

Tweeting Adam Smith:  
Using Twitter to Engage Students in the History of Economic Thought

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Abstract

This paper presents a novel way to use Twitter to engage students in advanced economics courses. While prior research provides some uses of Twitter in introductory economics courses, little research exists on the uses and efficacy of Twitter in upper level economics courses. This paper provides an example use of Twitter in a history of economic thought class. There is clear evidence that using Twitter makes a class more enjoyable and more engaging for students, and some evidence that Twitter increases knowledge retention. Thus, Twitter use in class benefits students by not only making class more enjoyable but also by increasing learning and knowledge retention.

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## **Introduction**

It is often difficult to engage students with the readings or to synthesize the readings. One way to overcome this challenge is to actively engage students in the learning process. Economics faculty have worked to find ways to engage students through using the social media in a variety of contexts. Al-Bahrani et al. (2016) detail the use of selfies in economics assignments, Al-Bahrani and Patel (2015) outline ways to incorporate Twitter, Instagram, and Facebook to economics courses. This paper outlines a novel assignment where Twitter is used to engage economics students.

Twitter, the social media platform where users have 140 characters to “tweet” a short message is popular among young people, as well as among a variety of public figures. Tweets are typically accompanied by one or more hashtags, starting with the # symbol. The hashtag, which contains no spaces or symbols, typically represents a pithy summary of the Tweet or connects a Tweet to the larger conversation. For example, #tbt is a popular hashtag for “throwback Thursday,” used to indicate that a picture is from the past.

In this paper, I outline an assignment whereby students use Twitter along with reading the works of historical economic thinkers to Tweet the main ideas and develop creative hashtags associated with the authors’ main ideas. This paper contributes to the instruction of economics by providing a way to help students relate to and engage with economic thinkers. It also shows that this type of novel and thought-provoking assignment can increase student knowledge retention. This study aims to fill the dearth of empirical evidence on the effectiveness of Twitter in the classroom pointed out by Al-Bahrani et al (2017). I provide empirical evidence of the effectiveness of using Twitter to help students relate to the material as well as the role of Twitter in information retention.

The rest of the paper is organized as follows. In the next section, I provide an overview of how Twitter is typically used in academia. I then outline the expected benefits of using Twitter and the main research hypotheses. Next, I outline the experimental design, instruments, and procedures. After a thorough discussion of the results of a pop quiz of knowledge retention and of a survey of student perceptions of using Twitter, I discuss the limitations of the study. Lastly, I conclude.

## **Twitter Use in Academia**

Given the heavy use of social media among companies and marketers, it is somewhat unsurprising that much use of Twitter in higher education occurs in marketing classes at both the

undergraduate (Barn 2016, Rinaldo et al. 2011) and graduate levels (Lowe and Laffey, 2011; Nygard et al. 2014). Twitter has also been used in a variety of other fields, from medicine (Forgie et al. 2013) to education (Lin et al. 2013) to general education courses (Halpin 2016). (See Tang and Hew (2017) for a more thorough review of research on the applications of Twitter in higher education.)

Instructors integrate Twitter in a variety of ways in their courses. These can be divided into three main categories: students posing questions during classroom lecture, instructors sharing supplemental information outside of class, and students creating content outside of class.

Twitter is often utilized in large introductory courses as a means to facilitate questions during a lecture. Novak and Cowling (2011) provide an example whereby students Tweet questions using a class hashtag while the instructor gives their formal lecture. The Twitter hashtag feed is projected simultaneously with the lecture. Either during the lecture or at the end of the lecture, the instructor can clarify student questions from Twitter. Bodnar et al. (2013) provide a similar example whereby one instructor lectures while the co-instructor responds directly to students' Tweets to clarify course material during the lecture. A critique of this use of Twitter might be the potential negative side effects of spending time writing Tweets during lectures rather than focusing on class and taking notes; however, this critique is addressed by Kuznekoff et al. (2015) who determine that texting and tweeting relevant information in class does not negatively impact recall in multiple choice texts. Thus, Twitter may facilitate student's questions during large lectures without harming their ability to learn.

