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Introduction to Symposium: Unique Approaches to Teaching Principles of Economics

This symposium in the *Journal of Economics and Finance Education* contains ten articles outlining tips and techniques for teaching core principles of economics. Developed for the 15th Annual Economics Teaching Workshop, hosted by the Department of Economics and Finance at UNC Wilmington, these manuscripts provide unique approaches for engaging students in the economic way of thinking by connecting the classroom to the world outside, motivating critical thinking, and providing experiential learning.

Launched in the year 2000 with support from the Calvin K. Kazanjian Economics Foundation, Inc. and National Council on Economic Education, the workshop brings 50-75 university and community college teachers from the Mid-Atlantic region to Wrightsville Beach, NC each October for a full day of presentations and discussions focused on teaching economics. Notable workshop speakers have included economists and teachers such as Ben Bernanke, John Taylor, Kenneth Elzinga, David Colander, Bob Frank, John Siegfried, Lee Hansen, KimMarie McGoldrick and Mike Salemi. In 2015, we decided to ask our participants to give us their best approaches to engaging students. The result is this compendium of manuscripts.

The first four manuscripts focus on capturing students' attention through narratives and include "Returns to Storytelling" by Jeffrey K. Sarbaum and Jean K. Rosales, "Gangsters, Scoundrels, and Thieves – Teaching Economics Using Nefarious Historical Characters", by Alice L. Kassens, "Teaching the Time Value of Money and Ethics: Using Case Studies of Bribery in Sports", by Ethan D. Watson, and "Teaching the Production Function Using Fast Food Royalty", by Michael Enz.

The next two manuscripts share the theme of asking students to think critically and ask economic questions that are relevant to their lives, and include "Teaching with Puzzles", by Jean K. Rosales and Jeffrey K. Sarbaum and "Using Salary Data to Illustrate Microeconomics Principles and the Importance of Mathematics", by Peter W. Schuhmann.

The final four manuscripts emphasize the importance of connecting learning through and to experiences, and include "Auctioning Extra Credit to Teach Economic Principles", by Daniel Hall and Peter Summers, "Teaching Elasticity with Rubber Bands", by James Tierney, "Using Soda to Teach Real Interest Rates", by Adam T. Jones, and "Interviewing Business Leaders to Develop Critical Thinking about Market Structure", by E. Anne York and Steven A. Benko.

We trust that you will enjoy this symposium. Our hope is that these papers will provide and inspire ideas that you can incorporate in your classes to capture students' attention and bring economics to life.

Adam Jones and Pete Schuhmann
Symposium Editors

Return(s) to Storytelling

Jeffrey K. Sarbaum¹ and Jean K. Rosales²

Abstract

Students' ability to understand and retain new concepts depends to a great extent on whether they are able to translate the new information into something familiar. Storytelling is one method of bridging the gap between new and familiar material. Effective storytelling requires some planning and forethought but the extra effort can earn big payoffs in student engagement and retention.

Storytelling, a time-honored tradition in all human society, can help create the bridge between what the student already knows and the new material being presented. Storytelling is a different way of communicating than the traditional lecture format of presenting information. Stories, when told effectively, engage students in a vivid narrative with a theme, a plot, a setting, and characters.

A body of literature exists that supports the use of stories as effective pedagogy. Journal articles by Dalton (2010) and Bryant and Harris (2011) discuss the value of narrative interviews and storytelling in macroeconomics and finance. Articles by Chamelee-Wright (2011), Kish-Goodling (1998), and Deyo and Podemska-Mikluch (2014) discuss how famous books of fiction can be used to teach economic concepts. Economists Russell Roberts (2006) and Ken Elzinga and William Breit under the pseudonym Marshall Jevons (1993) have written widely adopted novels that explicitly embed and explain economic theory throughout.

In a lecture, the focus is on describing the concept or facts to be learned, usually in a logical, atomistic format:

- A perfectly competitive industry has the following characteristics: many buyers and sellers, homogeneous products, price takers, etc.
- Easy entry and exit leads to a zero economic profit in the long run.
- Shocks create short-run profits or losses incentivizing existing firms to move away from their cost minimizing output level.
- New firms enter or existing firms exit in response to profits/losses until a zero profit long run equilibrium is restored.

With storytelling, the goal is not to “present” these materials but, rather, to pull out the concepts as the story unfolds and through a debriefing at the end. For example, the following story frame is one this author uses (and elaborates upon with pictures and additional dialog) to communicate the above concepts:

Last summer, I was hiking along the coastline near Bar Harbor, Maine. I kept seeing these things that were all painted differently bobbing up and down in the water. Being from Los Angeles and unfamiliar with the area, I had no idea what they were.

(Story Elements: Setting, plot)

I came across a fellow hiker and asked him if he knew what they were. He told me those were buoys identifying the location of lobster traps. The different paint patterns identified the different owners.

(Story Elements: New characters; Economic Concepts: Product homogeneity, many firms).

I kept walking along enjoying the scenery and eventually saw two guys in a small boat bringing in a trap—one was driving, while the other was loading it. It dawned on me that it would probably be pretty easy for me to figure how to catch lobsters if graduate school did not work out.

¹Senior Lecturer, Economics Department, The University of North Carolina at Greensboro, P. O. Box 26170, Greensboro, NC, 27402. email: jksarbaum@uncg.edu.

²Graduate Coordinator, Economics Department, The University of North Carolina at Greensboro, P. O. Box 26170, Greensboro, NC, 27402. email: jkrosale@uncg.edu.

(Story Elements: Advancing the plot; Economic Concepts: Easy entry/exit, perfect information, division of labor and fixed versus variable costs for the eventual cost curve set-up)

Finally, I left the trail and ended up on the harbor docks. There I saw dozens of nearly identical boats with lobster traps with crews unloading and selling their catch. As I got closer to the marina, I noticed numerous restaurant trucks parked at the docks. The cooks were busy buying the day's catch. I found out that all of the fishermen were offering the same price per pound. It looked like any fisherman who showed up at the dock that day would be able to sell as much as he'd caught at this price.

(Story Elements: More characters, advancing the plot; Economic Concepts: Price takers, firms can sell all they want at the going price)

Then, I saw one guy unloading fish from his boat. Curiosity got the better of me. I went over and asked why he wasn't catching lobsters like everyone else. He told me he used to but, when the big recession hit, he started losing money. He discovered hardly anyone was buying lobster anymore. On the other hand, he realized the guys who were catching fish were making really good money, so he decided to switch.

(Story Elements: New character, plot takes new direction; Economic Concepts: Change in demand for substitute goods; ease of entry and exit)

He went on to tell me that he was still doing okay with fish, but things have sort of evened out. He said the guys catching fish and the guys catching lobster are both making about the same income and that no one is switching anymore. I thought about this for a moment, and it seemed to make sense: lobstermen and fishermen had similar skills and use the same equipment, so they should make about the same income as long as the markets for fish and lobsters remain stable.

(Story Elements: Theme, plot, and character climax, "moral" of the story; Economic concepts: Inferior vs. normal goods in response to an income shock, short-run profits and losses, entry and exit, return to long-run equilibrium)

A second example of a story this author tells involves public goods, the tragedy of the commons, and alternative ways to establish/allocate property rights. In this story, the author uses lots of photographs for imagery and poses lots of questions to the students, asking for comments/feedback before explaining the theory involved.

My favorite place in the world is Yosemite. My favorite thing in Yosemite is Half Dome. I'm sure you've seen the famous pictures of it. I've actually climbed to the top a few times and looked right over the edge. Once, when I was in college, I even climbed it with my dad. It's a crazy climb—13 miles to the backside of the dome and then up a ¼ mile string of cables up over the rounded part of the rock. The cables are pretty nuts—if you slip, it's 2,000 feet down and you're dead. But if it's not crowded and you're careful, it's pretty safe. And the view from the top is better than anything. And it's totally free, well, except for the grueling climb.

(Story Elements: Setting, character introduction; Economics Concepts: Common resources)

Now, let's fast-forward 20 years. Two years ago, I had a conference at Stanford University and a free weekend afterwards, so my dad and I decided we'd meet up in Yosemite for a reunion Half Dome climb. We were in shape, the weather was nice, and we were ready to go. But we never made it to the top. In fact, we were not even allowed to try. What happened? What had changed? Well, as it turns out, over the years, climbing Half Dome became so popular and the cables became so overcrowded that they started having regular deadly accidents. So, to combat crowding, they introduced a system requiring each climber have one of a limited number of climbing passes issued each day. If you don't have this pass, a park ranger won't let you climb.

(Story Elements: Setting, character development, plot; Economics Concepts: Barriers to access, tragedy of the commons)

In an attempt to protect the safety of climbers, Yosemite took what was once a resource freely available for all to enjoy and limited its access via an admission process. Their argument was, if they can't make it safe, they have a moral obligation to take down the cables so no one can climb. Do they really have a moral obligation to protect people? What about buyer beware? Let's assume that issuing limited climbing passes is the right approach. How should this process work? Should the passes be sold to the highest bidders? Should they be given away first come, first serve, or by some other means? What is the fairest and/or most efficient approach?

(Story Elements: Plot resolution, theme, “moral/dilemma” of the story; Economics Concepts: Property rights, role of government, resource allocation mechanisms, solutions to the commons tragedy)

Introducing economic concepts as the story unfolds gives students a human, real-world context they can understand and relate to and helps them recognize that principles of economics happen around them all the time. The purpose of the story is not to replace the formal diagrammatic analysis but, rather, to get the class focused on a complete and digestible narrative with a setting, theme, characters, and a plot from which the economic nuances can be extracted.

How do you develop good “teaching” stories? Good teaching stories begin as good stories. Two sites that have helped us develop our skills at creating stories are <http://piktochart.com/what-makes-a-good-story/> and <http://www.wikihow.com/Tell-a-Great-Story>.

In order to turn a good story into a good teaching story, you will need to find a balance between engaging your listener and pointing out the economics that appears naturally in many common scenarios. Our experience tells us there are four elements that should be considered when creating a teaching story:

1. Plan ahead and consciously build the concepts you want to cover into the story.

This doesn’t mean you need to write out a story; in fact, we recommend against doing so. Spontaneity and interaction with the audience enhance the extent to which students connect with a story and a storyteller, so do avoid simply reading a story you wrote in advance.

