

## **A Blended Learning approach to the teaching of Sports Economics**

**Richard Vogel\***

### **ABSTRACT**

Teaching sports economics to undergraduates presents a number of challenges for any instructor. Most students coming into the course are more interested in the “sports” component of the title than the “economics” component. This paper examines some of these issues and extends previous research on performance outcomes based upon a major redesign of the course in the fall of 2011. This redesign focused primarily upon the face to face environment that more fully integrated the online course management system. Analysis using a censored Tobit regression model with grade outcomes as the dependent variable, does not find that course enrollment in the fully blended course significantly impacted students grades. Student evaluations conducted during the semester reported a higher level of satisfaction with the redesigned course than previous incarnations of the class.

### **1. INTRODUCTION**

The sports economics course presents a number of challenges to any instructor. In the absence of a major in Sport Management, the course is generally not a required course for any particular curriculum, and usually attracts students with a wide and diverse background in economics. Most students coming into the course are really hoping to talk mostly about sports as opposed to fully discussing the economic modeling and analysis of sports markets. So despite the word economics in the title, students are initially resistant to the introduction of economic methodologies into what for many is one of their favorite past-times. This paper examines some of the issues in teaching the course to students and extends my previous analysis (see Vogel 2011) of performance outcomes based upon a major redesign of the course in the fall of 2011.

This redesign focused primarily upon the face to face environment that more fully integrated the online course management system, thus allowing almost 100 percent of the available class time to be used for the delivery of course content and active learning exercise. All written assignments and course exams were moved to the online environment. Additionally, the textbook was changed from a fully comprehensive and costly textbook to an inexpensive and more focused textbook that was supplemented with additional articles that were embedded in the course management system. This discussion focuses and assesses differences in student performance and outcomes from previous learning environments.

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\* SUNY Farmingdale, School of Business – Email: Richard.vogel@farmingdale.edu

The sports economics course has been taught at Farmingdale for close to ten years, beginning first as a combined Sports and Entertainment economics course, which was split several years later into two separate courses. Initially the course was developed as a service elective for students in all disciplines at a time before the campus had a major in economics which was then adopted by the Business Management program as an optional course in their minor in Sport Management. The minor eventually grew into a concentration, at which point the course became a required core course. Two years ago, the Sport Management major was approved, and the sports economics course is now a requirement for this program. With enrollments in the sport management program growing (they are now approximately 120) evaluating the success the sports economics course under various delivery methods is of increasing importance.

Preliminary analysis of student grade outcomes from the redesigned course, are not significantly different from previous courses. Traditional face to face courses across the last 8 years are fairly similar with a class average grade ranging from 67 to 73 (with the exception of one course with a class average of 56), a standard deviation of approximately 34 points, and a median grade of 84. Hybrid and online course averages are between 67 and 77, with a standard deviation of close to 25 points, and a median grade in the low 80s. That said, there were some significant differences in classroom dynamics between the redesigned course and previous face to face and hybrid courses, suggesting that the redesign was successful. More students purchased the cheaper textbook – and thus, more students were familiar with the course readings and materials in each class. As a consequence, classroom discussion by students and participation in in-class group exercises appeared to be more productive than in previous iterations of the course.

The rest of this paper is organized as follows; Section 2 provides an overview of the online, hybrid, and teaching issues. Section 3 describes how the last iteration of the course differed from previous versions. An analysis of course outcomes is presented in Section 4. The conclusions of this study are presented in Section 5.

## **2. TEACHING IN ECONOMICS**

Economics has been slow to adopt new teaching methodologies and techniques. According to Watts and Becker (2008), while chalk and talk still predominates in most economics classrooms, there is evidence of an increasing use of a range of methodologies. Among them are the use of PowerPoint and computer based

presentations, computer-based exercises, and increased use of classroom discussion and exercises. Watts and Becker also indicate that methods such as classroom experiments, the use of current news and newspaper articles, and examples from the field of sports are on the rise.