A second use of Twitter occurs when the instructor shares supplemental information outside of class time. In this, the instructor Tweets relevant articles and comments to the class to view. Twitter is public and free; therefore, even students without a personal Twitter account are able to follow the instructor's posts. (See, for example, Wood (2017).) Instructors may also tweet reminders about assignment due dates and upcoming exams. In this instance, Twitter is a substitute for traditional email or class announcements through a learning management system. Similarly, Stephansen and Couldry (2014) detail the experience of creating a departmental Twitter account.

A third use of Twitter revolves around students Tweeting relevant course content outside of class. This use of Twitter is the focus of this paper. Parcha (2014) outlines an assignment requiring students to Tweet about a particular topic and then to retweet their classmates' Tweets, so that students comment on their classmates' Tweets. Kassens-Noor (2011) argues that Twitter encourages students to share information outside of class and therefore promotes informal learning. Her findings show that students choosing to use Twitter in an assignment spent more time on each individual entry than did students writing more traditional diary entries, and that the

Twitter students did much better in a pop quiz, which measured knowledge retention, than the students who wrote the more traditional diary entries. This study also utilized a pop quiz to measure if student use of Twitter increased retention of the ideas of the authors that they were assigned to Tweet.

Little research evaluates the effect of using Twitter in economics courses. A meta-analysis of 51 peer-reviewed empirical studies of Twitter reveals only one of an economics course (Tang and Hew 2017). The research on Twitter in economics that does exist focuses on principles classes. For example, Kassens (2014) utilizes Twitter as a complement to course lectures in a small principles of macroeconomics course. Over three-fourths of the students surveyed reported that using Twitter helped to clarify the course material (Kassens 2014). Similarly, Middleditch and Moindrot (2015) confirm that the use of Twitter in large lecture introductory economics courses improves student engagement. Wood (2017) finds that nearly 80 percent of students find that the professor's use of Twitter to provide real world examples was a "worthwhile addition" to the principles of economics course. Al-Bahrani and Patel (2015) provide background on the technical side of using Twitter, and a few brief examples of Twitter use in class. This paper addresses the lack of information on using Twitter in economics courses. This research adds to the economic education literature by providing a case study of how to integrate Twitter into an upper-level elective. In addition, it helps to fill the void of research on whether Twitter use in the classroom increases learning.

### **Expected Benefits of using Twitter**

There are several potential benefits to using Twitter in the classroom. First, Twitter is hypothesized to increase student engagement through two channels. First, due to the active learning component of composing tweets, students are hypothesized to remember more information. Second, by using the technologies that students are familiar with, students are hypothesized to relate more to the course. As Salemi (2002) argues, active learning leads students to understand concepts more deeply. Evans (2014) determines that using Twitter increases student engagement in a first-year Management course. Welch and Bonnan-White (2012) conducted an experiment using Twitter versus short writing prompts in class. The authors find contrary to their hypothesis that there were no substantial differences in student engagement between the Twitter classes and the control classes, with academic engagement being higher in the control class than in the Twitter class. A key finding was that students in the experimental class who enjoyed using Twitter did report being more engaged than those who did not enjoy using Twitter. This suggests that Twitter does not engage all students equally. Thus, it suggests a role for Twitter as a complement to other active learning strategies. Since student engagement is linked to higher levels of critical thinking and to higher grades (Carini et al. 2006), if Twitter improves student engagement then it is likely to have additional educational benefits.

**Hypothesis 1:** Twitter use will increase student engagement in and enjoyment of economics.

Closely related to student engagement is student learning. Junco et al. (2011) determine that Twitter use increased both student engagement and semester grades. The higher grades suggest that the increased engagement of Twitter also deepens learning and retention of information. Students report that using Twitter helped to clarify course material (Kassens 2014). Student Tweets which are used to start discussion are also likely to increase student learning, as student interactions in class are associated with increased learning (Myers and Bryant 2002).

In addition, the nature of using Twitter to synthesize and summarize a key point is thought to increase critical thinking skills, particularly with the requirement of using hashtags to comment on the relevant materials. For example, Halpin (2016) finds that using Twitter induced students to start using reputable science sources, including science periodicals like *Scientific American* or government websites like CDC.gov. For all of the reasons outlined above, hypothesize 2 suggests that Tweeting an author will lead to greater learning.