That being said, effective teaching stories need to be designed. You should know in advance which concepts you want to introduce or reinforce with your story—division of labor, diminishing marginal utility, gains from specialization—and decide how to include the idea without using its technical term.

2. Look for stories in your everyday experiences.

The lobster and Yosemite stories work well for these authors but may not work well for you. Your best stories, and the ones that your students will resonate with the most, will be the ones that come from your own unique experience. Try to regularly ask yourself: “Is there something about this situation/experience that I can use to help me teach my class?” Remember that the main purpose of the story is to teach an economics concept, not to be witness to the facts. Don’t hesitate to tweak, modify, and evolve your stories as you figure out which parts best resonate and which parts fall flat.

3. Less is best; keep the story short.

Although it is possible to introduce a number of theoretical concepts in one narrative, it is best to focus on no more than three new ideas in one story. That’s not to say you can’t develop a long narrative that illustrates seven or eight or more concepts. More power to you if you can! However, it is more effective to divide your story into bite-size chunks with a smaller number of concepts and to “connect the dots” to theory before moving on to the next piece.

4. Connect the dots for your listeners.

You’ve found a good story and you know how it illustrates an important concept in economics. You’ve developed a great narrative style for it and you tell it effectively to your audience. What happens next?

If you’ve done a good job as a storyteller, your audience now has an image of an event or a scenario they understand and can internalize. Now it’s time to help them connect that information to the concept you’re trying to teach.

It’s important to keep in mind that *you* internalized this information a long time ago but your students are learning it for the first time. Involve your audience by asking them to describe what happened in the story. When they finally arrive at a good description that matches what you wanted them to notice, you can segue into the more formal economic theory presentation of the underlying concept.

Teaching with stories lightens the tone in the classroom and makes a break in the traditional lecture style of presenting information. We have found that, used judiciously, a good story grabs students’ attention and makes them want to hear how it all works out.

Once you’ve given them the “hook”—the image or scenario that connects with what they already know—you can help build a bridge from their mastered knowledge to the new concept and increase the probability that the new material will find a place in their long-term memories.

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Gangsters, Scoundrels, and Thieves – Teaching Economics Using Nefarious Historical Characters

*Alice Louise Kassens*¹

Abstract

Utilizing applications and examples is a common and effective pedagogy. The Klondike Gold Rush provides a host of tales and characters to illustrate economic principles. Using scoundrels such as “Soapy” Smith to illustrate economics in action is engaging and memorable. Complementing these stories with black and white photos from the era brings the students into the period and the story to life. This paper outlines the concept and provides links to contextual and pictorial resources. Additional examples are briefly mentioned.

Application of economic principles is a common and successful pedagogy. Examples, particularly creative ones, bring the principle to life, engaging students and reinforcing the concept. The list of applications is seemingly endless as economics surrounds our daily lives. Economists incorporate art (Watts & Chineze, 2012), music (Hall & Lawson, 2008), literature (Cotti & Johnson, 2012), film (Leet & Houser, 2003), and TV series (Kuester, Mateer, & Youderian, 2014) in lectures of opportunity cost, scarcity, and competition. Given the fascination with gangsters and other infamous characters, this aspect of American history is a bountiful field of economic principles at work with the potential to engage students of all ages.

A host of scoundrels, including those of the Klondike Gold Rush, are an underutilized resource in the teaching of economics. This paper employs the rogue Jefferson “Soapy” Randolph Smith II in an application of product differentiation. “Soapy” and Adam (Smith) are more than an isonymous pair as they share a thorough understanding of economic theory, but “Soapy” is perhaps more entertaining and memorable to young economics students than Adam Smith.

The Scoundrel: “Soapy” Smith

A series of economic recessions in the late 19th century left many destitute and hopeless. After the discovery of gold in the Klondike region of Canada many headed West in the hope of staking their claim. An estimated 100,000 prospectors began the journey to Dawson City, Canada between 1896 and 1899. Many paused in Skagway, Alaska before making the final, dangerous press into Canada. The Skagway economy boomed during this period, many making fortunes not from finding gold, but by supplying goods and services demanded by the prospectors. The largely desperate and transient prospectors moving through Skagway attracted several scoundrels including “Soapy” Smith. “Soapy” specialized in hustling and swindling visitors.

Economic Application: Product Differentiation

Many prospectors demanded alcohol during their stay in Skagway. Approximately 80 saloons, including the Red Onion, Mascot, and Board of Trade, opened in the tiny town during the peak of the rush. To survive in this competitive market, saloons needed to differentiate their product; each needed to find a way to get thirsty travelers to enter their place of business. Some offered bawdy women or gambling while others read news aloud to patrons or served “free” food.

Mr. Smith owned the “Jeff. Smiths Parlor.” which served booze and specialized in the con. “Soapy” and his gang tricked visitors out of their money using a variety of means. One particularly nefarious example

¹ Associate Professor of Economics and John S. Shannon Chair of Economics, Roanoke College, Salem, VA

involved sending telegrams for customers for \$5 each when the wires to the machine went no farther than the wall. Sometimes they used artificial replies to these telegrams to lure patrons into backroom card games while they waited to see the message. Some customers figured out the swindle, but didn't press charges to avoid wasting time getting to the Yukon and their stake. The confidence games exercised by "Soapy" and his gang are an example of a one time game. The mark frequently left town before warning others of the trick, did not press charges, and did not stick around for another round, thus leaving the confidence men's reputation unharmed.

Suggested Lecture Outline

There are two approaches for using historical applications, including the "Soapy" Smith product differentiation example discussed above. One is to first provide historical context and introduce "Soapy" and his competitors. Next ask students what saloon owners might do to attract customers to their establishment. Once several suggestions are offered explain how the Skagway saloons actually differentiated their product. Follow up this discussion with a formal lecture of market structure and competition. An alternative method is to give the formal lecture first and then use the tale of "Soapy" and the Skagway saloons as a follow-up example. Regardless of method, use of images and video to help tell the tale is likely to engage students on the journey into the past.

Resources

Several resources exist to both provide context of the Klondike Gold Rush, Skagway, and the notable characters such as "Soapy" Smith. Additionally, illustrations can help bring the story to life. Examples of each are listed below.

Context

- www.soapysmith.net – website developed by descendants of "Soapy" describing his life before and during his stay in Skagway
- www.skagway.com – website providing a history of Skagway, including its role in the Klondike Gold Rush
- Catherine Holder Spude's "That Fiend in Hell": Soapy Smith in Legend" and "Saloons, Prostitutes, and Temperance in Alaska Territory"
- Pierre Berton's "Klondike Fever: The Life and Death of the Last Great Gold Rush"

Illustrations

- www.nps.gov/klgo/index.htm - National Park Service's website for the Klondike Gold Rush National Historical Park including old pictures, maps of Skagway during the Gold Rush, and informative video (great for showing in class)
- <https://content.lib.washington.edu/extras/goldrush.html> - Collection of images from the University of Washington of the Klondike Gold Rush, including "Soapy" Smith and the saloons
- Graham B. Wilson's "The Klondike Gold Rush: Photographs from 1896-1899"

Alternative

Some professors or students may not find "Soapy" Smith as interesting as other nefarious characters. History provides us with many alternatives. One alternative to "Soapy" to explain product differentiation is Dutch Schultz. Schultz was involved in many criminal activities in the 20th century, including bootlegging and the selling of alcohol to speakeasies during the Prohibition. Professors can explain how he used force, threats, and violence to convince speakeasies to buy his alcohol over his competitors.

Conclusion

Using applications of economic concepts to engage students and improve learning is not new. Finding fresh examples that interest students can be a challenge. Rogues, such as those found in the Klondike Gold Rush, provide fertile ground for class content and are likely to intrigue students given the continued popularity of such characters. Using “Soapy” and his peers is an interdisciplinary approach, combining history and economics. Going to these historical places and meeting some of their infamous residents delivers economic principles in an entertaining and memorable way. An expansion of this approach is the development of a general education course introducing a series of economic concepts each with its own story and scoundrel.

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Teaching the Time Value of Money and Ethics: Using Case Studies of Bribery in Sports

Ethan D. Watson¹

Abstract

In this article, I discuss an engaging way to teach the concepts of the time value of money by discussing bribery in sports. The case examples highlighted give the instructor the opportunity to also discuss ethics.

Introduction

Time Value of Money (TVM) is typically a new concept to students when they first encounter it in introductory economics and finance courses. Given the importance of TVM, and particularly the concept of Net Present Value (NPV), it is critically important that students achieve an understanding of the topic. In this paper I discuss a way that can engage students in the process of understanding NPV using an example of bribery in sports.

Howard Cosell, the famous sportscaster, once said that, “Sports is human life in a microcosm.” This statement appears to ring true. We can gain many positive lessons through sports as detailed in Minchew (2002). Unfortunately, sports also give us negative lessons. One example of a negative lesson is that there has always been a temptation to accept bribes.

Historically, bribery in sports brings to mind the 1919 baseball World Series. The series pitted the favored Chicago White Sox against the underdog Cincinnati Reds. Gamblers allegedly were able to convince players on the White Sox team to accept cash in exchange for sub-par performance in the series. In the end, eight players were banned for life from professional baseball, and the team is now infamously known as the Chicago “Black Sox” due to the scandal. Perhaps it is hard to learn from past mistakes because currently in the news is the alleged bribery of FIFA soccer executive committee members. On May 27, 2015 several FIFA officers were arrested on charges of alleged bribery.

The purpose of the exercise presented here does not condone the behavior of accepting bribes. Rather, the point is to demonstrate that people can act irrationally when confronted with bribes, i.e. they do not appropriately account for the TVM or consider all the costs associated with the bribe. In the following sections I will describe how TVM (in particular NPV) and ethics can be taught using the historical case of the Chicago “Black Sox.”

The case of the Chicago Black Sox

When we teach NPV in the context of asset valuation, we instruct students that assets should be valued on the basis of the discounted future cash flows associated with the asset, i.e. the NPV (formula given below):

$$NPV_0 = CF_0 + \frac{CF_1}{(1+i)^1} + \frac{CF_2}{(1+i)^2} + \dots + \frac{CF_n}{(1+i)^n}$$

NPV_0 represents the net present value of the future cash flows, discounted at rate i . We inform students that the value of the asset is the NPV, and purchase or sell decisions are made based on the NPV.

