

**THE USE OF POPULAR MUSIC TO TEACH INTRODUCTORY ECONOMICS IN A LIVE AND
ONLINE ENVIRONMENT**

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Abstract

This paper represents a preliminary analysis of how the incorporation of a music project influences learning and student perceptions in a pre-principles economics course in both a live and online teaching environment. Consumer Economics is a course taught at Clarion University that caters to students who are non-economics and non-business majors; primarily students majoring in elementary education. While the literature in economic education has discussed using music to teach undergraduate students, nothing has been done to see how the use of this nontraditional approach influences students learning economics at a lower level. By looking at average scores on final examinations, attendance records, and student evaluations for sections of Consumer Economics that both include and exclude a music project to teach economics, this paper fills that void in the literature. This paper shows that there is evidence to suggest that the incorporation of a music project that links musical lyrics to economic concepts has a positive influence on course attendance and important student evaluation results for courses taught in a live and online format. Changing the music project to include a segment where students write their own song lyrics initially appears to have a positive influence on final examination scores. Future analysis will need to determine whether this is a persistent result and not influenced by other individual student characteristics.

I. Introduction

The literature in economic education over the past decade is rich with information on various techniques and materials useful in making introductory economics courses more interesting to students. The common thesis in this area of research is that, presumably, a more interesting method of imparting course material beyond the standard lecture format will motivate students to learn more effectively. While it has not been empirically proven that any of the various approaches enhance student learning of the basic subject material in economics, the proliferation of alternative learning vehicles in the literature and in the textbooks available to instructors suggests that there is a growing belief that these methods are effective.

The general claim that a combination of lecture and another alternative information delivery device, especially one that involves the active participation of students is not new to the literature in the education discipline (Rich, 1988). Becker and

Watts (1995, 1998) are papers most often credited in the economic education literature with first incorporating the use of nontraditional techniques to teach economics. Cameron (1998) extended this line of analysis showing that students typically learn in different ways and that the use of varied learning tools can improve effective thinking in an introductory economics classroom. The development of this general educational strategy at the collegiate level in economics courses is relatively new.

Strategies used to teach basic concepts in economics range from the use of simulation games (Raehsler, Haggerty, and Caropreso, 1996) and the incorporation of experimental bargaining games (Raehsler, 1999) to a more abstract use of Shakespeare to teach monetary economics (Kish-Goodling, 1998). Tinari and Khandke (2000) provided the first noteworthy approach in utilizing music to help teach introductory economics (principles-level courses). After reading this interesting article, I decided to begin incorporating the same music assignment in my principles of macroeconomic courses with the purpose of discovering whether or not students came away with a greater understanding of economics from completing the project. Raehsler (2001) showed that student scores on the Test of Understanding of College Economics (TUCE) were not significantly influenced by the incorporation of a music project in class (in fact, the TUCE scores were slightly lower during some semesters in classes using the music projects). Since my conference paper was not well-received by my colleagues at the time, I chose to remove the music project from my principles of macroeconomics courses and focus on more remedial classes. It is encouraging to see that since then a much more inspiring and effective incorporation of music into the principles of economics curriculum has been developed. Mateer and Rice (2007) provide a much more complete

music project for educators in principles of economics to use. Joshua Hall, Robert Lawson, and Dirk Mateer have developed an excellent website (www.divisionoflabor.com/music) that provides musical pieces in addition to audio clips to assist any instructor wanting to incorporate music into their economics course.

Rather than stop using music in my courses entirely to teach economics, I decided to direct my efforts these past few years toward an even more introductory level economics course. In the spring semester of 2007 I began to use a similar music assignment in my Consumer Economics course. Consumer Economics is the lowest level course taught in the Department of Economics at Clarion University. The course is typically a large enrollment course that caters to undergraduate education majors. Nearly all the students come from the College of Education and are interested in becoming elementary school teachers and, consequently, have little interest in economics. Pennsylvania state educational standards require all teachers to have some course in economics and Consumer Economics is the course of choice. Not surprisingly, students do not typically have a very positive impression of economics before taking the course; less so than students required to take a principles of macroeconomics or microeconomics course. In the principles courses students often realize the important link the introductory courses have with more advanced courses in their academic majors. Since Consumer Economics is typically the last economics course education students will take, the advantage of this perceived is nonexistent. Since the education field has concentrated so greatly on nontraditional methods of instruction, it occurred to me that the music project might have its greatest impact on those least willing to learn economics from the outset. This paper, therefore, presents an introductory analysis of an ongoing project that

considers how the use of a music project appears to influence students in Consumer Economics in both a live and online environment. This paper still utilizes the approach introduced by Tinari and Khandke (2000).

III. Music Project and Course Sections

The analysis in this paper is limited to using information derived from live sections of my Consumer Economics course taught in five separate semesters: fall semester of 2006, spring semester of 2007, fall semester of 2007, fall semester 2008, and the fall semester of 2011, along with four semesters in which the course was offered online: fall 2009, summer 2010, spring 2011, and summer 2011. As stated earlier, students enrolling in Consumer Economics are generally majors in elementary education and are either freshmen or sophomores (some upper-class education majors do take the course as a last resort). The course itself is really a watered-down version of a principles of economics course where basic ideas of demand and supply as well as general macroeconomic and microeconomic concepts are stressed. The Law of Diminishing Returns, for example, will not be proven in a Consumer Economics course of this kind. In any case, a total of 677 students are included in the sample results for the nine sections (an average of 94 students for each section with 504 students in the live sections and 173 in the online sections). The music project was not assigned in the fall 2006, fall 2007, and fall 2011 live sections of the course (totaling 327 students) to serve as a very rough control (pre-project and post-project) to the sections using the music project. The music project was not assigned in the fall 2009 and summer 2010 online sections of the course to serve as a control for that portion of the analysis.

The music project itself closely mimicked the assignment outlined in Tinari and Khandke (2000) where students were asked to select various songs, present the lyrics, and discuss the economic meanings within their chosen titles. The basic idea of this exercise is to show students that economics does appear in daily life and to make the study of the concepts easier to understand and remember due to the applied nature of this project. Since the music project I gave in the spring semester of 2007 was substantially different than the one given in later sections, I will present each separately.

The music project utilized during the spring 2007 semester of Consumer Economics course was essentially the same as I used in my principles of macroeconomics courses before. To begin, I played a video of the band Pink Floyd performing *Money* for the students and gave them a brief history of the band as well as the date of the songs initial release. After the students finished given me a hard time about my age and liking for the band, I gave them the actual lyrics:

*Money, you get away.
You get a job with more pay and you're OK.
Money, it's a gas.
Grab that cash with both hands and make a stash.
New car, caviar, four star daydreaming
Think I'll buy me a football team.*

*Money, you get back.
I'm all right, Jack, keep your hands off my stack.
Money, it's a hit.
But don't give me that do goody bull****.
High fidelity first class traveling set
And I think I need a Lear jet.*

*Money, it's a crime.
Share it fairly, but don't take a slice of my pie.
Money, so they say,
Is the root of all evil today.
But if you ask for a raise it's no surprise,
That they're giving none away.....*

I then required each individual to write a short one to two page discussion of the economic relevance of the song and their overall perception of the piece. The purpose of this initial phase of the project (given midway through the semester) was to give students practice at analyzing music using economic terms in a way I could effectively compare. Once this part was complete, students were free to choose any song of their liking and provide the lyrics, a copy of the song if possible (I provided recordable CD's), and a similar analysis of their song along with a history of the band. Papers on their individual songs were more extensive and expected to be at least five pages long. These were due at the end of the semester. No additional reference to the music project was made in any subsequent lecture in the course.