**Hypothesis 2:** Tweeting an author will lead to more knowledge retention.

Not all of the research on Twitter use is positive. Several authors note the privacy concerns of using Twitter. Since Twitter is a public site, students' work is publicly available. In order to reduce this exposure to students, researchers have suggested that students create a Twitter account for school that is separate from their personal accounts (Lin et al. 2013). In this instance, students were also required to create anonymous Twitter accounts. It is also possible that students will see use of social media as an infringement on their personal space and time (see, for example, Haytko and Parker 2012). In the unlikely event that a student is averse to using Twitter, it would be relatively simple to have the student write a Tweet and submit it privately to the professor, without using Twitter as an interface.

### **Purpose of the Study and Research Questions**

The purpose of the study is to introduce economics faculty to ways to incorporate Twitter into upper level economics courses. At the same time, the research asks two important questions. First, can Twitter be used to increase student interest in an upper-level economics elective. Second, does using Twitter in a course increase student retention of information. In answering these questions, this paper provides one of the first examples of how to incorporate Twitter beyond the prior uses as either a question-based platform in large lecture classes or the one way sharing of information from instructor to student. In addition, Al Bahrani et al. (2017) point out the need for additional empirical evidence regarding the role of social media in student learning. This study fills in the lack of information regarding whether the Twitter assignment increased student engagement, student perceptions of their learning, and student learning.

## **Methodology**

### *Participants*

The participants in this study were the students in the history of economic thought at a small, liberal arts college in the mid-Atlantic. The class is a small seminar, with 12 students in this iteration. 11 students were in class the day of the survey regarding their experiences, and all 12 took the pop quiz. The course is a 400-level required of economics majors and an elective option for minors. The history of economic thought is a reading and writing intensive course; students read the original works of economic thinkers from Adam Smith to John Maynard Keynes and write substantial term papers over the course of the semester. The class consisted of 10 economics majors and 2 economics minors. 10 of the students in the class were seniors and 2 were juniors. 9 students were male and the remaining 3 were female. The structure of the class was a seminar, with the instructor facilitating a class discussion of the major authors, including all of the authors students were assigned to Tweet.

### *Design and Procedure*

Before the assignment began, expedited IRB review of the project and activity was acquired. The Twitter assignment focused on the writing of six of the most major economists read over the course of the semester: Adam Smith, David Ricardo, Thomas Malthus, Karl Marx, Thorstein Veblen, and John Maynard Keynes. To ensure a relatively even division of work, students were randomly assigned to Tweet either Smith or Marx, Ricardo or Malthus, and Veblen or Keynes. For example, half of the class was assigned to Tweet Smith and the other half was assigned to Tweet Marx. At the beginning of the semester, students were randomly assigned 3 of the 6 authors. In addition to doing the reading for each class, the students assigned to an author were also required to write a Tweet summarizing the author's main thesis and a short summary paragraph which summarized the Tweet and explained how it related back to the reading. Students were encouraged to Tweet either in the words of an author with a direct quote, or with the ideas of the author but in their own words. Before the assignment began, the students voted on a class hashtag, which all were required to include in their Tweets. This allowed the instructor to easily follow the class-related Tweets.

Tweets and summaries were graded on a 4-point scale. One point was awarded for completing the Tweet and summary. 1 point was awarded for a high-quality hashtag, which was relevant, informative, and logical. 1 point was awarded for a high-quality analysis, which was interesting, insightful, and grounded in the readings. Lastly, 1 point was awarded for the quality of the writing in the summary, to ensure that the writing was free from grammatical errors. To reduce any potential investigator bias from the instructor knowing who Tweeted a particular author, students were asked to create anonymous Twitter handles with no identifying characteristics. All assignment of authors to Tweet was completed using the student's random Twitter handles

and all grading was handled by the Teaching Assistant. The instructor learned the Twitter handles of students only after semester grades were submitted.

Tweets were discussed in class along with the readings. Each day of class where there was a discussion of a Tweeted author, class discussion either began or ended with a reading of the Tweets and hashtags and a discussion of how the Tweet and hashtag related to the reading.

### *Instruments and Measures*

At the end of the semester, students were administered a pop quiz to test for their retention of information. The pop quiz consisted of two parts: a section where students identified the author of a particular quote and a section where students both identified the author of a quote and then explained how the quote fit into the author's thesis.

