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Comprehensive Classroom Experiments for Microeconomics

Brief Summary of the Project

The goal of this project is to create a series of classroom experiments for all major topics covered in our Principles of Economics courses (ECON 2106) that will stimulate interest from our students and enhance their learning. This project would cover critical topics such as comparative advantage, supply and demand, elasticity, production costs to the firm, profit maximization, perfect competition, monopoly, monopolistic competition, and oligopoly. In a sense, this initiative will be somewhat similar to a flipped classroom in that a portion of the class meeting time previously allocated to lecture will be reallocated to an engagement activity. However, there are a few significant differences. First, each of these classroom experiments is intended to be conducted before the associated topic is covered in class. In this way, the experiments will serve as introductions to fundamental topics that are likely to increase students' interest and engagement, improving their comprehension. Second, these classroom experiments will provide a different type of information than the problems and exercises typically associated with a flipped classroom. These experiments would add high-impact teaching activities to our economics offerings. The potential benefits are substantial and include increased communication between students working in groups during these experiments and improved understanding and retention of central topics.

The specific classroom experiments would include detailed instructions for students so that they understand exactly how the experiments function. Such instructions also could be useful to other full-time and part-time instructors at UNG who teach Principles of Microeconomics. It is also relevant to note that this project will focus on experiments tied to fundamental elements of the coursework. While there are classroom experiments for economics that do exist, many of those experiments are focused on specialized topics within economics (Balkenborg et al., 2011; Rivas, 2011; Sherstyuk et. al, 2016; Van Long, 2010).). A narrow focus creates an issue in that it is not likely that all instructors will cover such topics in their principles classes. In addition, a specialized approach would not promote student success across the entire field of microeconomics and other coursework based on economics. As such, the focus of this project will be developing a broad set of activities that are tied to the central topics listed in the paragraph above.

This project will create detailed instructions for each experiment that instructors can use to relay the information to their students. The experiments will then be conducted using class time, but the cost in terms of class time used will be relatively minimal given the type of focused experiments that are the goal of this project. While computer-assisted experiments could be an option for some settings, those types of experiments typically are most useful for very large sections of economics classes (###reference###). Since the class sizes for on-campus sections of ECON 2106 in SP23 and FA23 ranged from 21 students to 65 students, spoken directions and

reinforcing instructions included as hard copies, classroom projections, or documents in D2L is the most practical method of delivery.

The classroom experiments used in this project will address two of the main learning objectives included in all sections of ECON 2106. Those objectives are that students will apply theory including but not limited to supply and demand, elasticity, production costs, market structures, and resource market and that students will examine the role of firms and government in undertaking actions that increase or decrease economic well-being. Furthermore, these classroom experiments will enhance the MCCB mission to foster curiosity, creativity, and innovation. In particular, this project will help the College meet Objective 1.1.1 within the MCCB Strategic Plan, which is to "Design and deliver engaged, innovative, and experiential learning opportunities that cultivate interdisciplinary business acumen and prepare students for impactful careers." This project also will help the University meet objectives that are key elements of UNG's 2022-2027 Strategic Plan. Those items are Objective 1.3 "Enhance faculty development to expand implementation and documentation of curricular high-impact educational practices that contribute to UNG's distinctive student experience" and Objective 2.6 "Create experiences that promote a sense of belonging and foster engagement within each of UNG's campuses and across the university."

Discussion of the Expected Impact on Student Success

This project will impact student success in numerous ways. The most significant benefit is likely to stimulate overall engagement. Students are often unmotivated by standard classroom presentations, particularly in Economics. Classroom experiments provide a means of active learning in which students have a different opportunity to obtain and comprehend critical concepts, and, by using classroom experiments, students take more ownership of the material concepts (Emerson & Hazlett, 2012), seeing themselves as critical parts of the learning process as opposed indentured participants. The improved comprehension is likely to result in improved performance on exams. The level of activity required for these experiments as well as the stimulation associated with them is likely to result in improved attendance at class meetings (Lin, 2020). Most importantly, these areas of impact likely will lead to improved retention, which is a tremendous benefit for both the students and for the College/University.

Discussion of Expected Benefits for Other Faculty, the Department, or MCCB

This project creates the potential for significant benefits to other faculty in the Department of Economics & Finance. The most notable of which is that other faculty can use some or all these experiments in their own sections of ECON 2106. At present, we have a total of nine full-time and part-time faculty who teach ECON 2106 at UNG. Specific examples from these experiments could be valuable to both experienced instructors and instructors who are new to UNG.