To engage students, we can apply the concept of NPV to real-life examples. For example, we could apply the same logic that we use to teach students whether or not to accept/reject capital budgeting projects or buy/sell an asset to the process of being confronted with a bribe. If the person confronted with a bribe acts

¹ Ethan D. Watson, Assistant Professor of Finance, Cameron School of Business, University of North Carolina Wilmington, 601 South College Road, Wilmington, NC 28403; email: watsoned@uncw.edu

rationally (maximizes wealth), he/she will consider the present value of future cash flows that they get from employment in their current capacity and weigh this against the amount of the bribe.

To illustrate the choice that the person confronted with a bribe faces, I use the fixing of the 1919 World Series. According to Linder (2010) the gambling culture was rampant around baseball. Some accounts suggest that the 1919 Chicago White Sox might have been particularly vulnerable to bribes. In Eliot Asinof's book, *Eight Men Out*, he contends that the relationship between the players and team owner, Charles Cominsky, was strained. The players viewed Cominsky as a cheap-skate, cutting corners, like not laundering uniforms, to save a buck. One player in particular may have been particularly perturbed with Cominsky. Two years earlier, Eddie Cicotte, Chicago's star pitcher, was approaching a 30 win season, which under his contract would have paid a bonus of \$10,000. Cominsky benched Cicotte to avoid having to pay the bonus.

According to Linder (2010) the fixing started with one player, Chick Gandil, and a price of \$80,000. Chick Gandil then recruited other players with the \$80,000. Star pitcher Eddie Cicotte, apparently resistant at first, eventually said that he would participate with the fix for \$10,000.

We know how the story ends from here. The fix was discovered, and Eddie and seven other players were banished from professional baseball, thereby forfeiting their salaries as professional ballplayers. Undoubtedly, Eddie's choice to accept the bribe is an ethical failure, which the instructor should point out. To add insult to injury, we can also consider if Eddie appropriately applied TVM to his decision. To accomplish our exercise, let us assume that Eddie could have pitched five more seasons. In 1919 Eddie's salary was \$6,000. Let us assume that Cominsky lived up to his reputation and didn't increase Eddie's salary over the next 5 years. Additionally, let us assume that an appropriate discount rate was 8%.² We can then calculate the net present value of Eddie's salary, and compare to the proposed bribe.

Calculating the NPV we find that it is \$23,956.26, significantly more than the \$10,000 that Eddie said he would accept for helping to throw the World Series.³ Eddie's decision now makes even less sense since he did not account for TVM.⁴ He should have chosen the ethical decision to reject the bribe since the NPV of his salary is higher. As the instructor you can be creative at this point. You can include opportunity costs from employment after baseball.⁵ Additionally you could ask other questions such as, given he had 5 years left what kind of discount rate was Eddie implying in his decision?

Additional potential examples

This exercise could also be run using more current events such as the alleged FIFA executive committee scandal. Dan Bloom in a June, 2014 article reports that the FIFA executive committee member's salary recently increased to £118,000 (\$184,000). Tenure of FIFA executive committee members can be quite long, so the NPV of forgone salary is quite large.

If you prefer hypothetical examples, below are a few examples:

1) Soccer referee salaries can be found via the following links:

- <http://www.tsmplug.com/football/average-salary-premier-league-referees/>
- <http://www.goal.com/en-us/news/1786/fifa/2011/03/04/2379063/revealed-how-much-referees-are-paid-in-each-european-country>

² Admittedly the discount rate assumption is somewhat subjective and will depend on the perspective of the person encountered with a bribe. The instructor can vary this assumption as they see fit.

³ Due to space constraints, I intentionally leave teaching the mechanics of NPV up to the professor implementing this teaching example.

⁴ A potential student question might be where does the probability of getting caught get incorporated? This allows the professor another opportunity to discuss ethics. First, the ethically correct decision is not predicated on a probability of getting caught. Eddie knew that it was wrong as evidenced by his initial reluctance to participate. Since you cannot know the true probability of being caught ex ante, the question is not "will I be found out?" but rather "What are the consequences of this action?" We can assume that Eddie Cicotte, accepted the bribe because he felt that there was a low or zero probability of getting caught, and that \$10,000 was worth the risk. In this example, not only did Eddie not account for the TVM, he apparently underestimated the possibility of being caught, which makes the decision even more irrational. Furthermore, the professor can also point out the enormous reputational costs that are not considered in the teaching example.

⁵ I thank an anonymous reviewer for pointing out that my basic example shown here does not include the opportunity costs of other employment after baseball. The instructor can incorporate opportunity costs as they see fit. Accounts of Eddie Cicotte's employment history following baseball show that he bounced around several jobs. Douglas (1921) provides average salary information from 1919 which can be used to incorporate opportunity costs into the example. Using the high end of the 1919 salary estimates does not change the result.

2) Division I football coach's salary can be found here:⁶

- <http://sports.usatoday.com/ncaa/salaries/>

As instructors, you can have fun and be creative with the examples:

Conclusion

The example uses bribes as an interesting and engaging way to think through the concepts of the Time Value of Money and gives a great platform to discuss ethics. Ask your students to consider the costs of the actions of the person(s) who accepted the bribe. In Eddie Cicotte's example, by all accounts he was at the top of his game, but his actions led to him being permanently banned from baseball. Accounts of his employment history post baseball appear to be spotty at best. Buck Weaver is another player who makes for a great cautionary tale of the importance of ethical behavior. Buck did not participate in the fix, but knew about it. Therefore, he had the chance to blow the whistle. His play during the Series was above reproach, but since he did not come forward about the fix, he was banned from baseball. Use the examples presented here to point out the large reputational costs that are not considered in the analysis. The Black Sox will forever be associated with their actions. In the case of the FIFA scandal, several members of the executive committee are feeling the reputational costs of being associated with a bribery scandal.

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⁶ In the case of NCAA football coaches the instructor can choose to include estimates of endorsement deals and other non-salary income into their examples.

Teaching the Production Function Using Fast Food Royalty

Michael Enz¹

Abstract

Students tend to understand concepts better if they can personalize the topic. Many students have worked in the fast food industry and even if they have not, they can easily visualize the production process in fast food. Given this and personal work experience at a particular fast food restaurant (to avoid any potential trademark issues, this restaurant is named Prince Burger in this paper), an example of hiring workers at a fast food restaurant is an excellent method of teaching the typical production. This presentation is easily adaptable and allows students to learn other concepts related to the production function.

Introduction

Several years ago, a relative was attempting to understand an economic concept for a college course. He was enrolled in a Principles of Microeconomics course and was having a difficult time with the typical production function. Given that students generally understand concepts better if they can personalize them, I presented an example using the fast food industry. After completing the explanation, he said “I wish my professor had used an example like that.” That encounter and the ability of students to recall the presentation years after graduation explain why using the story of the fast food industry is an excellent method for explaining the typical production function. Stories have been used as an effective pedagogical tool in higher education (Abrahamson, 1998), to engage student learning (Sadik 2008), to improve teacher quality (Lowenthal 2008), in teaching concepts in social studies (Combs and Beach 1994), and in teaching economics (Boettke 2005). This paper explains the presentation of the production function and provides several economic concepts that can be explained using the example.

Literature

The field of education has incorporated the use of storytelling as an effective pedagogical tool in different levels of education and professional development. Combs and Beach (1994) claim that storytelling is a powerful learning tool for children across different subjects. The authors applied storytelling to social studies issues and concluded that the stories supported a deeper understanding of the material. In higher education, Abrahamson (1998) finds that the use of stories enhances material that is subjective or empirical and enhances active learning along with increased ownership of the learning. Finally, Boettke (2005) reminds us that “we economists are storytellers...but not all stories are good ones.” He applies storytelling to *Atlas Shrugged* to increase student understanding of economic concepts.

Presentation

Almost all of the introductory microeconomic textbooks include a graph of a production function with output on the vertical axis and labor on the horizontal axis (Figure 1²). This production function is usually labeled as a production function or a total product curve. The production function has three

¹ Visiting Assistant Professor of Economics, Roanoke College and Associate Professor of Economics, Framingham State University

² <http://www.analystsnotes.com>

regions (referenced as Region A, Region B, and Region C in the Appendix). Figure 1 is an example of presenting the typical production function using fast food royalty (as previously mentioned, to avoid any potential trademark issues, the restaurant is Prince Burger³).

In Region A of Figure 1, students should be reminded that everything is already in place in the restaurant (all ingredients, deep fat fryers, microwaves, etc.) except for labor and the output in this example is number of orders. Imagine Prince Burger has hired its first unit of work. What would that one person have to do? Everything. First, the worker must take the customer order, accept payment, return any change, prepare and deliver the order (burger, fries, beverage, etc.). Acting out the production process helps students remember this concept, but it is not necessary. Suppose this one person can complete 10 orders in an hour. Now suppose that Prince Burger hires an additional unit of work. Will that person also do every step in the production process (for this point, students are asked to imagine dueling cash registers, similar to dueling pianos)? No. If the person did complete all of the same steps then we would expect the output for Prince Burger to exactly double (from 10 to 20), but the restaurant chooses to have the workers split tasks or begin to specialize. Prince Burger would only do this if output could be greater from specialization or the output should increase at an increasing rate.

In Region B of Figure 1, Prince Burger is hiring more labor and there continues to be more specialization. The continued specialization continues to increase output, but now at a decreasing rate. For Region B of Figure 1, students should picture someone who simply places pickles on burgers (or the “pickle person”). This increases output but not at the rate that the “fry person” was able to increase output. Thus, in this region, output increases at decreasing rate (it is a good idea to provide three points of reference in Region B of Figure 1 to explain numerically).

In Region C of Figure 1, Prince Burger hires even more people and now output starts to decline. Students should picture an overcrowded kitchen where workers are running into each other and dropping food. This forces the workers to start the order over again, which causes output to decrease. Thus output is decreasing as labor is increasing in this region.

