

ASSUMPTIONS

1. The Sustainability Literacy Test is a valid measurement of sustainability literacy.

2. The Sustainability Literacy Test allows for comparison of campus results to other campuses using this assessment tool.

3. The Environmental Economics class will see higher gains, especially in the economic trend domain, than the Freshman Seminar course.

4. The Environmental Economics points will have higher baseline knowledge about sustainability than the Freshman Seminar students, evidenced by higher pre-test scores.

INTRODUCTION

The Sustainability Literacy Test is a tool developed by a multi-organizational and international coalition including higher education institutions, NGO’s and businesses. It is intended to gauge student understanding of key sustainable development concepts and allow for universal applicability across institutions and nations. The test has had two versions. The students in this study were all administered the version 2.0 of the test which was comprised of 50 randomly selected multiple choice questions; 30 of the questions focus on the international level authored by an international expert committee and the remaining 20 focus on local/regional actions that are developed by regional experts. The 10 topic domains include: Inter/Supra National Issues, Local Issues, Founding Principles, Environmental Trends/Sustainable Development, Social Trends, Economic Trends, Organizational Government, Human Rights, Environmental Social Responsibility, and Fair Costs and Labor. The Sustainability Literacy test version 2.0 was launched in October of 2014 and was implemented in over 200 universities in 34 countries. One advantage gained by using the Sustainability literacy test is that a standardized result can be compared across our campuses results to other campuses. This will allow us to benchmark our students in comparison to other universities.

Further information about the Sustainability Literacy Test can be found at:

www.suflitest.org

The data was inconclusive as to whether the Environmental Economics course fostered an increase in sustainability literacy. The 2015 class results show strong improvement but the results were not replicated in 2016. This could be due to the freshman seminar students being in a General Education course, however, there was one change in the content of the two courses which may have affected the results. The results of this study are not significant but they did not improve and may have an impact on their knowledge in this class. Since there is only one administration of the Freshman Seminar class test version 1.0 and that pool yielded a small number of usable data points (13), it would be difficult to characterize the results as robust indicators, regardless of their statistical significance. The hypothesis that students in the Environmental Economics courses would have a higher baseline knowledge of sustainability was evidenced in our data set. Possible explanations for this could be that upper-classmen have developed better study methods as well as having been exposed to a broader range of academic courses and experiences. However, the data did not support the hypothesis that Economics students showed higher gains. This however they did have a greater rate than the Freshman students in the Economic Trend domain. The results further indicated that the courses affected the student’s knowledge of the foundations of sustainability but the results for the foundations of sustainability to a larger degree than the other domains and the two courses showed greater improvement in environmental trends.

Future Research

A new version of the Sustainability Literacy Test (version 2.0) was released in mid fall 2016. Implementation using this version has already begun with a spring 2017 Environmental Economics course. A new longitudinal data collection can begin with the Freshman Seminar course this fall to garner a larger pool of data.

Version 2.0 of the Sustainability Literacy tool provides data on the average scores on both the national and international level and for all of the domains instead of just the overall total. This will allow for deeper analysis of local results to national and international outcomes. The sections of the quiz have also been altered to the following domains: Core Knowledge, Sustainable Human and Ecosystems, Global and Local Human Constructed Systems, Transition towards Sustainability, Individual and Systemic Change. Currently the test has been given in 605 universities and companies worldwide.

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