For various reasons, it is likely that other faculty members will consider adopting these activities within their classes. Firstly, there is a relatively limited cost of doing so. Unlike various online activity platforms, there is no dollar cost to the instructor or the student for implementing these activities. The time cost is limited given that I will have piloted these activities to determine where potential pitfalls might occur, and I will focus on streamlined activities and instructions

that result in an efficient use of time for the instructor and the students. Secondly, the likelihood of improved comprehension and improved grades should lead to increased results regarding teaching as indicated by student evaluations. The potential for improvement in student evaluations is likely to provide motivation for faculty to consider at least some of the experiments associated with this project.

Another expected benefit of this project for other faculty is co-authorship. In addition to benefits to our students, this project has the potential to create content related to the scholarship of teaching and learning. The natural progression of this project would be to draft a manuscript regarding the effectiveness of these classroom experiments and the value to instructors and students at other institutions. It would be very reasonable for other faculty who adopt these activities for their classes and for faculty who offer input on the process to be co-authors on future research. Potential outlets for such research include but are not limited to the Journal of Economic Education, Active Learning in Higher Education, the Journal of Economics & Finance Education, and the Journal of Education for Business.

Discussion of the Expected Societal Impact of the Project

This project will further various objectives within the MCCB Strategic Plan, focusing on the goal of fostering curiosity, creativity, and innovation. In addition to yielding results aligned with Objective 1.1.1 of the MCCB Strategic Plan regarding experiential learning, this project will also create a new opportunity for the MCCB community to contribute to the improvement of society, which is Objective 3.2.2 of the Plan. As mentioned above, this project will yield activities and scholarship related to those activities that will be shared both with faculty within UNG and, via scholarly publication, with faculty at other institutions.

It is also likely that the results of this project can be used to benefit Economics instructors at the high school level. Through our existing relationships with organizations such as the Georgia Council on Economic Education and the Junior Economic Club of Atlanta, we easily can disseminate information regarding these experiments to teachers in the immediate area and across the state. In addition, there is the potential for a broader societal impact. The practical classroom experiments that will be established by this project could be used as the basis for a repository of activities for both microeconomics and macroeconomics, with the listings made available on the UNG website. In the past, such listings were available through sites such as Classroom Experinomics (n.d.) and EconPort (n.d.). However, these sites ended their activities in 2003 and 2006, respectively. As such, this project has the potential to provide information that would fill the existing void.

Explanation of the Current Progress on the Project

The project is very much in a preliminary phase. At this point, I have begun to discuss potential activities with colleagues at UNG and other institutions. I have also begun an initial literature review that includes the references contained in this document.

Supporting Documentation

While the term “dismal science” was originally used to describe Economics because of the negative outcomes that the study often suggests, more recently that negative description has been used to describe the methods in which the discipline is taught. Movement away from traditional “chalk and talk” delivery can be beneficial to instruction for any discipline. It is likely that one field of instruction with the greatest need for movement to other teaching methods is Economics.

The first attempt to employ an active experiment for economic instruction was Chamberlin (1948) which introduced an imperfect market simulation designed to be somewhat similar to laboratory experiments conducted in natural sciences. While classroom experiments have increased in popularity over the years, they are utilized by only a small percentage of Economics instructors and typically only for introductory topics (Guest, 2015). It is likely that many instructors consider the additional time cost associated with preparing and developing such activities as too large, making these activities not worth the effort (Goffe & Kauper, 2014).

The limited usage of classroom experiments in Economics is disconcerting given the fact that they have been shown to increase student learning and engagement (Atwood et al., 2023) and improve students’ knowledge of economic concepts (Grol et al., 2017). Students who participate in active experiments have positive learning experiences related to the topics being covered (Emerson & English, 2016). While the initial benefits of such activities are relevant, it is also pertinent to note that the higher levels of engagement associated with these experiments also improve long-term retention of the material (Emerson & Hazlett, 2012). In addition, students who participate in classroom experiments are more likely to perform well on related exam questions (Raymond & Wong, 2018). The increased entertainment associated with these activities also increases students' motivation to learn and classroom attendance (Lin, 2020).

Given the significant and diverse benefits associated with classroom experiments, it becomes necessary to determine the type of experiments to be implemented. The two main options are computerized experiments and so-called “paper” experiments, which may be delivered as hard copies on paper or electronic copies via classroom monitors or D2L. While there are various computerized activities available through VeconLab, EconPort, Aplia, Feele, and Moblab, these activities imply a monetary cost to the student, the instructor, or the institution. In addition, computerized activities can be less efficient because additional rounds of activity may be delayed by the actions of the student who is slowest to act or does not take action at all (Goffe & Kauper, 2014). In addition, students are likely to have more student-to-student interaction associated with “paper” activities (Carter & Emerson, 2012), which can lead to the creation of study groups and informal student cohorts associated with other activities on or off campus. Given these benefits and the size of ECON 2106 classes, “paper” experiments are the more prudent option at UNG.

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