One of the reasons this presentation is so useful is the ability to explain more complicated topics. First, one can easily explain the sign and direction of the marginal product of labor in each of the three regions of the production function. In Region A of Figure 1, since the second worker increased output more than the first, the marginal product of labor is positive and increasing. Students can visualize the gains from specialization when they think about splitting the production tasks amongst the fast food employees. In Region B of Figure 1, the additional worker increased output but at a decreasing rate, thus the marginal product of labor is positive and decreasing. Students recall this concept by thinking about the “pickle person” as opposed to simply seeing a production function increasing at a decreasing rate. In Region C of Figure 1, an additional worker cause output to decrease, thus the marginal product of labor is negative. The visualization of workers running into each other and dropping food reinforces this concept.

Another reason to use this production example is to explain why a profit maximizing firm would operate in Region B of Figure 1. Students gain a better understanding of not wanting to stop in Region A of Figure 1 if the workers are adding a greater amount of additional revenue and the additional cost is the same. They also see that a firm would decrease its profits if it hired more workers and the production decreased.

Finally, when the costs curves are introduced, it is easy to refer to the production process to think about how the variable cost and total cost will change as output increases. When students visualize the gains from specialization, they understand that variable and total cost increase at a decreasing rate and when the “pickle person” is hired, variable cost and total cost increase at an increasing rate.

Evidence of Effectiveness

Unfortunately, the first use of the fast food story did not correspond to any planning for research or publication. Thus, there are no data on student exam scores before and after the implementation. However, there are several sources of anecdotal evidence for the effectiveness of the teaching technique. After using the story, more students were able to explain why the production function took on different shapes in the different ranges (this evidence was through observation, rather than data collection). In future classes

³ For those who are not familiar with the fast food industry, Prince Burger is a play on one of the most popular fast food restaurants. The reference of royalty in the title of the paper and the use of Prince should reveal the identity of the restaurant.

would ask questions using the fast food industry. For example, when covering the diminishing marginal product of labor in a future class, a student asked “is this the same as the pickle person that you talked about in the principles course?” During office hours, if a student is struggling with the shape of the production function, a short reminder of either “dueling cash registers” or the “pickle person” allows the student to comprehend the concept much sooner than going through an example like a pin factory or some other industry that the student is not easily able to relate to a personal experience.

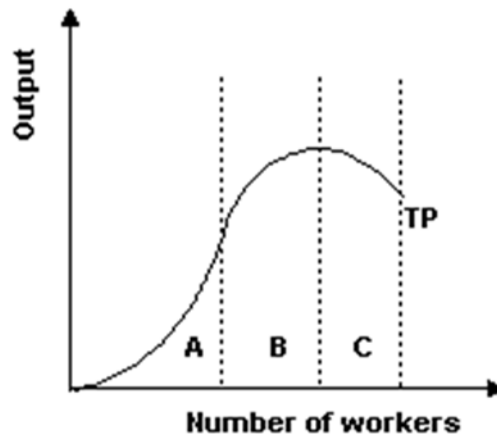
Conclusion

The production function is probably not a concept that students look forward to covering in an economics class. However, adopting the fast food royalty example, the production function has become a concept that is exciting (and slightly amusing) to teach. Students are not bored during the presentation and can easily recall the concepts. Using fast food royalty is an easily adoptable approach to energizing the presentation of a typical production function.

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Appendix – Figure 1



Teaching with Puzzles

Jean K. Rosales¹ and Jeffrey K. Sarbaum²

Abstract

Using economic puzzles to review or illustrate economic concepts introduces fun into the classroom and helps students practice critical thinking and the application of economic principles to familiar situations.

A “puzzle” is a question or scenario that challenges your knowledge and inventiveness in resolving a seeming paradox or organizing information that appears to be random or illogical into an orderly, understandable form that leads to a sensible solution.

If you’ve ever solved a puzzle—anything from filling in the last few squares of a crossword to correctly specifying a system of equations—you’ve probably felt a rush of excitement and involuntarily smiled. Solving puzzles is fun. It gives your brain a chance to look at new information and draw on information you already know to uncover a solution that answers a question or reveals a pattern of behavior in a new light.

A favorite economics puzzle of ours is the BOGO method of selling shoes, clothing, and even fast-food and restaurant meals. Many retailers run BOGO sales, during which customers are invited to “Buy One, Get One”, where the second item is made available at a discounted price or for free.

After introducing the scene, we present a puzzle to our students: Why would a firm agree to sell the second item for a lower price? Isn’t it giving up profits? Is a firm offering a BOGO sale being irrational? Since this is a scenario with which most students are familiar, students are usually willing to examine their own life experience to suggest an explanation.

For example, the Olive Garden restaurant chain recently ran a promotion in which diners could order one of seven meals for fixed prices, and then take home a second meal in a to-go box for free. According to the chain, the promotion was aimed at encouraging families to gather around the dinner table in the restaurant and at home and spend quality time together.

Begin by asking students if this sounds like a good deal. Would they be willing to accept a free meal if it were offered to them? You should get some students who think it is a deal. Then ask why Olive Garden is focusing its advertising on families and quality time, rather than the public at large. Ask who Olive Garden’s competition is when it comes to selling meals to families. Likely responses are McDonald’s and other fast-food chains. Ask students to compare the price of a McDonald’s meal to an Olive Garden meal. Students will likely respond McDonald’s is a lot less expensive than Olive Garden.

Point out that the price of the in-restaurant Olive Garden BOGO meal was \$12.99, certainly higher than the price of a burger, fries, and a drink at McDonald’s. Then ask if Olive Garden is selling one meal or two. Students should recognize the offer involves two meals. What is the average price of the two Olive Garden meals? Students will calculate the average price at about \$6.50, which makes the two meals much more competitively priced than two meals at McDonald’s.

Summarize by pointing out that BOGO ads frequently depend on the consumer’s willingness to calculate the average price of a pair of items and to compare that to their expected average utility for both items. By lowering the final average price, a BOGO deal can make a high-priced good more competitive, but only if the consumer is likely to consider buying that extra unit. BOGO deals are rarely offered for big-ticket items like automobiles or homes, but they can be effective in situations where the person buying the good is purchasing for more than one person (like Olive Garden’s family) or can use the second unit at another time (like the single person buying tomorrow’s lunch referred to in Kate Bratskeir’s 2015 *Huffington Post* article).

¹Graduate Coordinator, Economics Department, The University of North Carolina at Greensboro, P. O. Box 26170, Greensboro, NC, 27402. email: jkrosale@uncg.edu

²Senior Lecturer, Economics Department, The University of North Carolina at Greensboro, P. O. Box 26170, Greensboro, NC, 27402. email: jksarbau@uncg.edu.

Working through the demand-side explanation of a BOGO ad can be used as the opening for a more detailed discussion of utility, including average versus marginal utility. It also gives a good lead-in to a consideration of supply side concepts.

You began your puzzle by asking why a firm would be willing to drop their prices and “give up” potential profits. You can begin this part of the discussion by reminding students that firms compare the cost of producing an additional unit of a good to the revenue they expect to receive from selling that unit. Ask them to identify some of the costs of running a restaurant and providing meals.

Then ask which of those costs are incurred only when a diner is served a meal—variable costs—and which must be paid even when no one comes into the restaurant—fixed costs. In the case of Olive Garden and other restaurants, much of the cost of selling the first meal is tied up in fixed costs. In order to produce that first meal, the restaurant incurs a number of fixed costs—paying utilities, paying store rent, equipping the kitchen, paying cooks and wait staff and other employees, etc. Advertising is also a huge fixed cost for many restaurants. However, the variable cost of providing a meal is fairly low since it consists primarily of the cost of the ingredients of the meal and the costs associated with washing the dishes and cleaning the tables. The relatively low variable costs often allow the seller to decrease the selling price of an additional unit of a good.

To solve the BOGO puzzle, point out that, as long as the average of the prices charged the customer for each of the two meals is higher than the average cost of producing each of the meals, a restaurant will make a profit on both sales. You can point out that BOGO deals are most successful when a firm faces very high fixed costs and relatively low variable costs.

Schug and Western (2005) expanded the concept of economic puzzles into a pair of teachers’ guides, *The Great Economics Mysteries Book* with editions for grades 4-8 and grades 9-12, that provide entire lessons centered around mysteries and paradoxes intended to teach “the economics way of thinking.” The books provide lesson plans, student handouts, visual media, and answer keys for a number of real-world puzzles. The books provide good examples of how items in the news and situations familiar to students in their own lives can be analyzed with the tools learned in principles classes.

We suggest the following guidelines for finding and using puzzles for your economics class:

- Look for the “why”: Economic puzzles can often be framed as a question beginning with the word “why”. Why do gas prices increase just before holiday weekends and summer? Why do houses and apartments close to campus have higher rents than those located five or more miles away? Why are professional athletes paid so much more than school teachers?

- Use a “what if?”: Create a puzzle by changing a premise of a familiar situation. What would happen if resources were abundant and everyone’s wants could be satisfied? What would happen if a state government stopped funding state universities directly and started giving college tuition vouchers to graduating high school seniors? What would happen if the National Park Service removed the non-transferrable ownership provision on its America The Beautiful Access passes? (See <http://store.usgs.gov/pass/index.html> for background information.)

- Be prepared to provide “clues” to get students thinking in the right direction: The “Great Economics Mysteries” books available from the Council for Economic Education (www.councilforeconed.org) posit mysteries as a formal group activity for the class and provide a set of clues students use to solve the mysteries. The economic puzzles approach we advocate is far less formal but it does require you to identify a path of reasoning that leads from your puzzle question to a satisfactory answer. Each of the steps you take along that path constitutes a clue you can supply to stimulate thinking and discussion.

- Be prepared for someone providing a “wrong” right answer: Students can be ingenious when encouraged to think for themselves, and they might surprise you with an answer that is correct but not what you expected. In the BOGO puzzle presented above, we thought, and hoped, students would identify cost structure an explanation; we were surprised when a student pointed to firms’ awareness that consumers have diminishing marginal utility as an alternate explanation.

Recent research in learning suggests that the human brain rewards its owner for successfully solving puzzles by releasing a neurotransmitter called “dopamine”, which provides the brain with a pleasure response and plays a key role in motivation and learning (Burns 2012; Koster 2004, 2012; Chatfield 2010, Shohamy 2015; Willis 2011).