A number of recent studies demonstrate how examples, simulations, and situations from professional sports have been incorporated into classroom instruction – primarily for general economics courses such as principles, as well as courses such as econometrics. A study by Bruggink (1993) describes how to incorporate baseball to teach basic economics principles such as the production possibility frontier, exchange and Pareto optimality, marginal product and diminishing returns, marginal cost and supply. Bruggink's focus is primarily on latching onto the students' interest in baseball (or any other sport for that matter) to enhance the teaching of principles of economics courses to students, or as he puts it, ...“By relating subject matter to student interests, students can be motivated without sacrificing rigor” (1993, p. 289). Cebula (2009) also demonstrates how cases and examples from professional sports can be used to illustrate issues and problems for students of economics and free enterprise. The example that he focuses on is marginal revenue product, player productivity and wage rates in the NHL. Einhof (2006) on the other hand uses the NCAA March Madness basketball tournament to introduce students to auction, risk management and portfolio theory.

A number of simulations have been developed for use in the sports economics classroom as well. Rascher (2005) for example describes a baseball management simulation to be used in a graduate level sports economics and finance course to simulate the outcomes that would result from team management's decisions on eighty-two different choices including payroll, facilities, and ticket prices. Surdam (2009) uses the card game War in an in-class simulation to demonstrate the outcomes predicted by Rottenberg's invariance principle. Baird (2005) developed a classroom simulation to illustrate potential outcomes arising from owners' decisions on team composition and salaries from an in-class draft and auction for players. Einhof (2005) describes a fantasy-football simulation to be used across a semester allowing students to see the impact of their choices and decisions on team financial success and league outcomes.

Both Booth (2009) and Von Allmen (2005) provide a rationale for the existence of the Sports Economics course and the topics and concepts covered in the course. At its core, besides being a growing area of legitimate academic inquiry with an ever expanding literature, over the last 30 years, students are genuinely

interested in the topic. Thus, alongside the need for the course as a core requirement in a sports management or sports administration program, it is a popular topic with students. The range of materials from textbooks to supplemental materials, and the wide availability of video (from YouTube), and vast media coverage of professional, collegiate, and international sporting events (e.g. the Olympics), help to provide a wealth of teaching tools that can be brought into the classroom. Sports itself is an excellent vehicle to spark student interest and helps to illustrate core economic concepts beyond the principles course.

Teaching asynchronously online differs significantly from the traditional face-to-face environment. Many of the materials used such as a textbook and other course readings, lectures, PowerPoint, written assignments, and exams are very similar to those used in the traditional classroom. However, students and instructors very rarely interact in real-time with each other. Instead, students must actively engage in the online class environment in order to progress through the course. In a traditional classroom on the other hand, especially large lecture classes, students can often passively sit through class, and then simply submit exercises and take their exams at the designated times and dates. With the online class though, very often the student is expected to participate in a range of online activities such as discussions, group exercises, and online bulletin boards that the instructor can readily observe and track. It should be noted that this discussion focuses on online courses with enrollments of 20-40 students, not the MOOCs that have received widespread media coverage over the last few months.

Unlike the traditional classroom, almost every aspect of the online course must be planned and set in place before the course goes live to students. All assignments must have clearly established parameters, instructions need to be concise and understandable, course modules and links need to open and close at the right times and function correctly. The instructor can never be sure of when a student is going to log on to the course and work on their assignments, and thus will not necessarily be available to respond to a student's two in the morning on a Saturday request for clarification on an assignment or report that the assignment did not open up like it was supposed to and now the time to complete it has passed. Additionally, student and instructor interactions take place in a more formalized and in general, written fashion.

Cavanaugh (2005) finds that online courses are more labor intensive or time consuming to teach than similar face-to face courses. Alongside a significant sunk cost in developing and establishing the online

course materials, he finds that teaching in the online environment is significantly more time intensive as a result of increased student contact and individualized instruction per student.

Hybrid or blended courses on the other hand, take advantage of the features of both the traditional classroom and the online classroom. Instructor-student interactions occur both in the classroom and online, introducing a greater level of flexibility to the delivery of course content. Course content and assignments may be housed in the course management system, but content delivery occurs through both the traditional classroom and asynchronously. The instructor does need to decide which activities should be conducted in the classroom and which activities should be reserved for the online course management system – i.e. problem sets, group discussions, class discussions, content delivery (lectures), and exams.

### **3. PAST AND CURRENT COURSE**

Regardless of mode of instruction, the sports economics course over the past five to six years has maintained an overall uniform consistency. There are four essential elements to the course – class discussion, low stakes written assignments, an audience review journal, and two exams.