For the fall 2008 semester and sections after that point, I made some important changes related to both the available technology and previous examination results. I continued to give the assignment utilizing *Money* by Pink Floyd and the individual song assignment. In addition, however, I directed students to the website address www.divisionoflabor.com/music discussed earlier providing many songs with lyrics as well as a list of keywords in economics to look for. I reproduced the list and added a few terms:

<i>Advertising</i>	<i>Mortgage</i>
<i>Budget</i>	<i>Opportunity Cost</i>
<i>Capital</i>	<i>Policy</i>
<i>Capitalism</i>	<i>Poverty</i>
<i>Competition</i>	<i>Price Discrimination</i>
<i>Consumption</i>	<i>Principles</i>
<i>Costs</i>	<i>Profit</i>
<i>Credit</i>	<i>Property Rights</i>
<i>Debt</i>	<i>Public Choice</i>
<i>Deficit</i>	<i>Rent</i>

<i>Demand</i>	<i>Resources</i>
<i>Development</i>	<i>Savings</i>
<i>Earnings</i>	<i>Scarcity</i>
<i>Expenses</i>	<i>Self Interest</i>
<i>Free Trade</i>	<i>Sunk Costs</i>
<i>Income Mobility</i>	<i>Supply</i>
<i>Inflation</i>	<i>Taxes</i>
<i>Insurance</i>	<i>Unemployment</i>
<i>Interest</i>	<i>Urban Decline</i>
<i>Loan</i>	<i>Value</i>
<i>Luxury</i>	<i>Wages</i>
<i>Market</i>	<i>Warranty</i>
<i>Money</i>	

These terms were useful for students in identifying their songs and writing about how the lyrics of their chosen songs related to economics. The website provided by Joshua Hall, Robert Lawson, and Dirk Mateer is an excellent aid in doing this project and made my overall presentation to the students much more effective.

In addition to showing students the website and providing a list of important key terms, I added a part to the assignment where students were asked to write their own lyrics. Based on the musical genre of song chosen individually by students (I required them to provide the song title and genre before they began their reports), I placed students into groups of three to four and asked each to come up with their own lyrics to a song. For the online sections, this was accomplished using chat rooms and discussion boards. After all groups turned this in at the beginning of the last week of classes I provided each student a copy of all song lyrics created in class along with a sheet to rank each song. I did not provide the name of authors for each song nor the musical genre in order to diminish any selection bias. Based on class votes, I developed a ranking of the song lyrics for students to see on the last day of class. In the next section, I provide a copy of the top song lyrics selected in a previous past semester. In this newer version of the music

project, I provided students with a written example of how I would complete the project and eluded to the results of that analysis in three separate lectures during the course of the semester. Online students watched asynchronous video lectures that included mention of the music project during three separate recorded lectures.

For all sections of Consumer Economics utilized in this study, I give the same comprehensive final examination. While my midterm examinations are a combination of objective and essay questions, my final examination is purely multiple-choice. The 89 question final examination covers a broad cross-section of material presented in the course with a more heavy emphasis on the market model, general economic measures like unemployment and inflation, and macroeconomic policy. The final grade in the course is significantly influenced by performance on the final examination and it is worth pointing out that average results for the examination are generally very low. Despite this, the fact that the same examination is given each semester I teach this course, this final examination provides a way to compare student results across different semesters and relate those results to the use of the previously discussed music projects. This, of course, assumes that other aspects of my teaching are consistent across semesters (not a bad assumption in my opinion) and that the academic ability of students across sections is uniform (a problematic assumption I will discuss later). Of course, lectures for the online course are identical across semesters. The next section provides some qualitative examples of the music project followed by an empirical section that looks at how student performance, attendance, and teacher evaluations differ across semesters in this study.

III. Some Examples

At this point, I would like to provide three examples of work presented by students in my Consumer Economics. The first two involve the individual portion of the assignment while the last is simply the best group lyrics chosen by students in the class. While these are what I consider to be the most interesting assignments turned in, none is completely correct nor fully incorporates all economic ideas or definitions. I do believe (and this is just based on my memory) that the projects turned in by students were of a higher quality than those submitted by my principles of macroeconomics a number of years ago.

I chose the song *Money* by Pink Floyd for a couple reasons at the beginning of the project. First of all, the song is relatively short; short enough so that students do not need to devote as much research as they would if I had chosen another song mentioned in Tinari and Khandke (2000). For example, *Allentown* by Billy Joel or *Song of the South* by Alabama would have involved a much more in-depth analysis. In addition, *Money* by virtue of its title was the most popular song selected by students when I incorporated this project in my earlier principles of macroeconomics courses. One project turned in by a freshman education major I found interesting analyzed this song as follows:

“ *Money* speaks of many socioeconomic issues. The most prevalent is the basic cliché that people with money make the rules, or that a person needs a lot of money to be happy. Unfortunately, on the basis of supply and demand as well as scarcity, there is not enough money to fulfill everyone’s wants.

Investing is also mentioned, such as keeping a ‘stash’ to invest with in order to make your amount of money grow. Investing leads to further economic growth by not allowing money to sit idle, but to work towards the expansion of output producing sectors. An investor also needs to feel secure about the economy; either he has faith his money will increase in value, or he has enough ‘stashed’ to not be hurt by a bad investment.

Another theory mentioned is Classical Theory, as first written by Adam Smith in the *Wealth of Nations* in 1776. Throughout the song Pink Floyd is proving the second assumption; that individuals act in matters of self-interest.

The song also discusses the ‘American Dream’; a belief that any person who works hard will be able to succeed. Cash tends to motivate people towards bettering themselves through material goods. This forces people to try and satisfy their unlimited wants with their limited means, the fundamental concept of economics.

The performers seem to make this a laid-back, easy-going kind of song, even though they sound as though they feel strongly about the words and message. This song also implies that people should not act as chronicled in the song; that the performers were being sarcastic, and think such greed is unnecessary. Therefore, people who are involved in such greed need to prioritize and people should not make such a fuss about material things, and be happy with what they have.”

Interestingly, not one individual clearly identified what was going on in the world when the song was released (1973) nor did anyone discuss the background of the band members (some were from middle-class families while others came from lesser means). Given that most students were born after 1980 (there were one or two returning adult students), this is not surprising.

Turning to the individual songs selected, I found that most individuals chose either Rap, Hip-Hop, or Alternative Rock and, showing my age, I understood only a few. While there were many impressive songs turned in, it was the analysis and choice of a less popular genre that attracted my attention this past semester. One individual chose the song *Rent* by the Broadway cast of the musical by the same name. This song might have been chosen based solely on the title as Broadway musicals are not in the favorite musical genre enjoyed by current students. The lyrics are as follows:

*How do you document real life
 When real life's getting more
 Like fiction each day
 Headlines, bread lines
 Blow my mind.
 And now this deadline:
 "Eviction or pay"
 Rent.*

*How do you write a song
 When the chords sound wrong
 Though they once sounded right and rare
 When the notes are sour
 Where is the power
 You once had to ignite the air*

*And we're hungry and frozen
 Some life that we've chosen*

*How we gonna pay
 How we gonna pay
 How we gonna pay
 Last year's rent*

*How do you leave the past behind
 When it keeps finding ways to get to your heart
 It reaches way down deep and tears you inside out
 Til you're torn apart
 Rent*

*What binds the fabric together
 When the raging, shifting winds of change
 Keep ripping away*

*Draw a line in the sand
 And then make a stand
 Use your camera to spar
 Use your guitar*

*When they act tough, you call their bluff
 We're not gonna pay
 We're not gonna pay
 We're not gonna pay*

Last year's rent
This year's rent
Next year's rent
Rent rent rent rent rent
We're not gonna pay rent
'Cause everything is rent

The analysis turned in went as follows:

“ *Rent* talks about unemployment. The characters are unable to find work, and unable to pay rent for their apartment as a result. Mark and Roger, the main characters, are suffering from both structural and frictional unemployment. Their structural unemployment stems from a lack of job availability (they are trained as a film producer and a musician, respectively). The frictional unemployment stems from an unwillingness to accept new jobs; they have unrealistic expectations.

The also cannot pay for their apartment because of price floors, which the government set in order to make more money off of the sale of apartments. These price floors have allowed the price to rise above the equilibrium price, and made rent too high for Mark and Roger to pay.

Meanwhile, they are depressed because of the economic situation around them. There are bread lines everywhere, and everyone seems to be worn-out, and unable to cope with life. The standard of living is dropping before their eyes as homeless people surround them. Mark and Roger also have emotional problems when people and memories from their pasts arrive unexpectedly and remind them of things they would rather forget.

They also keep getting hit with emotional changes, especially when they are not ready for changes. Mark and Roger also express the feeling that you have to pay some type of rent for everything in the world including love and happiness, not just your apartment, food, and material items. They seem to express amazement at what the world has become. To them, it is a place full of crime and hypocrisy, a place where they do not fit in.

The song is upbeat, even though the material is angry and unhappy. The rhythm put a different light on all of their despair talked about in the song. Just listening to the song can make someone feel better through the tempo and the music, despite the despair and anger portrayed throughout the song.”