In addition to providing a fun alternative to the straight chalk-and-talk method of teaching, using puzzles in the classroom gives students practice in using economic reasoning to analyze situations. Practice in

“thinking like an economist” develops students’ critical thinking skills and helps them go beyond memorizing answers to using the knowledge they’ve gained.

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Using Salary Data to Illustrate Microeconomics Principles and the Importance of Mathematics

*Peter W. Schuhmann*¹

Abstract

This paper outlines an easy approach to bring real world data into the classroom to illustrate concepts in the principles of microeconomics course and highlight the importance of math. The approach is to display median entry-level and mid-career salaries categorized by undergraduate major and use that data to construct critical thinking exercises regarding market-clearing prices, changes in supply and demand and elasticities. These exercises generate a great deal of student interest because expected future salary is a topic directly relevant to their lives.

Introduction

As instructors of economics we know that math is important. Many of our students probably have a sense of this, but may not fully appreciate the impact that quantitative literacy can have on their lives. The importance of mathematics and quantitative literacy for performance in principles of economics has received considerable attention in the literature. For example, Cohn and Cohn (1994) find that students who are more adept at graphical analysis demonstrate more economic learning. Higher scores on the Test of Understanding in College Economics (TUCE) are associated with completion of math courses (Gery 1970) and the quantitative portion of the SAT (Gery 1972). Brasfield et al. (1992) find that students who completed two courses in Business Math earned significantly higher final grades in an introductory economics course. Espey (1997) finds that the successful completion of a math competency exam improves student performance in principles of economics. Ballard and Johnson (2004) and Schuhmann et al. (2005) find that multiple measures of students' math skills are associated with higher grades and attainment of economic knowledge in principles courses.

Beyond success in the economics classroom, math skills contribute to improved labor market outcomes. McIntosh and Vignoles (2001) find evidence that higher quantitative literacy (numeracy) provides a significant and positive effect on earnings and employment rates in the U.K. Green and Riddell (2001) find similar results in Canada. James (2013) suggests that completing higher levels of math in high school is associated with higher levels of employment and earnings for both high school dropouts and high school graduates in the U.S. Rose and Betts (2001) find that high school math courses, particularly more demanding courses above the level of algebra/geometry, have a significant effect on the probability of graduating from college and on future earnings in California.

Using Real World Salary Data to Show that Math Pays

The obvious takeaway from the above summary is that being able to do math is important to students' success in principles courses and in life after college. Yet, as all principles instructors are aware, it is the mathematical applications in economics that often give students the most trouble. Discussing the relationship between math and success with students can provide much needed motivation. Rather than simply saying "math is important, please try to keep up" one approach is to illustrate the importance of math using data on median salaries in the U.S. categorized by undergraduate major. Entering "salary by undergraduate major" into a search engine will invariably produce the data.

The "Majors that Pay You Back" table available at Payscale.com, lists starting and midcareer salaries for over 100 undergraduate majors. Instructors can show the list of undergraduate majors ranked by midcareer

¹ Peter W. Schuhmann, Professor of Economics, University of North Carolina Wilmington, 601 S. College Rd. Wilmington NC, 28403. schuhmannp@uncw.edu

salary, briefly describe the data and allow students a few minutes to view it. Students are always interested, and anxious discussion should be expected as they view the list. My approach is to show the top 20 paying majors on the screen and ask the class what these highest-paying majors all have in common. Someone usually states the obvious very quickly: “Math”. Instructors can then support the data with additional discussion centered on media attention to the demand for workers in STEM fields. It is important to note that while there is no standard definition of STEM fields (Langdon et al. 2011), the study of science, technology and math can all be expected to involve a good deal of math. Research suggests that holders of degrees in STEM fields receive an 11 percent earnings premium relative to other college graduates, regardless of their field of employment, and students that major in STEM fields and work in STEM fields can earn a 20 percent premium (Langdon et al. 2011). The premium for engineering is considerably higher. The point to convey here is factual: students who study subjects involving mathematics or who work in areas associated with math tend to earn incomes that are significantly higher than those who do not.

A good time in the principles class for this discussion is after covering supply and demand, and prior to the introduction of elasticity (i.e. immediately before the mathematical difficulty increases). Instructors can therefore point out that salaries are a payment from one party to another in exchange for labor, which means that salaries are *prices*. With supply and demand as a backdrop, students should recognize that like other prices, salaries are determined in large part by the forces of supply and demand. Instructors can remind students of this and mention that after graduation, most of them will sell their labor in market, and their income will be determined by supply and demand. All of this provides the foundation for four critical thinking questions, which can be a productive think-pair-share exercise, or can be handled more directly:

1. Use two supply and demand graphs to explain why graduates in “mathy” majors earn higher salaries than students from other majors.
2. Make changes in your graphs to illustrate how workers in “mathy” majors might expect to earn higher salaries in the future.

The goal of this exercise is for students to come to the conclusion that the demand for majors in STEM fields is high relative to other majors, or the supply of workers in STEM fields is low relative to other majors, or both. Projections of future earnings are more uncertain, but students can formulate “if...then” conclusions using the supply and demand model.

Instructors can supplement the exercise by providing some simple facts and statistics:

- The number of undergraduate degrees awarded by U.S. academic institutions has been increasing over the past two decades in science and engineering fields and non-science and engineering fields, with degrees in science and engineering accounting for one-third of all bachelor’s degrees for the past 10 years (National Science Board 2014). This suggests that the supply of STEM and non-STEM workers are both shifting to the right at roughly the same pace.
- Between 2000 and 2010 employment in STEM fields increased 7.9 percent, while employment in non-STEM fields increased by 2.6 percent (Langdon et al. 2011). This suggests that the equilibrium quantity in both STEM and non-STEM labor markets is moving to the right, but that in the STEM market is moving at a faster pace.
- The earnings premium in STEM fields has been rising since the mid-1990s (Langdon et al. 2011). This suggests that the equilibrium price in the STEM labor market is rising over time. Combined with the other points, students might come to the conclusion that the demand for STEM majors is rising faster than the demand for non-STEM majors.

Without more data, we cannot be certain of this third conclusion, which is fortuitous from an instructional standpoint, as it allows the instructor to introduce an assumption and move the discussion toward elasticity. Specifically, the salary data can be revisited and the instructor can note that the difference between starting and mid-career salaries is essentially the “pay-raise” that one might expect over the first half of one’s career. Calculating the difference between starting and mid-career salary is straightforward, and reveals that most of the top-paying majors also have the highest pay-raise potential. This observation allows for the introduction of the price elasticity of supply by asking the following question:

3. Which type of labor (STEM or non-STEM) would expect to get a larger raise assuming that the demand for both types of labor increases over time *by the same amount* and assuming no change (shift) in supply?

The answer of course is whichever labor has more inelastic supply. The instructor should then draw two supply curves, one with a steep slope and one with relatively shallow slope, and ask:

4. Why would an equal increase in price result in a smaller increase in the quantity supplied of STEM labor than non-STEM labor? That is, why is the supply of one type of labor less flexible?

This leads to a discussion of the difficulty associated with earning a degree in the STEM fields, which can be used to introduce the idea that some inputs are difficult to acquire while others are relatively easy to acquire.

Conclusion

Displaying salary data categorized by major field of study is of direct relevance to students' lives and has consistently piqued the interest and attention of my classes. These data serve as a great launching point for a series of critical thinking questions that can be used to review the basic functioning of markets and transition into a discussion of elasticity. Finally, students are exposed to the important lesson that diligence in the study of mathematics can be an important contributor to their success in economics and in life after college.

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Auctioning Extra Credit to Teach Economic Principles

Daniel T. Hall¹ and Peter Summers²

Abstract

Over two semesters and in 11 principles of microeconomics and macroeconomics classrooms, we conducted four types of multi-unit auctions where students bid for extra credit. The auctions were used as an experiential learning technique to reinforce knowledge of willingness to pay, consumer surplus, demand and supply determinants, and opportunity costs. Through these auctions, students have an “extra” incentive to take in these concepts through a common experience. The auctions also provided an opportunity to engage grade-focused students hungry for extra credit!

Introduction

Using a virtual currency earned through online problems, our students “purchased” extra credit in competitive auctions. We conducted auctions in 11 principles of microeconomics and macroeconomics classrooms conducted over the fall 2012 and spring 2013 semesters. The auctions were initially developed as a means of allocating extra credit in a classroom experiment designed to examine the incentive effects of extra credit. As a side benefit, the auction process was used to teach the concepts of willingness to pay, consumer surplus, price discrimination, demand and supply determinants, and opportunity costs. Through these auctions, students have an “extra” incentive to take in these concepts through a common experience. The auctions also provided an opportunity to engage grade-focused students hungry for extra credit!

Auction Designs

In all of the auctions run, the currency used was created based on student performance in LearnSmart homework assignments, a series of interactive flashcards designed by McGraw-Hill for their Connect online homework software.³ Students earned “standing points” for correctly answering each question, with more awarded if a student is confident in her answer than if she is just guessing. To avoid confusion with the extra credit points purchased, we will refer to the “standing points” earned as *tickets* redeemable for extra credit in competitive auctions.

Tickets could certainly be generated by other mechanisms, but it is important that they be earned to maximize the learning benefits from the auction. Students take the auctions more seriously when tickets are earned instead of being house money. Tickets could be earned for attendance, participation, or any other pre-exam performance task. Tickets could be physical, but we recommend digital and keeping tickets “stored” on a class spreadsheet.

All of the auctions run were multi-unit auctions: the supply of extra credit was fixed into 10 point blocks, and the number of blocks was equal to half the number of students enrolled in the class. The amount of extra

¹ Assistant Professor of Economics, Department of Economics, High Point University, One University Parkway, High Point, NC 27268, email: dhall@highpoint.edu.

² Assistant Professor of Economics, Department of Economics, High Point University, One University Parkway, High Point, NC 27268, email: psummers@highpoint.edu. We are grateful to Tim Hubbard for helpful comments, but retain all responsibility for any errors.