In the fully online environment, the exams have consisted of two open ended essays that in general require the students to employ a range of materials and concepts from the two respective halves of the class. In the classroom, the two exams were generally essay exams consisting of five to six essay questions that the students were required to complete four of them in a seventy-five minute period. The low stakes written assignments have in general either required the students to prepare short abstracts of the readings (usually five to six out of the eight sets of readings assigned for the course from the textbook and supplementary articles embedded in the course site) or short analytical responses to specific issues and problems (again generally five out of eight assignments).

The audience review journal required students to attend several sporting events (the specific number would vary according to the time frame of the particular semester the course was offered in) as well as view an event on television. They then had to submit an analysis of the various economic aspects of the event that they were able to observe and collect about the event (e.g., pricing, advertising and marketing, strategy, stadium operations, etc.).

Class discussion took on many different forms. Online, it was in the guise of formal online discussion forums – one or two for each course module (generally eight total). Students were generally required to participate in six to eight of the discussion forums (again depending on the particular semester that the course was offered in). Discussion questions centered around one of the topics of the particular module open at the time, such as ticket pricing and demand related issues, or player costs and the concept of MRP. In-class discussions generally took up many of the same topics again centered on the particular module of material being covered in the class on that particular day – though they may also have included some group exercises. Group exercises were not utilized in the online courses.

In the strictly online class, course lectures consisted of primarily either short fully developed written materials, or a number of short slide/PowerPoint presentations focusing upon the central themes posed from the assigned readings. Face-to-face classes were generally lecture based, with half of the class usually reserved for lecture, and the other half reserved for group exercises and class discussion. In the hybrid and blended classes, class time was primarily reserved for class discussion, though there was some portion of each class reserved for lecture.

A central concern with most online and hybrid instruction is how much of the work is completed by the student themselves. While this is even an issue for traditional face to face instruction, many assignments can be crafted to reduce the ability of students to cheat, and the in-class proctoring of exams can additionally reduce students' ability to engage in cheating. That is not to say that student violations of academic integrity do not occur in the traditional classroom, but that depending upon the type of assignment in question, it is very often easier to design assignments and proctor exams that make it more difficult for students to engage in these types of behavior. The same thing though is true of online assignments, and there are a large number of tools that the instructor can utilize that limit a student's ability to engage in this type of behavior undetected (for example requiring students to submit assignments through Turnitin software). Most modern course management software has features that readily allow for timed assignments with questions assigned in random order, and the ability to lock students into the current window that they are working inhibiting the ability of the student to open multiple windows that would allow them to conduct internet searches while engaged in a timed assignment such as an exam.

From the fall of 2009 through 2011, the sports economics course was scheduled as a traditional face to face course online twice (fall 2009 and fall 2011), a hybrid course once (spring 2010), and online three times (intersession 2010, intersession 2011, and summer 2011). From fall 2009 through summer 2011, the course structure and materials for both the online and classroom courses were the same. While lecture materials and class presentations varied from the online and traditional classroom, they were all built around the same set of readings, textbooks and order of the material. The primary materials in use at the time were Fort's Sports Economics textbook and Golfonomics by Shmanske, which was used as a supplement to illustrate various aspects of economic analysis and concepts surrounding individual sports and competition.

The cost of textbooks is an ongoing issue facing college students and instructors alike. New through the Farmingdale bookstore, the two textbooks combined were approximately \$250. Used, the books would run about \$200. Over time it had become apparent that larger numbers of the students were not purchasing the textbooks – and many of them did not use the copies that were at the reserve desk in the library either. Eliminating the supplemental textbook to make the cost of books more affordable for students would have resulted in removing an important topic from the course that Fort's text did not cover. But even eliminating Golfonomics from the course would still not reduce the cost of textbooks substantially.

In the fall of 2011, the course was completely redesigned using an inexpensive and non-comprehensive paperback, Szymanski's, Playbooks and Checkbooks, an Introduction to the Economics of Modern Sports. This was the only required textbook for the class and came in at a cost of under \$50. All of the other supplemental readings for the course were articles gathered through the Farmingdale library databases and embedded directly in the course site. Instead of using the hybrid model of 75 minute classes once a week with everything else on line, the class was scheduled for 150 minutes once a week. Half of the class time was reserved for lecture, and the rest of the class was reserved for class discussion and group exercises. All written assignments and exams were online. The previous spring, the course had been taught in a hybrid format, with class time reserved almost exclusively to class discussion (short 25 minute mini-lectures and the other 50 minutes was devoted to discussion and group exercises) and two in class proctored exams.