While I would not agree entirely with this assessment of the song, this analysis was better than most and illustrates how well it made this student think of basic economic terms in relation to music lyrics.

The final part of the music project given, as described above, allowed groups of students to create their own song lyrics. The purpose in doing this was to induce students to begin looking at their notes in a more detailed fashion compared to other semesters just prior to the final examination. The best lyrics selected among group submissions over the past few years are as follows:

*There's war in Iraq
And political unrest
Gas prices are high
Capitalism's put to the test*

*Unemployment is growing
Mortgages are sub-prime
The economy's in crisis
There are growing bread lines*

*But I'm not giving up
I'm not giving in
I'm going to fight for my rights
Cause it's my turn to win*

*There's panic among us
Tho a new President's near
The poor are suffering
When will we hear*

*When greed takes a front seat
And trade with China is to blame
Will fortunes be gone?
Will the world be the same?*

*But I'm not giving up
I'm not giving in
I'm going to fight for my rights
Cause it's my turn to win*

*With urban decay
And money so tight
It's hard to remember
What's wrong or what's right*

*But times will get better
This recession will give way
That day will come
When I can confidently say*

*But I'm not giving up
I'm not giving in
I'm going to fight for my rights
Cause it's my turn to win*

I must agree with the student's choice of this song in that it included many of the issues we discussed during the course of the semester. Unfortunately, I did not ask students to provide a complete analysis of their own song. In the future I will do this in addition to exploring the possibility of the lyrics being put to actual music of some kind (with the assistance of the Music Department on campus). The next section in this paper will study how including this project may have influenced student learning and perception.

IV. Empirical Results

The bottom line when introducing any class assignment involves considering how student learning is influenced. In my Consumer Economics course, a final measure of learning is the comprehensive final examination. Table 1 below provides average values and sample standard deviations of the final examination for each semester in the sample for the live courses. The bar graph that follows provides a visual presentation of the

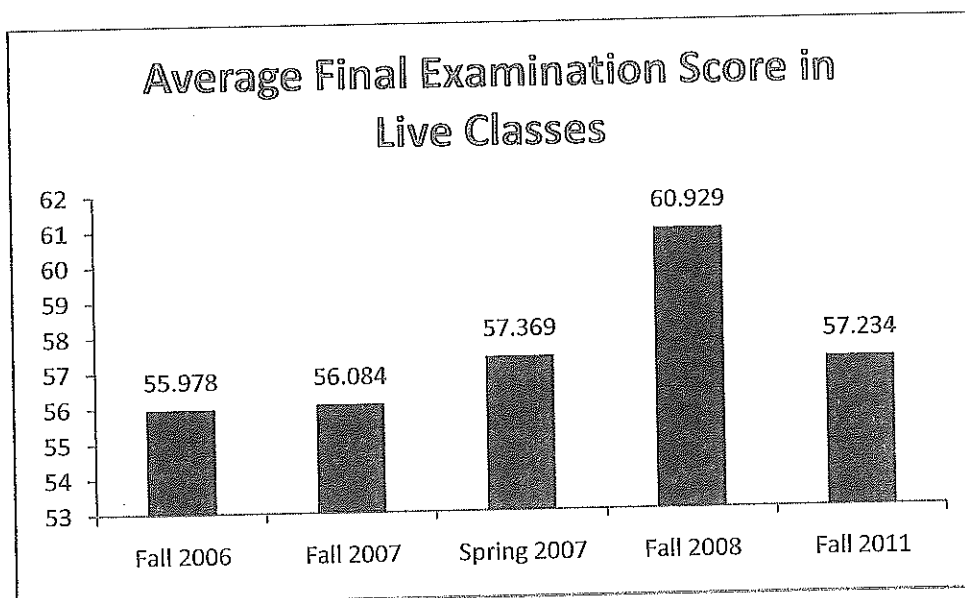
average values. It is clear from observing this data that the average values are similar with the notable exception of

TABLE 1: SIMPLE STATISTICS ON FINAL EXAMINATION (LIVE)

<u>Term</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Sample Size</u>
Fall 2006 (No Music)	55.978	9.637	92
Spring 2007 (Music 1)	57.369	10.675	65
Fall 2007 (No Music)	56.084	10.268	107
Fall 2008 (Music 2)	60.929 ¹	10.969	112
Fall 2011 (No Music)	57.234	10.778	128

¹ Significant difference from Fall 2007

FIGURE 1



The fall 2008 semester (even though a 60.929 average only represents 68.46 percent correct on the examination). In the spring semester of 2007 the original music assignment was given (Music 1) while in the fall semester of 2008 the updated music project was assigned (Music 2). As a consequence, it is relevant to test the difference in scores between fall 2006 and spring 2007 to see whether the first music project made a difference in average final examination scores. Likewise, the fall 2007 and fall 2008 semesters can be compared to see whether the second music project appears to create any significant difference. While this seems rather arbitrary, results are supported by what we visually see in Figure 1. The t-statistic for testing the difference between average examination scores for fall 2006 and spring 2007 is only 0.852 (not statistically significant) while the same statistic for average values between fall of 2007 and fall of 2008 is 3.371 (statistically significant). If all other conditions are equal (which is a debatable assumption), the music project developed for the fall 2008 semester seems to positively influence the average final examination score. During the fall semester of 2011 students were only given the option of completing a far less involved version of the music project on their own. During that semester no additional class time was devoted to presenting the project other than to point it out among other term projects available. Since the music project was optional as a choice among other projects, an initial presentation of the Pink Floyd music and continued discussion in subsequent lectures related to this project were not incorporated. As a consequence, the fall 2011 section did not utilize the music project as was done in other semesters and average examination scores dropped to levels observed in semesters of the live course taught before the inclusion of the expanded music project.

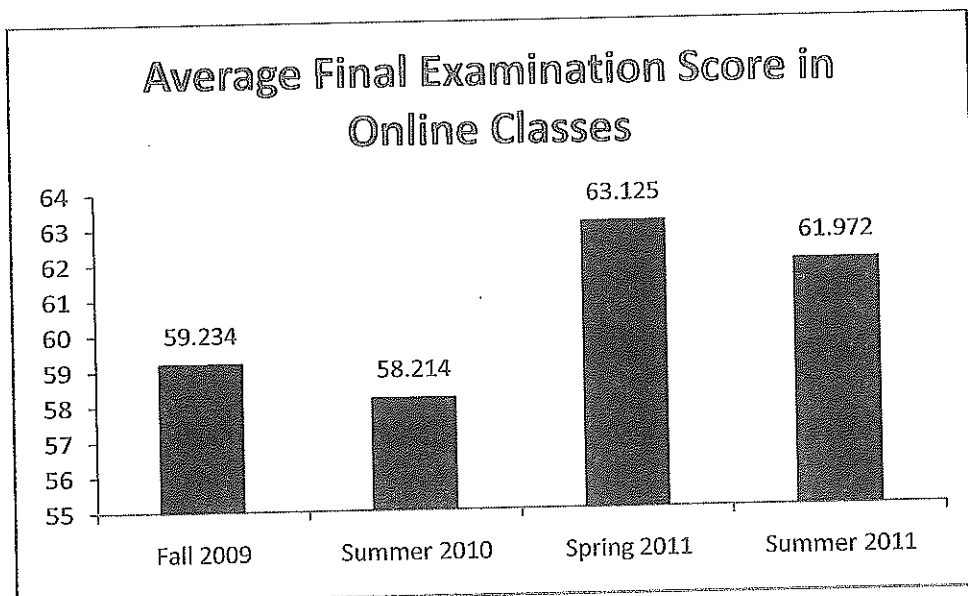
A similar analysis was done for online sections of this course with results provided in Table 2 and Figure 2 below.

TABLE 2: SIMPLE STATISTICS ON FINAL EXAMINATION (ONLINE)

<u>Term</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Sample Size</u>
Fall 2009 (No Music)	59.234	10.034	47
Summer 2010 (No Music)	58.214	10.118	42
Spring 2011 (Music 2)	63.125 ¹	8.723	48
Summer 2011 (Music 2)	61.972	9.843	36

¹ Significant difference from Fall 2009

FIGURE 2



The music project was not part of the online course in the fall semester of 2009 nor the summer semester of 2010 (fall semesters last sixteen weeks while summer semesters are only five weeks). The online courses utilized software that made taped lectures available to students. One advantage of the online environment for students is that they can go back and watch lectures multiple times during the semester at any time they wish. Students taking the online version of this course typically score better on the final examination. This may be partially due to the self-selection of better students (students able to master the technology of an online course are often better overall students) and the ability to review lectures more than one time. Chat rooms and discussion boards are used for communication along with software for document and examination delivery and evaluation (Blackboard and Decision To Learn).