³ LearnSmart and Connect are copyrights of McGraw-Hill Higher Education.

credit should be high enough to interest students, and the number of blocks sold should be low enough to promote competition in the auctions.⁴

The remaining design features differ in the type of auction run in each exam. We ran four multi-unit auctions:

- *The discriminatory price auction:* The winners pay their exact sealed bid.
- *The uniform price auction:* Instead of paying their (sealed) bid, winners all pay the highest losing bid.
- *The multi-unit Dutch auction:* The instructor starts with a high price and incrementally lowers the price until all extra credit blocks are sold.
- *The multi-unit English auction:* The instructor asks all students to stand and starts with a low price. Students still willing to pay the price remain standing and those no longer willing sit down. The instructor raises the price until the number standing equals the number of blocks for sale. Winners pay the price that made the last student sit down.

Teaching Opportunities from the Extra Credit Auctions

Students, motivated by the desire to purchase extra credit, are more likely to respond to the experiential learning opportunities the extra credit auctions present, which are described below. Economic principles and concepts are directly connected with the common experience of bidding in auctions, rather than discussed separately.

Willingness to Pay and Demand

Students can be taught that their bid is a lower-bound approximation of their willingness to pay.⁵ These bids can be used to construct full or partial classroom demand curves for extra credit. We used the Supply and Demand Graphing Tool on EconPort to generate the demand curve as the auction occurs, as shown in Figure 1.⁶ Partial demand curves occur when the market clears in the multi-unit English and Dutch auctions, since the winning and losing bids, respectively, are not revealed. If desired, the instructor could ask those students what their bids would have been. After showing the demand curves the instructor can ask students if their bids equaled their maximum willingness to pay, and note that if so this would map out the true demand curve.

Consumer Surplus and Price Discrimination

Assuming bids represent willingness to pay in the uniform price and multi-unit English auctions, consumer surplus can be discussed.⁷ Winning students' surplus is the difference between their bid and the uniform price they paid. In the discriminatory price auction this surplus is "captured" by the instructor, who acts as a price-discriminating monopolist with information on their individual bids.

⁴ In both authors' sections there were seven exams worth a total of 70% of their final grade. The auctions were set up so that the average student wins about half of the auctions, so about 5 points per auction is weighted as 3.5 additional percentage points on their final grade.

⁵ Auction theory predicts that a buyer's weakly dominant strategy in the single-unit uniform price and English auctions is to bid his maximum willingness to pay, whereas in multi-unit auctions or the other auctions mentioned the buyer has an incentive to shade the bid below his maximum willingness to pay. The complexity of auction theory puts this discussion outside the scope of a principles class, but for the curious or skeptical student we recommend the "Auctions" chapter in Klein and Bauman (2010) or the introduction to Ausubel et al. (2014).

⁶ See <http://econport.org/content/teaching/modules/DemandSupply.html>

⁷ Discussion of consumer surplus is more complicated in the other auction types, as the possibility of bid shading arises there. See footnote 5.

Figure 1: Sample classroom demand curves generated from multi-unit auctions.



Determinants of Demand and Supply

For each auction the instructor can ask their students whether they think demand will increase or decrease with the following determinants: perceived difficulty of the exam, knowing your performance on the exam, attendance of the class, anxiety about final grades as the semester progresses, and so on. The follow up is whether or not the price(s) of extra credit will increase or decrease. The supply of extra credit is fixed, but the instructor can still ask how changing that supply will affect the price(s) of extra credit.

Opportunity Cost

Unused tickets can rollover for subsequent exam auctions. Thus, students face a dynamic opportunity cost of using their tickets to buy extra credit for the current exam. Bidding high and winning this exam's auction means the student must forgo the option to bid high in future auctions. For the last exam an auction was not held, but instead the same total amount of extra credit points were distributed according to each students' proportion of the remaining tickets. Thus, students must consider their opportunity cost the entire semester. The lesson can also be extended to how winning extra credit affects the opportunity cost of leisure before the exam.

Student Response

We conducted surveys at the end of class about student enjoyment and experience on the extra credit auctions. It was fun to watch the students compete for the extra credit, particularly in the descending price auction as students crept up to the front to pounce on the price before all of the extra credit blocks were sold. The average enjoyment was 8.4 out of a 10 point scale (standard deviation = 1.9). Most comments were

positive since students like extra credit. Students who participated in all four multi-unit auctions preferred the uniform price auction the most followed by relatively close rankings of the multi-unit English price, discriminatory bid, and multi-unit Dutch price auctions. Below are some selected student comments from our survey:

- (The extra credit auction) Made me work harder on the homework in order to get more LS points (tickets). Helped me understand the material better.
- I focused more on the learnsmart (sic) HW so I would get more points (tickets) and I ended up learning the material better.
- I thought it was a great way to engage the class in a real-world type market.
- I really enjoyed the extra credit market because it made me look forward to class more. I think it should be continued.

Conclusion

We “sold” extra credit in our principles of economics classes using four types of multi-unit auctions. Experiential learning techniques from the auctions can be used to reinforce knowledge of economic principles and concepts. Students are given an “extra” incentive to take in the lesson by the chance to win extra credit in the auctions. Adopting instructors are advised to offer multiple exams with auctions so the experience remains fresh as each concept is covered. Rehearsing and keeping the auctions simple to minimize use of class time are also recommended. Employment of these practices will add extra credit auctions as an effective and fun way to teach economics principles.

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Teaching Price Elasticity of Demand with Rubber Bands

*James Tierney*¹

Abstract

Students often struggle to fully understand the concept of elasticity within the realm of economics. However, they come to class with knowledge of what “elastic” means. They encounter this concept within their everyday lives with items such as rubber bands, hair bands, and resistance bands at the gym. To expand upon this knowledge, a classroom activity was developed to link the economic use of the word elasticity to this everyday usage. This activity utilizes different types of rubber bands in order to solidify the concepts of elastic and inelastic demand for goods and services.

Introduction

The key to motivating students to learn a difficult concept is to make the concept relatable and build a solid foundation of understanding (Furlong and Maynard 1995). When introducing the concept of price elasticity of demand, I begin with a broad and simple definition. Students are told that elasticity is simply a measure of responsiveness. This serves as a way to not discourage students from disengaging from the topic immediately. Haambokoma (2007) finds that students in Zambia were discouraged from learning about genetics when the instructor informed them that the topic was difficult. I have found that the same can be true of economic concepts such as price elasticity of demand. By informing students that price elasticity of demand is not difficult to understand, and is as simple as measuring responsiveness, I increase my students’ feelings of accessibility toward the topic.

Unfortunately, many economics instructors are reluctant to utilize innovative techniques when teaching principles’ topics (Becker and Watts 1996 and 2008). This can make connecting with students on concepts such as price elasticity of demand difficult. The classroom activity introduced below uses rubber bands to solidify the concept of price elasticity of demand by relating the elasticity of the band to different types of goods and services. The activity section will include materials needed as well a step-by-step guide on how to implement the activity in the classroom. The paper concludes with advice and observations.

The Activity

Learning Objective

At the conclusion of this activity, students will be able to grasp the concept of price elasticity as it relates to the demand for different goods and services being relatively elastic or relatively inelastic.

Materials Needed:

In order to complete this activity, each student (or group of students) who is participating needs two different types of rubber bands. One band needs to be more elastic than the other. The bigger the contrast in elasticity the better the activity works. I use one size 64 rubber band and one size 84². In addition, I provide

¹ James Tierney, Lecturer of Economics, Penn State University, University Park, PA 16801. Jet26@psu.edu.

² Rubber bands come in standard sizes that correspond to length, width, and thickness.

my students with fine-point Sharpie markers that they return at the end of class. Students can write on the rubber bands with pen but it is easier to write with, and easier to see, Sharpie ink.

Cost of Materials:

A standard package of rubber bands (about four-hundred bands) will cost the instructor around ten dollars at an office supply store. Sharpie fine point permanent markers will cost around fifty cents per pen. In a large class it is suggested to have students use their own pens to minimize cost.

Time of Activity:

The activity takes approximately fifteen minutes of class time, including the non-mathematical introduction of elasticity and price elasticity of demand. If there are time constraints, it is possible to have students complete this activity outside of class and bring in the finished product for discussion.

Class Time:

At the start of class, students are given one of each type of rubber band and a fine-tip Sharpie. The instructor should introduce elasticity in a broad way relating the idea to the responsiveness of rubber bands. It is also useful to encourage students to pull on the rubber bands to “feel” what elasticity is. The instructor should also emphasize that the two rubber bands respond differently to the same “pull” with their hands. As the students are stretching the rubber bands, the instructor should highlight that the rubber band that stretches farther has a larger response to the pulling and is considered “elastic”. The rubber band that stretches less has a smaller response and is considered “inelastic”. These are terms and ideas that the majority of the students already understand.

Once the students have explored the elasticity of each rubber band, it is important to define the price elasticity of demand for students. Indicate that one reason economists are interested in how consumers respond to a price change is because it affects revenues. This can be illustrated with the following real-world example: If a business owner is attempting to raise company revenues by increasing the price of the product, she does not want consumers to have a big response (she wants an inelastic product), because losing customers takes away from the revenues gained from the price increase. However, when she decreases the price of the product she wants consumers to have a big response (she wants an elastic demand for her product) to gain enough customers to offset the loss in revenue from the price decrease. Following this example, the instructor should urge students to stretch the “elastic” band when talking about goods with elastic demand and stretch the “inelastic” band when talking about goods with inelastic demand. This employs students’ kinesthetic abilities which they can utilize to trigger memories of the topic later.

After the basic lecture covering the concept and definition of the price elasticity of demand, instruct students to pair up or create small groups to discuss what types of goods they think would be classified as having elastic demand and inelastic demand. Instruct them to write the goods with elastic demand on the more elastic rubber band and write the goods with inelastic demand on the more inelastic band. If time permits, encourage some of the groups to give examples of the goods and services they wrote down and discuss other examples.

At the end of class the instructor can either collect the rubber bands or allow students to keep them. Collecting the rubber bands allows the instructor to have some noteworthy materials for their office to show future students and colleagues. Allowing students to keep the rubber bands may help them relate back to elasticity as they study for future exams. In my courses, I give students a choice and approximately 75% of them choose to keep the rubber bands.

Advice

When I first started conducting classroom activities I was concerned that students may think they were childish. However, I quickly learned that if students see the added value they respond well and enjoy the break from traditional lecture. I set expectations early in the semester and students understand if examples and activities are not handled professionally and seriously then they will not be conducted and traditional

lectures will resume. Curwin, Mendler and Mendler (2008) discuss at length how to meaningfully include students in setting classroom expectations.