Moving the exams from classroom to the online environment was made possible by both the randomizer feature of the course management system and the ability to set a fixed and irrevocable time limit to the exam. Once the student opened the exam, they had 75 minutes to complete the four essay questions which were

presented in random order, with no ability of the student to return to a previous question once they had moved on to the next one. While this may have amounted to what could be termed, open book exams, students did not have much time to sift through lecture notes and the textbook while taking the exam given the fact that they essentially only had about 18 minutes a question. Although students did not have foreknowledge of the questions, they were all based in large part on prior written assignments. So if a student had completed all of the written assignments up to that point in the course, they would have been well prepared to tackle the exam questions. Students were also required to certify that they had adhered to the Farmingdale honor code and fully understood the penalties associated with violations of the honor code.

Although it is impossible to say that no level of cheating took place, random checks of student's responses to exam questions for plagiarism and wholesale copying and pasting from web materials or even course materials was apparent. Student responses in general were consistent with the limited time that they had to respond to the questions and overall exam scores were not out of line with previous courses where exams were proctored. Median and average exam scores for the online exams were 67 and 80 respectively on the midterm and 64 and 79 respectively on the final exam in the course. Grading the exams online was also more uniform as I was able to employ a feature that allowed me to grade question by question (without knowing which student had submitted it) as opposed to exam by exam (which is usually the case when using the standard exam book). This tended to make the grading fairer for all students.

#### 4. ANALYSIS OF OUTCOMES

The outcomes from the three modes of instruction are evaluated using a modified production function. Assume that the grade a student obtains at the end of the semester depends upon a number of attributes such as innate abilities (A) and student work input (X) into the course, and course type (traditional, hybrid, or online – T). Student  $i$ 's score (grade) production function is

$$g = g(x, A, T), \text{ with } g_x \geq 0, \text{ and } g_{xx} < 0. \quad (1)$$

where  $g_x (\leq 0)$  is the marginal score/grade productivity with respect to student effort. Further assume that this function can be expressed as a Cobb-Douglas style production function of the form:

$$\log g = \alpha + \beta_1 \log x + \beta_2 \log A + \beta_3 \log T + \varepsilon, \quad (2)$$

where  $\alpha$  and  $\beta$  are parameters to be estimated, and  $\varepsilon$  is an error term. An additional variable is included under T for the fully redesigned course, or what I will refer to as the blended course B as opposed to

traditional or hybrid. The analysis is conducted across all sections of sports economics from 2006 through fall 2011. Summary data for all of the variables included in the analysis is presented in Table 1. There are a total of 208 observations from seven courses – one hybrid, three online, three traditional courses, and the blended course

Attendance (Attend) is measured as a percentage of total class time available. For a 3 credit online course in this analysis, this is assessed as the total number of hours (minutes) a student was logged into the course during the semester using 45 hours (2700 minutes) as the index standard. For the traditional and hybrid courses, attendance is taken simply as the total number classes the student attended divided by the total number of classes held during the semester.

**Table 5: Summary Statistics**

	GRADE	ATTEND	GENDER	INTERS	ONLINE	HYBRID	BLENDED
Mean	69.40302	0.525385	0.1875	0.221154	0.317308	0.149038	0.144231
Median	82.83036	0.576296	0	0	0	0	0
Maximum	100	1	1	1	1	1	1
Minimum	0	0	0	0	0	0	0
Std. Dev.	31.41413	0.334715	0.391254	0.416025	0.466551	0.356986	0.352171
Skewness	-1.37545	-0.156841	1.601282	1.34376	0.78505	1.970994	2.025308
Kurtosis	3.362649	1.677582	3.564103	2.80569	1.616304	4.884819	5.101873
Jarque-Bera	66.72429	16.00895	91.64672	62.92447	37.95853	165.4624	180.4864
Observations	208	208	208	208	208	208	208

All of the other variables in the analysis are dichotomous dummy variables for either individual student attributes (Gender), or course attributes. For Gender, the variable is equal to 1 for a female student and 0 otherwise. Only 19 percent of the students in the analysis are female. Twenty-two percent of the students were enrolled in intersession courses (INTERS), 32 percent were enrolled in online courses, 15 percent were enrolled in the hybrid course, and 14 percent were enrolled in the blended course.