In addition, students were surveyed regarding their experiences and reactions to using Twitter in class. The survey was developed based on prior research regarding using Twitter in class. Questions were adapted from Welch and Bonnan-White (2012), Middleditch and Moindrot (2015), and Krause and Coates (2008). Most questions were asked using a 5 point Likert scale, from strongly disagree (1), disagree, neither agree nor disagree, agree, and strongly agree (5). Cronbach's alpha, a measure of instrument validity, was calculated for the survey questions ( $\alpha=.75$ ). This value of alpha suggests that the survey instrument is internally reliable (Tavakol and Dennick 2011). In addition, students were asked several open-ended questions to gather more detailed information and feedback. The full list of survey questions is available in Appendix A.

## **Discussion and Results**

### *Student Enjoyment*

Affirming hypothesis 1, students reported enjoying the Twitter assignment, and that it made class more engaging and more enjoyable. In each of these three questions, the mean score from the student survey was between 3 and 4. Over two-thirds of the student reported that they agreed or strongly agreed that they enjoyed taking part in the Twitter assignment. Similarly, nearly three-fourths of the class agreed or strongly agreed that Twitter made the class more enjoyable and half of the class agreed or strongly agreed that Twitter made the class more engaging. The clearest acknowledgement of student enjoyment came in the narrative section of the surveys. For example, students commented:

- “I liked how the assignment brought a fun way to discuss normally tasteless topics like Marx/Smith to the course.”
- “It was a fun change of pace from [a] typical class.”
- “Tweeting gave a little modern twist to a class about really old people.”
- “I liked the challenge to post relevant content.”

Students also acknowledged that Twitter led to more thinking about a topic and to more engagement from their colleagues. In particular, the Twitter assignment “required more thought, [I] had to make sense of a quote by writing the paragraph along with the Tweet.” Similarly, the Twitter discussion “breaks up class a bit and I find that it allows others to be engaging in class that wouldn't otherwise”

Perhaps the strongest measure of student’s enjoyment using Twitter in class comes from the survey question regarding whether or not Twitter should be used in future classes. 91% of the students either said that Twitter should be used again or had no opinion on using Twitter in future classes. Indeed, one student noted that future students can relate to the current class from the Tweets of prior classes. To make this even more beneficial, though, students will also need to include a hashtag that relates to the author they are Tweeting. This would also have been useful during the normal course of the semester.

Only one student was against using Twitter in the future, writing Twitter “was very confusing at the beginning of the semester as I fell behind.” A couple of students were ambivalent about recommending Twitter, including the one who noted: “I personally did not find it very beneficial, though some of the submissions were entertaining.”

The students’ Tweets and hashtags throughout the semester exemplified the thought and creativity that went into the Twitter assignment. For example, one student wrote about *Das Kapital*, “If you’re flat broke, at least labour will serve as an asset #DasKapital.” Another wrote about *The Wealth of Nations*, “The far greater part of them he must derive from the labour of other people. #teamworkmakesthedreamwork.” A final example wrote about *The General Theory* “if the classical theory is only applicable to the case of full employment, it is fallacious to apply it to the problems of involuntary unemployment #LayOffsArentOptional.” Each of the Tweets and hashtags summarize the main theses of the authors and exemplifies the additional thought and creativity which students put into creating the Tweet and hashtag.

### *Knowledge Retention*

There is evidence that the Twitter assignment increased knowledge retention. Students reported that they engaged in activities associated with learning, namely reading and thinking, when they



Tweeted an author, reporting a mean score of 4.09 on both the reading and thinking questions. 73% of students agreed or strongly agreed that they spent more time reading an author they Tweeted and 82% of students agreed or strongly agreed that they spent more time thinking about an author they Tweeted. Interestingly, however, students did not necessarily connect those activities with learning, scoring a mean of 3.09 in terms of learning, with only 3 students reporting that they agreed or strongly agreed that they felt like they learned more when they Tweeted and the majority of students (55%) neither agreeing nor disagreeing that they learned more when they Tweeted. Given the connection between thinking and learning, this suggests that students do not really understand the learning process and does suggest that students learned more when Tweeting an author.

Students were slightly more inclined to report remembering more when they Tweeted, with 45% of students reporting that they agreed or strongly agreed that they felt like they remembered more when they Tweeted. Some of the student narrative feedback also displayed that student's believed that they retained information when they used Twitter: "I would recommend using Twitter because it makes the reader focus more on strong points that authors make."