The only issue I have encountered while implementing this particular activity relates to the examples students use. Some examples are related to sex, drugs, and alcohol which can be distracting to the class as a whole if not handled correctly. Depending on the way the instructor conducts the classroom he or she will want to address these examples differently. Geerling et al. (2014) briefly discuss using sex and drugs as classroom examples in *Tip #XVI* in *The Ultimate Guide to Teaching Macroeconomics*.

Conclusion

I have implemented this activity in my classroom several times and each time my students have enjoyed the activity, and shared that it helped them relate elasticity to something they already knew. Not only is this activity useful for students, but it allows me to convey a difficult topic in an exciting and engaging way.

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Using Soda to Teach Real Interest Rates

Adam T. Jones¹

Abstract

Real interest rates are an abstract and often difficult topic for students to understand, especially because inflation is a long-term process in which young students often do not have much experience. However, by offering to let students make an interest earning deposit of money reserved for soda, and varying the price of soda across class, it is possible to provide an experience of how inflation affects real interest rates. This exercise also provides a foundation for teaching wealth redistribution following unexpected inflation and the Fisher effect.

Introduction

Real interest rates are an abstract but important concept for students in a principles of macroeconomics course. Students often perform well on formulaic exam questions by memorizing formulas but cannot apply the concepts when asked. Part of the difficulty is likely a lack of experience with inflation, borrowing, and interest rates. It is our job as instructors to bring experiences to the students and enable them to transfer the material to other experiences. While classroom experiments and interactive online activities are becoming more popular, they are often time consuming and the time cost may exceed the marginal benefit for some activities and concepts. Thus, shorter, more tightly run demonstrations may be appropriate for some topics.

Interactive lecture demonstrations (ILD), borrowed from physics and explained by Maier (2012) can be a valuable part of students' experience in the economics classroom. Personal experience suggests demonstrations also have a side benefit of putting students at ease and providing an opportunity for instructor and students to bond through common experiences and theatrical joking around. Tsigaris (2008) suggests experiential interaction may also improve student evaluation of instructors, likely through increased interest (Durham, McKinnon, & Schulman, 2007). The ILD outlined below uses three cans of a soda and a change in price to demonstrate real interest rates, requires approximately 10 minutes of class time, and three dollars of supplies.

The Concept

The basic concept behind a real interest rate is a change in purchasing power, not a change in monetary units. The formula for the real interest rate is:

$$\text{Real interest rate} = \text{Nominal interest rate} - \text{inflation}.$$

Understanding the concept of a real interest rate is an important foundation for understanding the Fisher effect, wealth redistributions following unexpected inflation, etc. While students can easily memorize the formula, it is the concept that is important for understanding more advanced material.

Demonstration

In physics and the natural sciences, demonstrations are often done at the start of the class. I prefer presenting this demonstration the class before formally discussing real interest rates and splitting the demonstration across the class to emphasize the long-run aspects of inflation, setting up the ILD at the start of class and using the last five minutes for the punchline. The objective is to plant the seed and let it germinate

¹ Adam Jones, University of North Carolina Wilmington, 601 S. College Rd, Wilmington, NC, 28403-5945 jonesat@uncw.edu 910-962-2539.

between classes, but there is no reason the ILD could not be run entirely at the start of class prior to formally discussing real interest rates. The basic idea is that students deposit money at the start of class and withdraw the deposit plus interest at the end of class only to find out that prices have changed, thus setting up the discussion of real interest rates.

Supplies needed:

- 3 x cans or bottles of soda, potentially different flavors
- 3 x index cards
- 3 x quarters
- 6 x pennies
- 3 x deposit slips (see appendix)
- 6 x price tags (see appendix)
- Tape
- Scissors

Pre-Class Preparation

To prepare the demonstration, purchase three sodas and print the materials appendix from this article.² Cut out the deposit slips and price tags. Tape the 1a, 2a, and 3a, price tags securely on each can of soda. Then tape the 1b, 2b, and 3b price tags, such that they can be easily torn off, over the other price tags, matching the numbers. This should produce can #1 with two \$0.25 price tags, #2 with a \$0.27 price tag and a \$0.25 price tag taped over it, and #3 with a \$0.29 price tag and a \$0.25 price tag taped over it.

Start of Class

Upon arriving at the classroom, quickly walk around the room and find three students who like soda, preferably in different parts of the room, hand each student a quarter and tell them to hang onto it; you are choosing your three participants and ensuring they have a quarter to use in the ILD. After calling the class to attention, tell them that you have three extra sodas that you are not going to drink. I often make a joke about being on a diet or something along those lines and ask if anyone would like to buy one for \$0.25, but they have to have exact change. “Do any of you have a quarter? Oh you do...” Pick up the cans of soda and then as you take a step forward drop them on the floor, if you can make a silly face, even better! (Plastic bottles might reduce the chance of one bursting. Alternatively, just tell the students you dropped one on the way to class and aren’t sure which one it was.) Apologize to the students and tell them that you cannot sell shaken up sodas because the cleaning staff will be mad. Ask if you can make it up to them by allowing them to deposit their quarter for an 8% return over the class period. (Note: this is an opportunity to discuss other interest rates as context.) Take the quarter from each student and hand them a deposit slip.

The final step in setting up the demonstration is to tell the students that you want to keep a record of what happened and that you will come back to it later. Set up the start of Table 1, left of the dashed line, on the board and work with the students to pick ridiculous country names for each area of the room, a good opportunity for a laugh. Find a spot such that you can add the right half at the end of class. When writing the table on the board, emphasize the “nominal” part of “nominal interest rate.” You could even add a definition if so inclined but I tend to hold off until after the ILD because I prefer the students observe rather than switching into writing mode.

Ask the students if they feel like they have been set-up? Ask “how?”, and many students guess the price might change. This is another good opportunity to stress inflation as a change in the price level versus a single price. Crouch et al. (2004) suggest the more you get students involved the more they will get out of the activity and this is an opportunity to engage them. Give a cheeky little smile and say “we will find out,” and then start your planned class.

² To emphasize inflation as an increase in the price level and not a single price, the ILD can be expanded to include multiple goods, including candy bars and chips. However, this will add time, complexity, and some cost. To add more items, print the materials appendix multiple times.

Table 1: Summary Table for Board

	Country Name	$P_{\text{soda},0}$	Dep.	Nominal i-rate	Withdraw	Infl.	$P_{\text{soda},1}$	Net	Real i-rate
1.)	United States of the Front Row	\$.25	\$.25	8%	\$.27	0%	\$.25	\$.02	8%
2.)	Peoples Republic of the Middle Row	\$.25	\$.25	8%	\$.27	8%	\$.27	\$ 0	0%
3.)	Backistan	\$.25	\$.25	8%	\$.27	16%	\$.29	\$ -.02	-8%
				<i>Nominal</i>	-	<i>Inflation</i>	=	<i>Real</i>	

End of Class

A few minutes before class ends, collect the deposit slips from the students and give them their \$0.27 (\$0.25 deposit and \$0.02 of earned interest). Offer to sell the sodas to students but laugh a little and tell them prices may have changed. Pick up the first soda, peel the top price tag off to reveal the new price, and sell it to the student associated with the first country on the board. Ask the student if they can afford it, yes, and how much of a real return they earned, \$0.02. Then repeat for the second student who will just be able to afford the soda with no real return, and then look at the third student with a sad look as students will have figured out the game by now. Peel off the original price and reveal that their new price is \$0.29, \$0.02 more than they made in interest. Ask the students what happened, did they not receive an 8% nominal return, \$0.02, in interest? How can they not afford it? The students will answer that the price increased by more than the deposit. Stress the fact that the price increased more than the nominal interest rate. Ask the student how much better of he/she “really” is at the end of class? Try to help them get to \$0.02, or 8%, worse off. (This is an opportunity to talk about scaling and lead them to the percentage change which matches the real interest rate formula.) Quickly append the rest of the Table 1 to its start on the board and ask the students if they see a pattern for how to get from the nominal interest rate to the real rate, $nominal - inflation = real$. You might circle the *nominal i-rate*, *inflation*, and *real i-rate* columns for emphasis. Write the formula below the table and tell the class you will discuss it more in the next class. (Give the third soda to the student who came up short!)

Closing Thoughts

While ILDs provide a common experience for discussion and a visual presentation of a concept, they should be used to supplement a lecture rather than replace it. The demonstration involving deposits and price changes above illustrates a concept but does not fully explain it. During the subsequent lesson, the instructor should emphasize inflation as a change in the price level and not the change in the price of a single good. To emphasize this point and expand upon the ILD, an instructor could ask where the ILD falls short and how it could be improved. Finally, when the ILD is presented can vary across courses, schools, and instructors. Using the ILD in the class prior to formally discussing real interest rates plants the seed of the concept and provides students time to mull over the ideas, facilitating discussion of the concept in two classes. However, the ILD could also be presented in its entirety immediately prior to the formal discussion of real interest rates such that the idea is fresh in students’ minds. Regardless of when it is used, the ILD is a quick way to interject some humor and experiential learning into your classroom.

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Materials Appendix

<p>Bank of Economics Deposit Slip</p> <p>Deposit Amount:</p> <p>\$0.25</p> <p>Interest rate: 8%</p>	<p>Bank of Economics Deposit Slip</p> <p>Deposit Amount:</p> <p>\$0.25</p> <p>Interest rate: 8%</p>	<p>Bank of Economics Deposit Slip</p> <p>Deposit Amount:</p> <p>\$0.25</p> <p>Interest rate: 8%</p>
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<p>Enjoy for Only:</p> <p>\$0.25</p> <p>1b</p>	<p>Enjoy for Only:</p> <p>\$0.25</p> <p>2b</p>	<p>Enjoy for Only:</p> <p>\$0.25</p> <p>3b</p>
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<p>Enjoy for Only:</p> <p>\$0.25</p> <p>1a</p>	<p>Enjoy for Only:</p> <p>\$0.27</p> <p>2a</p>	<p>Enjoy for Only:</p> <p>\$0.29</p> <p>3a</p>
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Interviewing Business Leaders to Develop Critical Thinking about Market Structure

E. Anne York¹ and Steven A. Benko²

Abstract

Abstract: This article describes an assignment in which students gather information about firm and industry behavior by interviewing a business owner or high ranking corporate executive. Students develop their critical thinking skills through analyzing the market structure of the interviewee's industry and connecting actual firm behavior to economics concepts in principles of microeconomics.