During the spring semester of 2011 and the summer semester of 2011 the music project was incorporated with a full lecture devoted entirely to introducing the music project and three short lectures developed to relate later material to the music project. All other lectures were identical across sections. As a consequence, the most relevant comparisons to make concerning the use of this music project in an online environment are between the spring 2011 and fall 2009 semesters and the summer sessions in 2010 and 2011.

The average final examination score in the spring semester of 2011 when the project is used is significantly higher than the average for the fall 2009 online section when the project is not utilized. The t-statistic for the difference in means is 2.018 which does imply a significant difference when a 0.05 level of significance is used (this is the level assumed throughout this paper when discussing statistical significance). While the

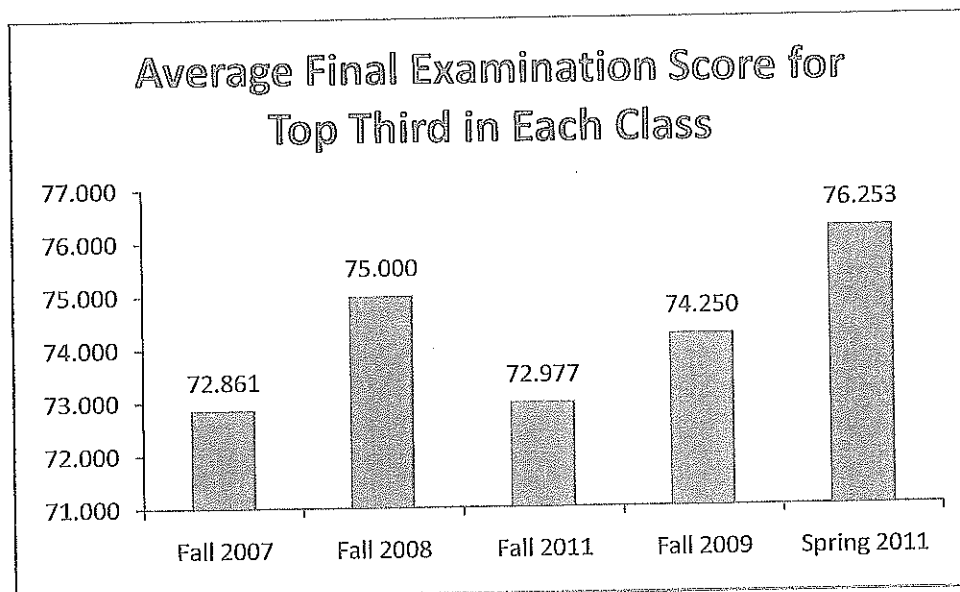
average examination score for the summer online section using the music project was higher, it does not rise to the level of statistical significance (the t-statistic was 1.656). As a result, there appears to be clear gains in the full semester version of the online course using the music project but these gains dissipate when looking at the shorter academic sessions.

One criticism often leveled by students concerning this project over the years involves questioning the relevance of the project to real economics. This complaint typically originated from the better students in each course. It would be interesting to observe, therefore, any differences in gains that are made among the top and bottom students in the course with regard to final examination results. Tables 3 and 4 along with Figures 3 and 4 below summarize final examination results for live and online sections concentrating on the top third and bottom third students in each section.

**TABLE 3: SIMPLE STATISTICS ON FINAL EXAMINATION
FOR TOP THIRD STUDENTS**

<u>Term</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Sample Size</u>
Fall 2007 (Live, No Music)	72.861	6.877	36
Fall 2008 (Live, Music)	75.000	7.118	37
Fall 2011 (Live, No Music)	72.977	5.743	43
Fall 2009 (Online, No Music)	74.250	5.592	16
Spring 2011 (Online, Music)	76.253	6.234	16

FIGURE 3



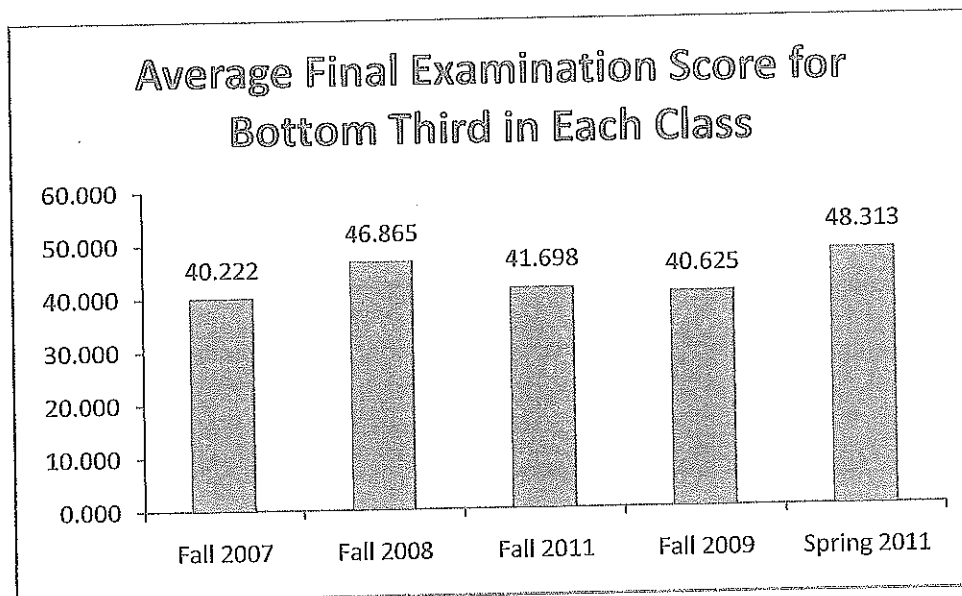
**TABLE 4: SIMPLE STATISTICS ON FINAL EXAMINATION
FOR BOTTOM THIRD STUDENTS**

<u>Term</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Sample Size</u>
Fall 2007 (Live, No Music)	40.222	12.789	36
Fall 2008 (Live, Music)	46.865 ¹	11.241	37
Fall 2011 (Live, No Music)	41.698	11.424	43
Fall 2009 (Online, No Music)	40.625	11.141	16
Spring 2011 (Online, Music)	48.313 ²	7.613	16

¹ Significantly higher than Fall 2007 live course average.

² Significantly higher than Fall 2009 online course average.

FIGURE 4



Results clearly show that most of the gains made on final examination scores come from the lower achieving students across sections. Scores among the top students do not significantly change when comparing sections using the music project to those not using the project regardless of delivery method. Among students scoring in the lower third, final examination scores significantly improved in both live and online classes utilizing the music project. One can conclude that, at least in this sample, students typically scoring lower on the examination are most influenced by this project and that the music project tends to improve scores of students most at risk of academic failure.

While the music project may induce students to study more for the final examination, it may be that the project itself creates more interest among students in the course, a greater degree of camaraderie and friendship among students, and better attendance. If the projects do increase attendance it may well result in better examination performance. Normally, I would not think of including this statistic in the paper,

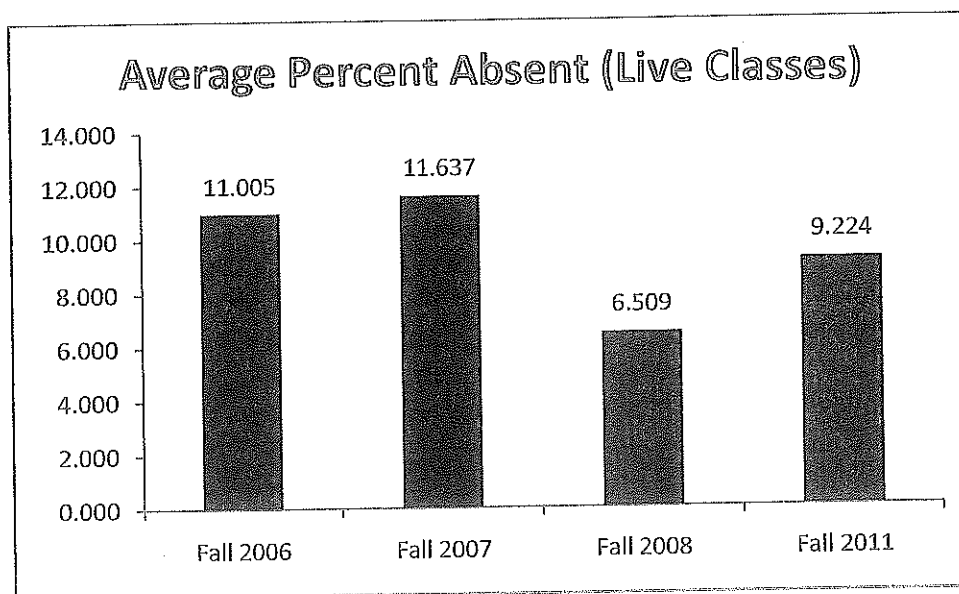
however, I have noticed a difference in the classes when I use the music project (especially for this past semester). Table 5 below provides data on overall attendance rates for each semester for the live course followed by a bar graph that illustrates the same values.