When it comes to testing knowledge creation, the small sample size became an issue. Since half of the students Tweeted each author, the other half of the class was used as the control group. Even in ideal conditions where all students completed the assignment and Tweeted the authors they were assigned to (neither of which happened), the sample size for each group would be 6 students. In order to minimize the quiz time, the quiz focused on the first four authors, Smith, Ricardo, Malthus, and Marx. The quiz included two sections: a 10-point multiple choice section where students identified whether a series of quotes could be attributed to Adam Smith, David Ricardo, Thomas Malthus, or Karl Marx. Figure 1 provides the results of the pop quiz. Total possible points on the pop quiz are 12 for Smith and Marx and 13 for Ricardo and Malthus. In the full pop quiz grade, there is a small positive effect of Tweeting on student information retention, and there is clearly no negative effect.

When looking only at the multiple choice section of the exam, Twitter has a clearer positive impact on student grades. Rather than comparing students against each other, the fact that students Tweeted only some authors and not others allows for a comparison in student answers for the authors that they Tweeted relative to the authors that they did not. A simple t-test comparing the number of correct answers shows that students answered more correctly when they Tweeted an author than when they did not. The average percentage correct on the 10 point multiple choice section of the test when Tweeting an author was 52%. The average when not Tweeting an author was 36%. This 16 percentage point difference is statistically significant at the 5 percent level. Thus, in addition to student's own reports that Twitter increases knowledge retention, the pop quiz results also support the hypothesis that Twitter increased student knowledge retention.

The small sample size is potentially an issue for the data analysis, which is addressed further below. More data and a larger sample size would be needed to test this result further; however, this initial finding does, along with the results of the student survey, does suggest that students retain more knowledge as a result of the Twitter assignment. Thus, Twitter can be used to increase student engagement in a course while simultaneously increasing knowledge retention.

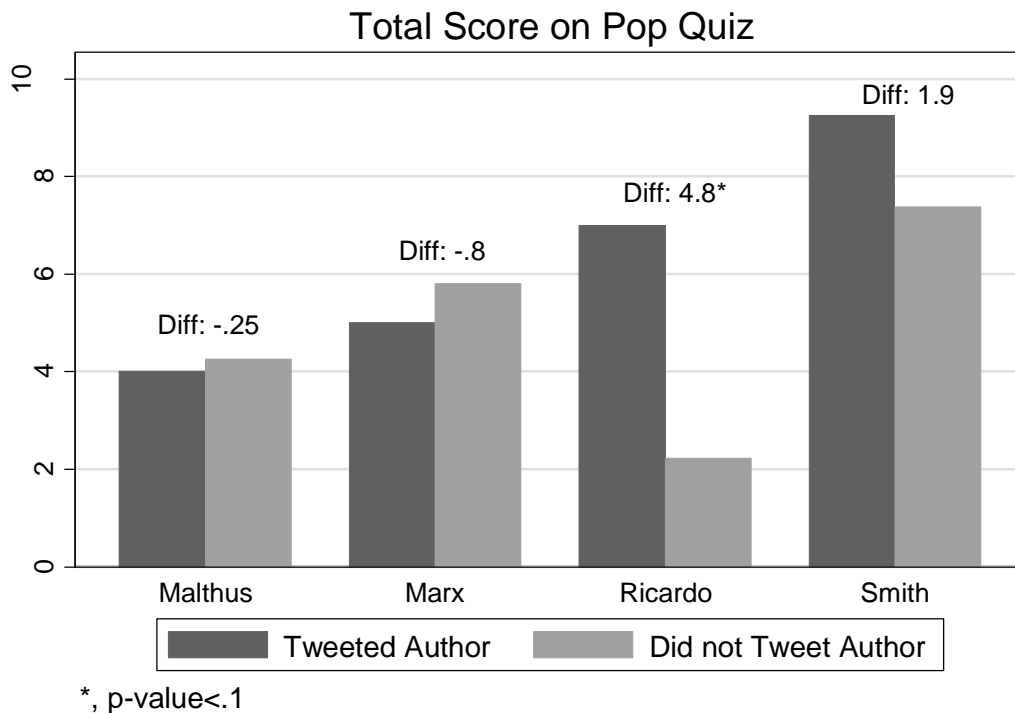


Figure 1: Total score by correct answer on pop quiz.