The analysis is conducted as a censored Tobit analysis and the results are reported in Tables 2 and 3. Two analysis are conducted – one on grades, and the second with attendance as the dependent variable to evaluate whether the course format affected class attendance.

**Table 6:** Grade Production

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	<b>4.526062</b>	0.084532	53.5426	0
LOG(ATTEND)	<b>0.570746</b>	0.076998	7.412432	0
GENDER	0.098323	0.114221	0.860821	0.3893
ONLINE	<b>0.623526</b>	0.175675	3.549313	0.0004
HYBRID	<b>-0.235367</b>	0.134285	-1.752744	0.0796
BLENDED	-0.105657	0.140388	-0.752608	0.4517
INTER	-0.217775	0.168838	-1.289844	0.1971
Scale C(8)	<b>0.609419</b>	0.031942	19.07891	0
R-squared	0.251052			
Adjusted R-squared	0.220922			
S.E. of regression	0.623271			
Sum squared resid	67.59328			
Log likelihood	-168.1115			
Avg. log likelihood	-0.923689			
R-squared	0.251052			
Adjusted R-squared	0.220922			
Mean dependent var	4.240653			
S.D. dependent var	0.706133			
Akaike info criterion	1.935291			
Schwarz criterion	2.076127			
Hannan-Quinn criter.	1.992384			

\*182 observations after censoring 0 grade values,

Overall, the regression on student grades does not find that course grades in the revised, blended course were significantly different from the traditional face-to-face class. Attendance significantly impacts student grade performance, and students in online courses outperformed students in traditional or hybrid classes. The regression results also indicate that students in hybrid courses performed worse than students in traditional or blended courses.

With regard to class attendance, it does appear that both gender and the type of course that students were enrolled in did impact their attendance. Female students appeared to have higher attendance than male students – the regression coefficient on this variable is positive and significant at the 10 percent level. Online students had lower levels of attendance than students enrolled in all other types of courses. Or in other words, students were more likely to attend courses that met face-to-face, regardless of whether it was a traditional, blended, or hybrid course, than they were to attend the online course.

**Table 7:** Attendance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	<b>-0.492554</b>	0.095993	-5.131155	0
GENDER	<b>0.250262</b>	0.140973	1.775247	0.0759
ONLINE	<b>-0.98354</b>	0.198031	-4.966596	0
HYBRID	0.02667	0.167185	0.159525	0.8733
BLENDED	-0.073397	0.172092	-0.426499	0.6697
INTERS	-0.103046	0.211706	-0.486742	0.6264
SCALE:C(7)	0.770861	0.039649	19.44228	0
R-squared	0.296877			
Adjusted R-squared	0.273697			
S.E. of regression	0.785545			
Sum squared resid	112.3088			
Log likelihood	-218.9927			
Avg. log likelihood	-1.158691			
Mean dependent var	-0.806321			
S.D. dependent var	0.921748			
Akaike info criterion	2.391457			
Schwarz criterion	2.511521			
Hannan-Quinn criter.	2.440098			
Mean dependent var	-0.806321			
S.D. dependent var	0.921748			

\*189 observations after censoring 0 attendance values.

## 5. Conclusions

Overall, the regression analysis does not find that enrollment in a blended course impacted students grades either positively or negatively. On the other hand, students in online courses tended to have higher numerical course scores and lower levels of attendance. There is no indication that switching away from an encyclopedic textbook to a resulted in any negative impact on learning in the classroom. As a matter of fact, student evaluations conducted during the semester reported a higher level of satisfaction with the course and the course materials than previous incarnations of the class.

Anecdotal evidence from the courses suggests that instructor-student interactions were of a higher quality in face to face and blended courses than they were in online and hybrid courses. Many instructors at Farmingdale and likely many other institutions would probably suggest this as well. This is still an ongoing issue of inquiry and given the ever increasing blending of multiple modes of instruction available to students in need of further study.

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