TABLE 5: ATTENDANCE CALCULATIONS FOR EACH SEMESTER (LIVE)

<u>Term</u>	<u>Total Enrollment</u>	<u>Contact Days in Semester</u>	<u>Total Number of Absences</u>	<u>Average Percent Absence</u>
Fall 2006 (No Music)	92	32	324	11.005
Spring 2007 (Music 1)	65	46	215	7.191 ¹
Fall 2007 (No Music)	107	31	386	11.637
Fall 2008 (Music 2)	112	31	226	6.509 ¹
Fall 2011 (No Music)	128	31	366	9.224

¹ Significantly lower than Fall 2006 live section.

FIGURE 5



It is clear that a major difference in attendance does exist between the semesters when the music project is included versus semesters it is not incorporated. In the spring semester of 2007 the average percent absent in each lecture is 7.191 percent. One might expect students who are still in school after the previous fall semester to have a greater propensity to attend class. As a consequence, the drop in absenteeism from the fall to the spring semester might not be unique to the Consumer Economics course. The drop in absenteeism between the fall semester of 2007 (11.637 %) and the fall of 2008 (6.509 %) cannot be as easily explained if we assume entering students each fall semester possess similar academic attributes. It is also interesting to note that the apparent improvement in attendance between the fall 2006 and spring 2007 courses does not translate into better examination scores while the improved attendance apparent when comparing fall 2007 and fall 2008 does. Therefore, while this improved examination performance witnessed this past semester might be a result of better student attendance, it might also be due to the improvements included in the music project. Interestingly, when the music project was only optional and not incorporated into class discussion (fall semester of 2011), the rate of absenteeism rose to nearly previous levels.

With courses taught in the online environment, the instructor is able to monitor and record how much of each lecture is viewed by every student. As a consequence, the rate of absence is simply the percentage of lectures not viewed for each student during the semester. Since students are permitted to view lectures at any time they wish and to review lectures, rates of absenteeism are typically much lower for online courses. Table 6 and Figure 6 below provide information on rates of absence for each online section.

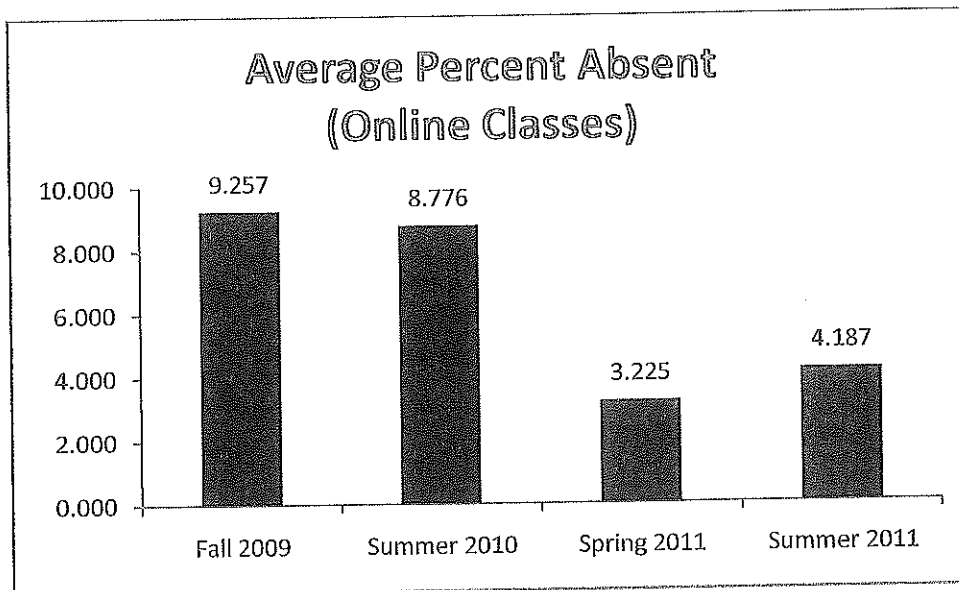
**TABLE 6: ATTENDANCE CALCULATIONS FOR EACH SEMESTER
(ONLINE)**

<u>Term</u>	<u>Average Percent Absence</u>
Fall 2009 (No Music)	9.257
Summer 2010 (No Music)	8.776
Spring 2011 (Music)	3.225 ¹
Summer 2011 (Music)	4.187 ²

¹ Significantly lower than Fall 2009 online section.

² Significantly lower than Summer 2010 online section.

FIGURE 6



It is clear from the statistical results presented in Table 6 and the accompanying graph that attendance rates significantly improved in online sections that incorporated the music project. These results mimic those observed when studying attendance rates in the live versions of this course. Higher attendance, it itself, might explain the higher scores achieved in the final examination for these sections.

While it is important to see whether the incorporation of a nontraditional teaching method has any impact on learning, it might be equally important to see whether student perceptions of the course and the instructor are influenced. The impact a project or approach of this kind has on student evaluations might be even more important for non-tenured faculty members. To see whether there are any differences in student evaluations across the four semesters in this sample, I have collected data from my student evaluations for eight crucial questions on Clarion University student evaluations. The important questions are as follows:

- Question 5: I found the course to be
- Question 6: The quality of instruction was
- Question 7: The amount of effort in this course compared to others is
- Question 9: The instructor enhanced my interest in the course.
- Question 12: I learned a lot in this course.
- Question 14: The instructor appears to be well-prepared.
- Question 15: Materials used helped achieve course objectives.
- Question 17: The instructor effectively used examples/applications/illustrations in this course.

For Question 5 and Question 6, students used the following scale:

- 5 = excellent
- 4 = above average
- 3 = average
- 2 = below average
- 1 = poor

For Question 7 the following scale was used:

- 5 = much more than other courses
- 4 = more than other courses
- 3 = same as other courses
- 2 = less than other courses
- 1 = much less than other courses

The remaining questions analyzed use the following scale for assessment:

- 5 = strongly agree
- 4 = agree
- 3 = neither agree or disagree
- 2 = disagree
- 1 = strongly disagree

For each question on the student evaluations, higher average values are better for the instructor than lower average values. In order to compare the effect of the original music project (Music 1), data on student evaluation results are compared for each question for the fall semester of 2006 and the spring semester of 2007. These results as well as t-statistics testing the difference in average values for each question are also provided with bold values indicating a statistically significant difference at the 0.05 level in favor of increased values for the spring 2007 data. Standard deviation values are given in parentheses below each mean.

**TABLE 7: STUDENT EVALUATION STATISTICS FOR MUSIC 1
(LIVE SECTIONS)**

<u>Category</u>	<u>Fall 2006 Mean</u>	<u>Spring 2007 Mean</u>	<u>Difference in Mean t-statistic</u>
Question 5	3.84 (0.75)	4.32 (0.81)	3.821
Question 6	4.29 (0.64)	4.60 (0.60)	3.067
Question 7	3.71 (0.88)	3.63 (0.78)	- 0.588
Question 9	3.77 (1.08)	4.04 (1.09)	1.537
Question 12	3.83 (0.92)	4.23 (0.85)	2.678
Question 14	3.72 (0.97)	4.84 (0.44)	8.692
Question 15	3.94 (0.95)	4.31 (0.87)	2.488
Question 17	4.60 (0.55)	4.81 (0.57)	2.321

Table 8 below provides similar student evaluation results comparing fall 2007 and fall 2008 evaluations which are meant to discover the effect of the second music assignment (Music 2). Likewise, Table 9 provides an analysis of student evaluations completed for the online courses in the fall semester of 2009 and the spring semester of 2011 (evaluations are not completed during the summer sessions).