### Limitations

The major limitation of this study is the class size. The author recognizes this concern and suggests that this paper provides more of a pedagogical tool and the outline of a methodology that can be used by others in larger settings should they so choose. That said, one of the largest critiques from students was keeping Twitter anonymous; thus, while from an experimental standpoint, not knowing who wrote each Tweet had benefits in terms of reducing experimenter

bias, from a pedagogical standpoint, having students share their Tweets to the class with their explanation of the Tweet's relevance would be more beneficial.

A second limitation of using Twitter relates to the character limit. As Kassens-Noor (2011) and Rinaldo et al. (2011) point out, the character limit poses constraints on students' Tweet lengths. Though as Barn (2016) counters, the brevity requirement means that students must also synthesize their ideas and therefore may also benefit learning. The main response from students was to clarify whether they could use a two tweet format and submit multiple tweets rather than being limited to 140 characters. Thus, explicitly emphasizing whether this is acceptable is important. In addition, when Twitter doubled the character count limit to 240 characters mid-semester, this reduced the difficulty for students to write short Tweets.

Though there may be some limitations to using Twitter, this initial evidence suggests that the benefits outweigh the costs.

## **Conclusion**

Even though students are often considered digital natives, savants with all types of technology and social media, many students have not previously used Twitter and may find it difficult to use (Barn 2016). Similarly, less than a third of the students in the course currently had a Twitter account. Thus, an important note is to provide an overview of how to Tweet at the beginning of the semester, including the role of hashtags. In addition, given the character limit, it is essential to have a short character limit for the class. The class hashtag for the economic thought course, for example, was 6 characters, including the hashtag symbol. Thus, students could include the class hashtag in their Tweet and still have much character space left.

Twitter can be used in upper level economics electives to increase student engagement and enjoyment of economics, while also increasing learning and the time students spend thinking about a topic. In speaking with students informally outside of class, many of the students who were most excited about using Twitter were average and not superb students. Thus, the marginal benefit of reaching the marginal students, those who are less likely to engage in the readings on their own, may be even greater than the benefits suggested here.

This paper provides initial empirical evidence of the pedagogical benefits of using Twitter in economics courses.

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## Appendix

Please rate each of the following based on the following 1 to 5 scale:

1: strongly disagree    2: disagree    3: neither agree nor disagree    4: agree    5: strongly agree

	Disagree			Agree	
1. I am satisfied that I chose economics as my major/minor.	1	2	3	4	5
2. I am interested in learning more about the history of economic thought.	1	2	3	4	5
3. I am interested in reading more about a specific author(s).	1	2	3	4	5
4. I am interesting in learning more about economics.	1	2	3	4	5
5. I enjoyed taking part in the Twitter assignment.	1	2	3	4	5
6. The Twitter assignment made the class more enjoyable.	1	2	3	4	5
7. The Twitter assignment made the class more engaging.	1	2	3	4	5
8. I spent more time reading an author when I had to use twitter.	1	2	3	4	5
9. I spent more time thinking about an author when I had to use Twitter.	1	2	3	4	5
10. I feel like I learned more when I had to use Twitter.	1	2	3	4	5
11. I feel like I remember more about an author when I had to use Twitter.	1	2	3	4	5
12. Did you have a Twitter account before this semester started?		Yes	No		

Open-Ended Questions:

13. Would you recommend that I use Twitter again in future classes? Yes          No          No Opinion
14. Please explain your choice, noting specifically anything you liked and/or disliked.

15. Were there any major problems that you encountered using Twitter?

16. If there is anything else you would like to add, you may do so below:



## Appendix B: Survey Results

Survey Question	Mean	Std Dev
Enjoyed the Twitter assignment	3.45	1.13
Twitter assignment made class more enjoyable	3.73	1.01
I spent more time reading when I Tweeted	4.09	1.22
I spent more time thinking when I Tweeted	4.09	1.14
I feel like I learned more when I Tweeted	3.09	1.04
I feel like I remember more when I Tweeted	3.36	0.92
I am interested in reading more about a specific author	4.18	0.98
<u>I am interested in learning more about economics</u>	<u>4.82</u>	<u>0.40</u>
Observations	11	
Cronbach's alpha, ( $\alpha=.72$ )		

Did you have a Twitter account before semester started?

Yes                    3 (27%)  
No                     8 (73%)

Would you recommend that I use Twitter again?

Yes                    7 (64%)  
No Opinion           3 (27%)  
No                     1 (9%)