**TABLE 8: STUDENT EVALUATION STATISTICS FOR MUSIC 2
(LIVE SECTIONS)**

<u>Category</u>	<u>Fall 2007 Mean</u>	<u>Fall 2008 Mean</u>	<u>Difference in Mean t-statistic</u>
Question 5	3.53 (0.94)	4.23 (0.83)	5.848
Question 6	4.13 (0.72)	4.72 (0.54)	6.880
Question 7	3.95 (0.72)	4.21 (0.68)	2.748
Question 9	3.66 (1.07)	4.17 (0.94)	3.752
Question 12	3.62 (1.01)	4.37 (0.79)	6.136
Question 14	4.20 (0.62)	4.81 (0.38)	8.822
Question 15	4.28 (0.84)	4.46 (0.49)	1.947
Question 17	4.78 (0.84)	4.86 (0.41)	0.902

**TABLE 9: STUDENT EVALUATION STATISTICS FOR MUSIC 2
(ONLINE SECTIONS)**

<u>Category</u>	<u>Fall 2009 Mean</u>	<u>Spring 2011 Mean</u>	<u>Difference in Mean t-statistic</u>
Question 5	3.21 (0.82)	3.94 (0.91)	4.105
Question 6	3.43 (0.74)	3.85 (0.55)	3.144
Question 7	4.17 (0.64)	4.25 (0.72)	0.572
Question 9	3.15 (0.99)	3.65 (1.06)	2.375
Question 12	3.77 (0.93)	3.96 (1.02)	0.948
Question 14	3.68 (0.58)	4.13 (0.79)	3.159
Question 15	3.98 (0.88)	4.23 (0.69)	1.543
Question 17	4.51 (0.47)	4.44 (0.62)	-0.619

In addition to data presented in the tables, bar graph results on averages for each student evaluation question above in each semester of Consumer Economics are provided for visual comparison. For the graphs, it is helpful to recall the following semester distinctions:

- Fall 2006: Live Course, No Music Project
- Fall 2007: Live Course, No Music Project
- Spring 2007: Live Course, Music Project Version 1
- Fall 2008: Live Course, Music Project Version 2
- Fall 2009: Online Course, No Music Project
- Spring 2011: Online Course, Music Project Version 2

FIGURE 7

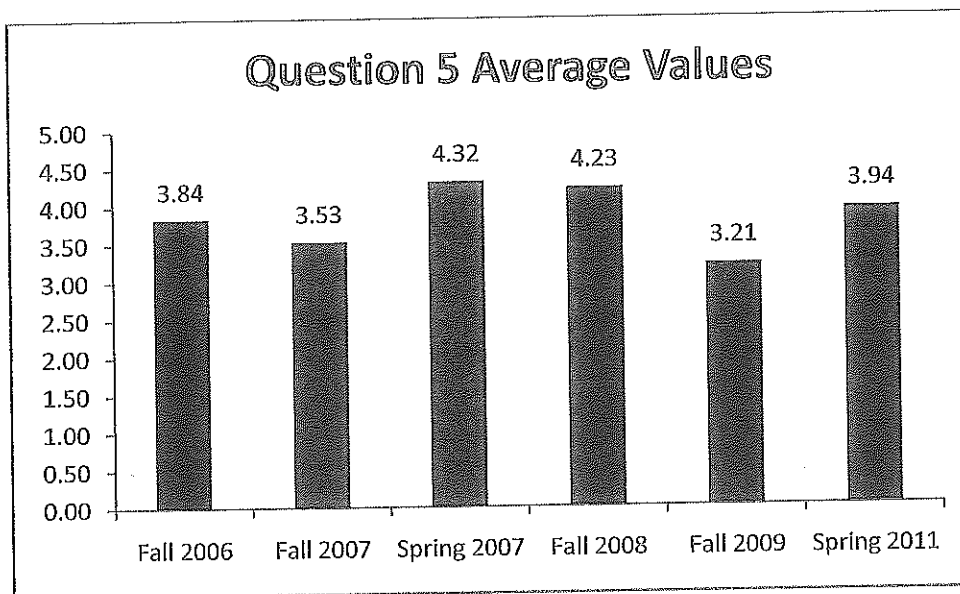


FIGURE 8

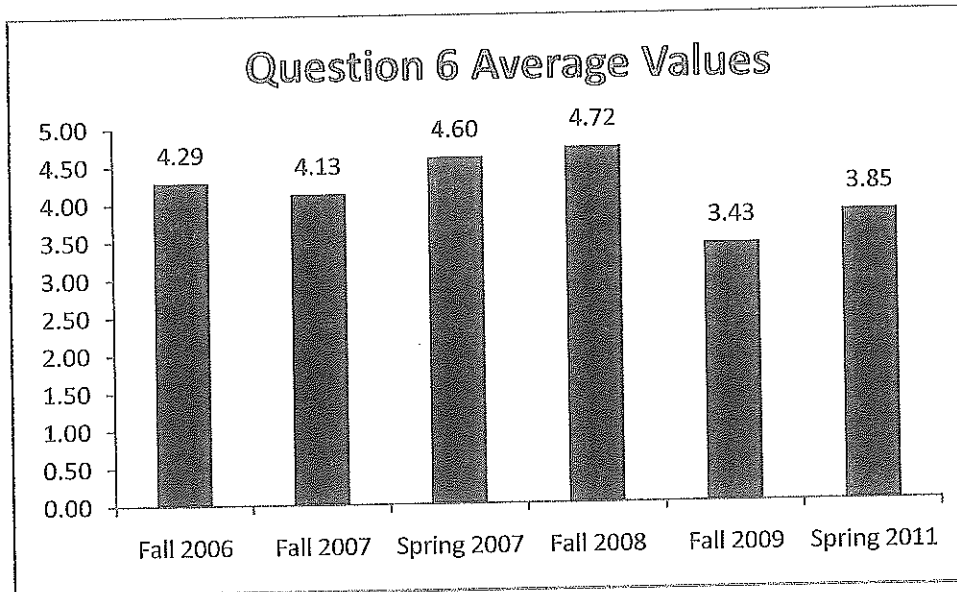


FIGURE 9

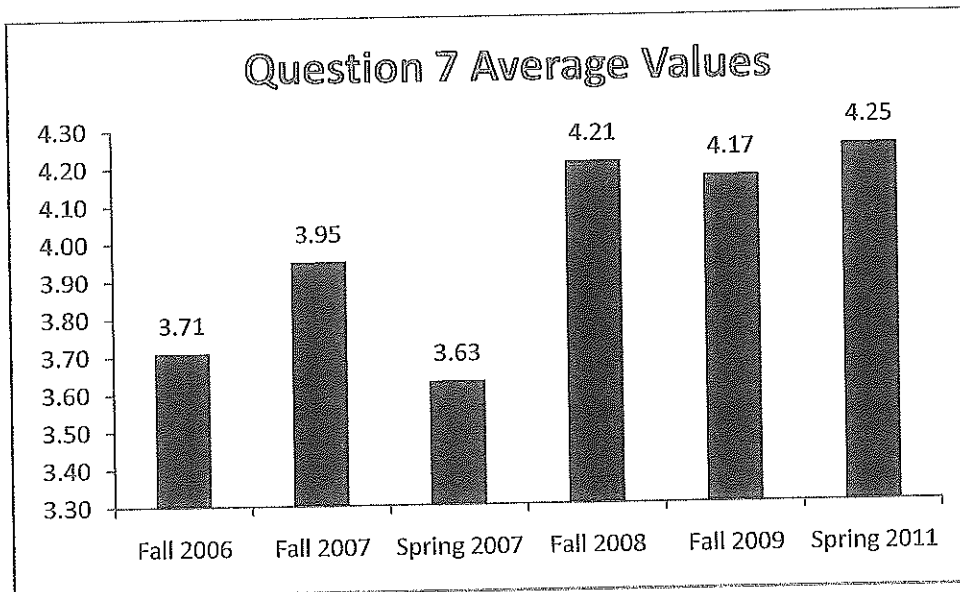


FIGURE 10

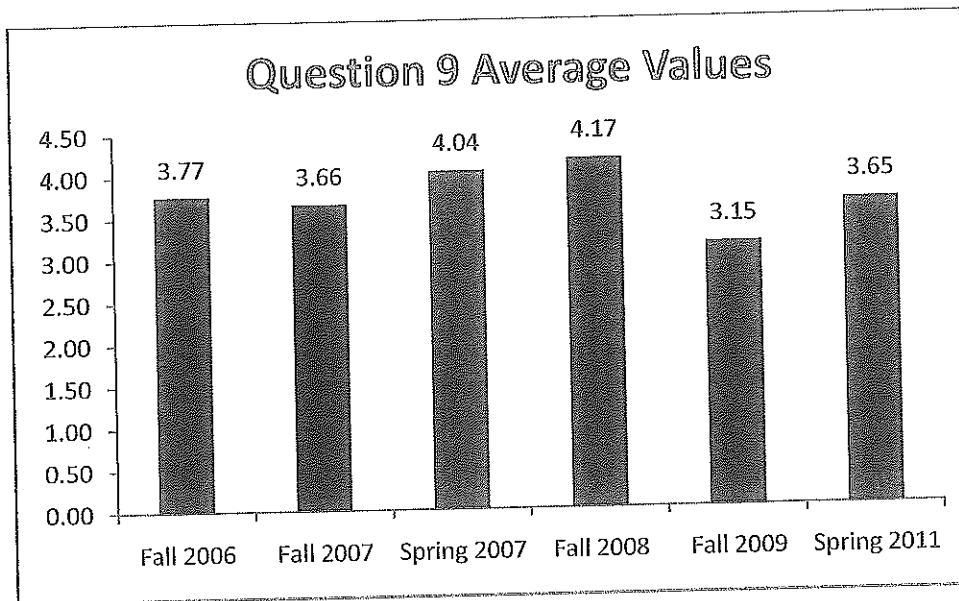


FIGURE 11

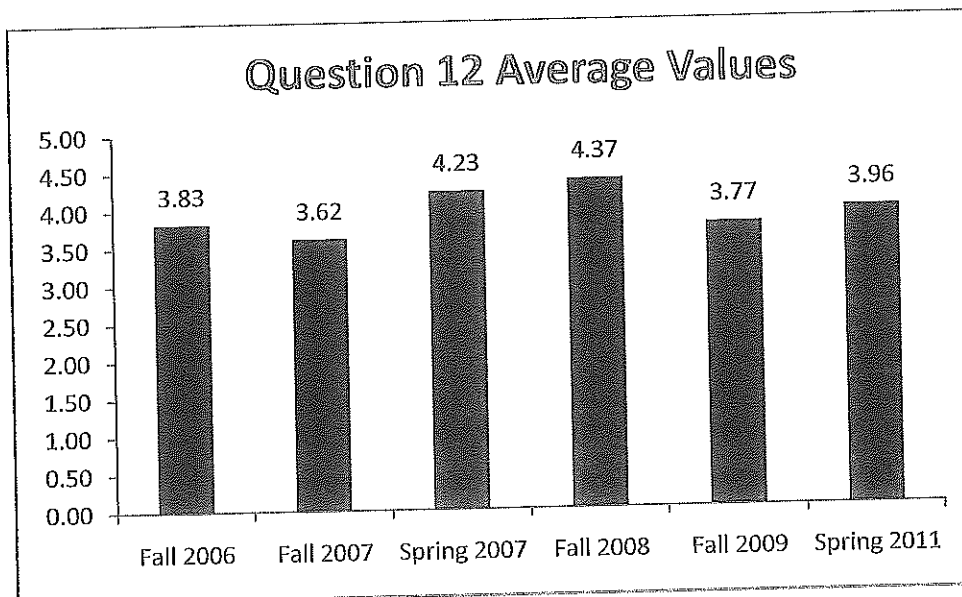


FIGURE 12

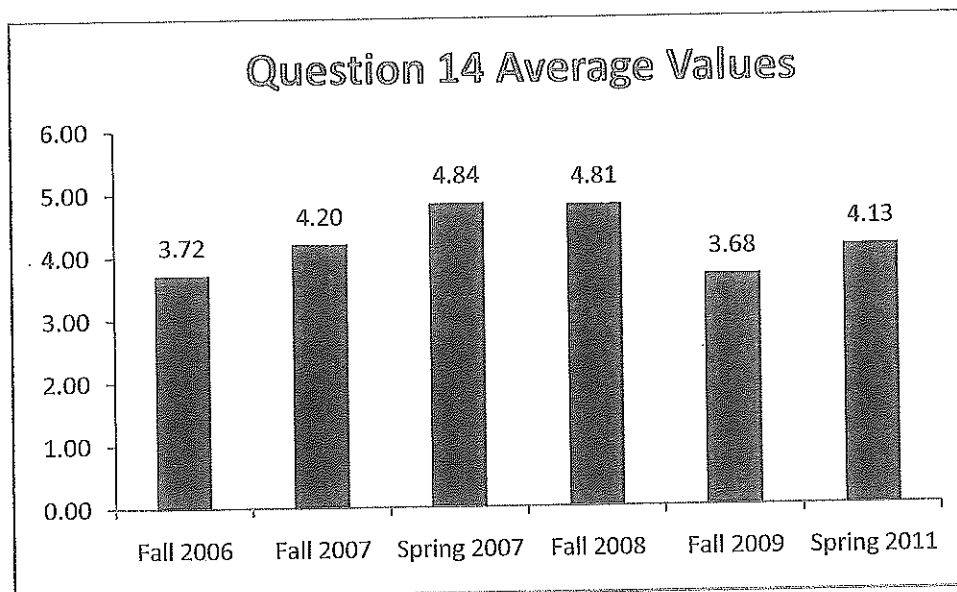


FIGURE 13

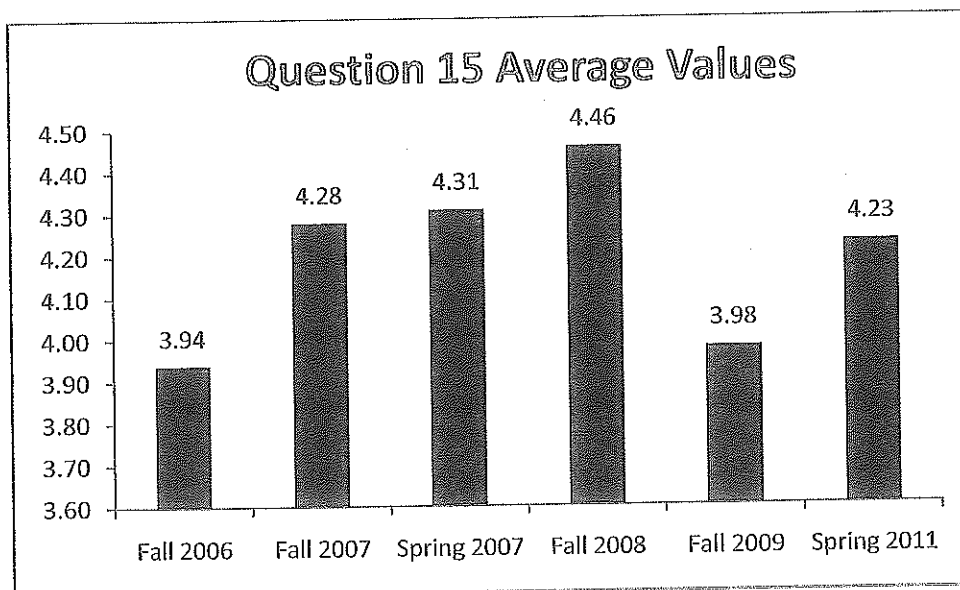
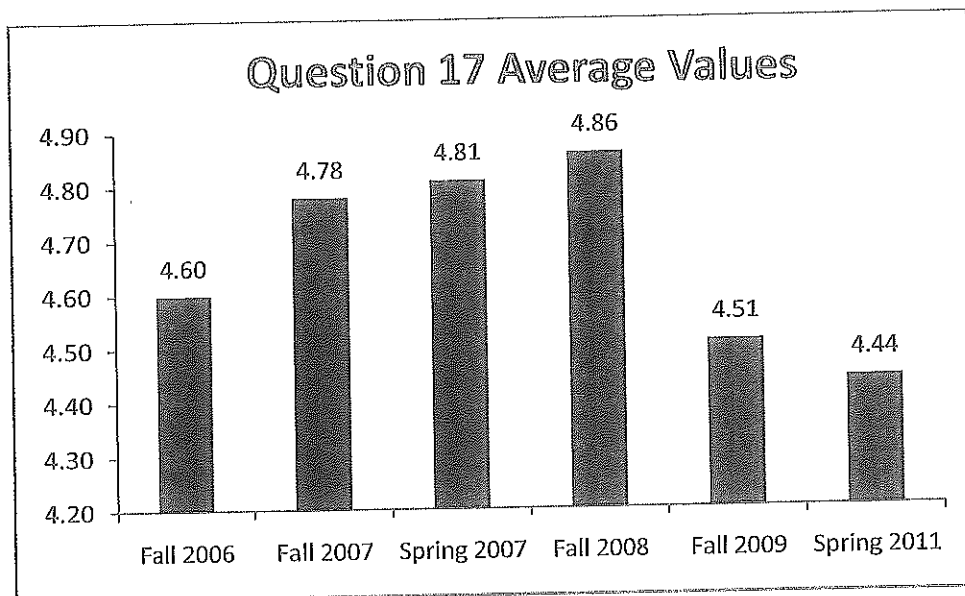


FIGURE 14



The analysis of each student evaluation question incorporates data in Table 7, Table 8, and Table 9 along with visual interpretation of relevant bar graphs. Even though this seems out of order, Question 6 must be looked at first in that it is the crucial question in the student evaluation form regarding tenure, promotion, and subsequent faculty evaluation. That question is simply a student assessment on the overall quality of instruction. The data indicates that average results for Question 6 are significantly higher in the spring of 2007 (when the first music project was given) compared to the fall semester of 2006 (no music project). Likewise, average results for this question are higher in the fall semester of 2008 (the second music project including student-written song lyrics). The data and perusal of Figure 7 indicate that student evaluations for this question are improved during semesters when the project is used in Consumer Economics. In the online sections, average responses for Question 6 were lower than

those seen in the live sections, however, they significantly improved in the online section that incorporated the music project. Similar results are observed when looking at the data and graph for Question 5. The average values are lower for Question 5 (students often still do not enjoy economics even if they like the quality of instruction) compared to other questions in the student evaluation form, but they still improve significantly when a music project is incorporated into the course for the live and online sections. This is somewhat peculiar in that outside the lectures specifically addressing the music project, general course lectures are the same for each of the online sections.

Results for Question 7 (the student perceived amount of effort in the course) are somewhat different. Students in the fall semester of 2006 (no project), on average, believe the course was slightly more difficult than students in the spring semester of 2007 did (includes the original music project). This difference, however, is not statistically significant. Comparison between fall of 2007 and fall of 2008 shows that students taking the course when the second music project was included think there is more effort than students taking the course when the project is not included. The music project given in the fall semester of 2008 certainly involved a great deal more effort by students than in other semesters. In the online sections, the perception of effort in the course was not affected by inclusion of the music project. As one might expect, students in online sections viewed the course as involving more effort than those students in the live sections. Results on Question 9 (whether the instructor enhanced student interest in the course) are similar regarding statistical insignificance for the first music project and statistical significance for the second music project. While the bar graph in Figure 10 shows better results in semesters when a music project is used, the only significant rise is

a comparison between fall of 2007 and fall of 2008 (the second music project). For the online sections, the difference involving this question is statistically significant.

Question 12 (student assessment of how much they learned) and Question 14 (assessment of instructor preparedness) results are both very favorable when comparing semesters with and without either of the music projects. Looking at Table 7 and Table 8 along with Figure 11 and Figure 12, it is clear that student evaluations for these two questions significantly improve when a music project is added to the Consumer Economics course. For the online sections, there is a significant positive effect for Question 14 but not Question 12. This is, again, somewhat of a surprise in that material lectures are identical across online sections of this course.

Results on the final two student evaluation questions analyzed in this paper (Question 15 and Question 17) show average improvements when a music project is included. For Question 17, however, the improvement between fall semester of 2007 and fall semester of 2008 is not statistically significant. The average scores for those two semesters are already quite high so it appears students feel a significant number of examples and illustrations are part of the course with or without the new music project. There are no statistical differences across sections of the online version of this course for these particular questions. Overall, it is clear that incorporation of a music project in Consumer Economics has a very positive overall effect on my student evaluations for both the live and online learning environments.

VI. Conclusion

As stated in the introduction, this paper is still a very preliminary analysis. A great deal of work needs to be done in terms of improving the statistical analysis and the development of the music project. Nevertheless, it appears that there is some support for using a music project to teach economic concepts to students in a pre-principles of economics course. From a pedagogical standpoint, it is encouraging to see that during the two semesters when the music project was included attendance improved. I believe most instructors will agree that improving attendance among students most at risk for failure (such as beginning freshmen) is half the battle. There does not appear to be any evidence that suggests that simply incorporating a music project improves student performance. It does appear that the way the project is constructed might matter. The second music project that included student groups writing their own song lyrics appears to have some positive effect on final examination scores when compared to other semesters. Perhaps this is a result of inducing students to review their notes more while preparing song lyrics. It might also simply be a function of placing students in a group. Students originally get together to write song lyrics but may extend this to a study group of some kind. Interestingly, this gain is also evident in online courses where there is little student collaboration. Therefore, it does not appear that the formation of study groups have much to do with the improved performance observed. This leaves the attendance rate as, perhaps, the best cause of this improvement and an overall positive impression of the project as a reason for viewing higher student evaluation statistics. It is encouraging, regardless of the explanation, to witness improved examination performance during a semester when I used a more involved project.

While student academic performance, learning, and attendance are all vitally important, faculty members are also interested in discovering ways to improve student evaluations. It is clear from my student evaluations over a four semester period that including the music project in the Consumer Economics course is a good idea. For the most part, my student evaluations were much better during semesters when I included the music project. Clearly, it seems students enjoy nontraditional instruction techniques regardless of how the course is delivered.

It is entirely possible, however, that my teaching improves during semesters when I incorporate a music project. Consumer Economics is a very remedial course in comparison to other courses I teach and, as a consequence, adding any new twist to the course might influence my teaching style in a subconscious fashion. Comparing examination scores and student evaluations across semesters assumes that my teaching approach is uniform over a two year period. Likewise, these comparisons are only valid if student characteristics are relatively uniform across semesters. While I believe that both my teaching approach and student characteristics are relatively stationary for this course during this sample period, this conjecture is without empirical verification. For example, one would expect freshman students in the spring semester to generally outperform freshmen in the fall semester simply based on attrition between those two semesters. Results are even more encouraging in that this trend does not appear to be altered when looking at online versions of this course. It is also possible that with changing standards faced by education departments, the quality of student taking Consumer Economics changes over time. If education colleges are more selective then student entrance examination scores might rise. Likewise, education programs might not require a basic

economics course but, instead, a selection of a group of social studies courses for students majoring in education. If this is the case, the better students might self-select into Consumer Economics compared to previous semesters. Results in this paper seem to indicate that this project has the greatest influence on students in the lower end of the grade distribution. In any case, it will be important to develop a reasonable control group in future research as well as include student characteristics in a more precise analysis. Since SAT scores and grade point averages were not available to me at this point in time, a regression analysis could not be done. In the future, I will seek to teach more than one section of Consumer Economics in the same semester to provide a control group in addition to recording data that specifically measures different student characteristics. It will be important, for example, to see whether examination scores are higher in sections where I use the music project once SAT scores or grade point averages are factored out. Another improvement that must be made to the music project involves the treatment of the lyrics written by students. While I required students to provide a written synopsis of the previous two songs they turned in, I did not do so with this part of the project (due to time constraints). I believe it would be more beneficial for students to turn in a discussion of how their lyrics relate to economics both in terms of the learning process and for assessment purposes. As it stands, I only asked students to rate each song turned in and I simply graded the lyrics; not enough information to make a complete assessment of the work put in by each group. This is a change I will make in future sections of this course.

Despite the shortfalls of this initial study, the results are encouraging and in support of the use of this nontraditional teaching tool in a pre-principles economics course. Students in Consumer Economics are less experienced and less likely to

understand how economics relates to their world. Incorporating a project that involves music they like is a way to create interest among these types of students and I suspect its impact to be stronger than in a principles of economics course where most students are already aware of why they are enrolled in the course (even if they don't like it). The group lyric writing in my assignment is unique in the economic education research and a part of my project I will continue to include. In the future, I will explore the possibility of obtaining the services of local musicians or the Music Department to put student lyrics to music and maintain those files on my website.

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