Introduction

Principles of Microeconomics is among the first courses that students take for the economics and business majors and so they tend to bring to the course little knowledge of market functioning other than their own assumptions for how the forces of competition shape firm behavior. Compounding the problem, traditional age students are now increasingly less likely to have work experience that would give them exposure to business leaders and the decisions they make (Toossi, 2013). Therefore, the topics of perfect competition, monopolistic competition, oligopoly, and monopoly are often abstract theories to many principles students and the complex graphs for the various market structures may be a stumbling block for students with weaker math skills. What can economics instructors do to help their students understand how different characteristics of markets lead to different consequences for pricing and profitability in the "real world"?

One out of class assignment that can bridge the gap between theory and reality is for the students to interview business owners or corporate executives about the market in which his or her firm competes. Using the interview answers, textbook, and class notes as their research materials, students can then complete an assignment that will allow them to synthesize these disparate ideas, make connections to course content, and sharpen their critical thinking skills by seeing how concepts and assumptions of economic theory connect to outcomes and consequences in actual practice. This paper describes how to implement this assignment and relates the learning outcomes to Paul and Elder's model of the "Elements of Thought," which emphasizes the development of the student's understanding of how assumptions and concepts shape thought (2009).

Assignment Instructions

At the beginning of the semester, the purposes of this assignment are explained even though it will relate to the chapters on market structure that will be covered in the last half of the semester. Each student needs to start searching for a business leader, as defined as a business owner or high ranking corporate executive, who would be willing to do an interview. This person could be a relative, family friend, or current or former employer of the student. So that all students have to go outside their comfort zone to do the interview, the instructions stipulate that the interviewee cannot be an immediate family member but parents are often instrumental in recommending an appropriate person to do the interview. It is helpful if the instructor is willing to consult with the students on the appropriate person to interview because a new business owner or lower ranking executive may not have enough experience in the industry to give insightful and complete answers. For nearly all students, the interviewee has been someone who knows the student and is eager to help when they are asked to do the interview. Students

¹ Associate Professor of Economics, School of Business, Meredith College, 3800 Hillsborough Street, Raleigh, NC 27607, phone: 919-760-8483, email: yorka@meredith.edu

² Assistant Professor of Religious and Ethical Studies, Director of Think Strong, School of Arts and Humanities, Meredith College, 3800 Hillsborough Street, Raleigh, NC 27607; phone: 919-760-8801, email: benkos@meredith.edu

who do not know someone to interview have still been able to complete the assignment by networking with roommates and friends to find, for example, another student's parent to interview. Students are told to ask the questions at the interviewee's convenience and in the format that the interviewee prefers (phone, in person, by email). Students are reminded to dress appropriately if they meet for the interview and to send thank you cards afterwards.

To give all students an equal chance of getting good information from their interview, the students are given a set of interview questions to ask but they are encouraged to also ask their own questions. These interview questions are listed in the appendix. These questions should be handed out before fall break or spring break so the students can work on this part of the assignment when they are home at that time. The first question does ask for permission to use the interviewee's answers in a student assignment. Since this assignment is for class purposes only and not being published, our institution exempts this assignment from Institutional Review Board approval.

These resulting reports can vary in length or be oral depending on the instructor's preference. The report that our students are assigned to write is typically three single-spaced pages in length and is divided into five sections to make it easier to grade with all students using the same organizing template.

The first section is an introductory paragraph. The students are to briefly describe who the interviewee is and how they know this person to ensure that they are conforming to the restrictions on whom to interview. The students describe the product or service the firm sells, which industry it competes in, and they end this paragraph with a thesis statement that states which market structure best matches this industry's behavior and characteristics.

In the second section of the report, the students persuasively argue in three or four paragraphs how this industry fits the characteristics of a particular market structure. The students are given guidelines to help them sort through which market structure could have the best fit, such as considering how high or low are the barriers to entry and how much product differentiation each competing firm has. For grading this section, the student needs to demonstrate that the key characteristics of the chosen market structure are correctly identified and explained and provide a reasonable and substantive justification for that choice.

In the third section of the report, the students write one or two paragraphs to relate any other information they learned about the firm or industry to make a connection to at least one other microeconomics concept (other than market structure), such as factors that have led to that industry's demand or supply curve shifting in or out, price elasticity of demand of the firm's product, price discrimination, costs of production, etc. The students may also use economic concepts to give advice to the firm to improve its profitability. For grading this section, the student is expected to accurately explain the economics concepts and apply it to the firm or industry behavior.

The fourth section is the concluding paragraph and the fifth section is an appendix in which they include both the interview questions and the answers they received. Having an appendix with the interviewee's responses helps the instructor determine if a student has an incorrect analysis due to an interviewee giving an answer that shows a misunderstanding of the question or gave an incomplete answer.

The students also benefit from time devoted to class discussion of what they learned from completing this assignment. It can be interesting to compare, for example, all of the different industries that the students determined would fit monopolistic competition.

Critical Thinking

Paul and Elder's model of the "Elements of Thought" (2009) breaks down thinking into eight constituent parts so that instructors and students can focus on a specific part of thinking (point of view, purpose, question at issue, information, interpretation and inference, concepts, assumptions, and implications and consequences). This assignment touches on a number of the Elements of Thought. In the second and third sections of the report, students will think more deeply about their own assumptions on how firms make pricing and output decisions. When thinking about their own assumptions, students reflect on hidden biases or pre-conceived notions that incline their thought in one direction and not another. The goal of the interview is to both deepen and broaden student understanding of different types of markets and firm behavior so that the students' understanding becomes more complex and nuanced. Hearing from the interviewee about his or her experiences with making business decisions challenges the students' assumptions about the functioning of markets. Raising questions about assumptions leads to a clearer elucidation of concepts. For Paul and Elder, a critical thinker can justify how and why she is using a particular concept and her correct use of it demonstrates that she knows what that concept means. As a result, her thinking, writing and speaking are more confident and clear.

Discussion and Conclusion

This assignment has gotten much positive feedback. The students have said that they enjoyed learning about this business and that they can better understand that economic theories are applicable to how firms and industries actually function in the market. One business owner was so impressed with the student who interviewed him that he made her a job offer! By completing this assignment, students have an intellectually deeper and more memorable grasp of the differences in the four market structures by challenging their own thinking about firm and industry behavior and connecting economic theory to real world situations.

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Appendix

1. May I have your permission to use the answers you give to my questions below to write a report for my Principles of Microeconomics course at _____ College/University? This report will analyze the industry in which your firm competes and will help me better understand the connection between economic theory and actual firm and industry behavior.
2. Describe who your competitors are and how many firms you compete against. Have the number of your competitors recently been growing or shrinking? If the number of sellers has changed, what is the reason for more or fewer firms selling this type of product or service?
3. Does the industry you are in have many barriers to entry to keep out potential competitors? That is, how difficult or easy is it for a firm to start up in your industry? If so, what are these barriers to entry?
4. How large or small is the market share of your company in the main market or submarkets in which you compete? About how large is the market share of the largest firm in your industry (if their firm is not the largest firm)? (Small business owners may not know exactly how much market share they have but ask for any estimates of how large their firm is compared to the competition.)
5. How does your firm or the industry try to increase the demand for your product? What type of product differentiation do and your competitors try to do? Do you generally see the demand for your industry's product rising or falling over the near future?
6. Are there any significant changes in the costs of production that are affecting your firm? If so, how is your firm and industry responding to this change in input prices?
7. How do you make decisions on what price to set for your product? How much does your competition affect what price you set for your product?
8. What are the main government regulatory issues that affect your industry?

Introduction to Symposium: Innovative Approaches to Using Technology in Economics and Finance Classes

This symposium in the *Journal of Economics and Finance Education* contains three articles describing how instructors can use Bloomberg and Stock Trak in different finance and capstone classes. A special session titled, 'Innovative Teaching Project Presentations on Cengage Technology, Bloomberg, Stock Trak, or CFA related topic', was included in the 2016 Academy of Economics and Finance Conference. The papers show the importance of technology related pedagogy tools in providing practical, business-related applications to theoretical models when teaching finance and economics classes. These tools complement experiential learning that has been shown to improve cognitive learning and teaching outcomes. The papers recommend best practices for using these technologies for experiential learning, which has been shown to improve cognitive learning and teaching outcomes. Combined the three papers show that these technological tools provide business-related applications to economics and finance theoretical concepts. Innovative pedagogy approaches using either Cengage Technology, Bloomberg, Stock Trak, or CFA certification programs are described. All of the authors present sample course outlines and assignments, making it easier for a professors to structure their courses with information provided in these papers.

The three manuscripts focus on ways that instructors can use technology to enhance students' understanding of complex topics, an innovative teaching approach within economics and finance. The first paper, "A Corporate Finance Approach to Integrating Bloomberg and Stock-Trak into the Curriculum," by Phyllis Y. Keys won the Best Paper Award in the session at the meeting. Her paper is valuable because it provides details on how to incorporate Bloomberg and Stock Trak throughout the finance major curriculum. Her suggestion is that Bloomberg be used for completing financial analysis of publicly traded firms prior to students making trading and portfolio decisions for the researched stocks on Stock Trak. In this way, the expense and allocation of time needed to incorporate these tools into the curriculum will have economies of scale. The recommended approach is simple to implement and tied to specific learning goals for seven finance classes.

The second paper, "The Effectiveness of Stock Simulation and Technology: The Importance of Kolb Learning Styles in Introduction to Finance Courses," by Jocelyn D. Evans and Timothy A. Jones makes a contribution to the finance pedagogy literature by demonstrating the effectiveness of integrating the Stock Trak technology into the first finance course for students with different majors and learning styles. Since many universities and colleges require all business majors to take this first course, a common problem that finance professors face is disinterest among non-finance majors. The recommended approach taps into students' learning styles and specific areas of interest by requiring the financial analysis and stock trading to be tied to publicly traded corporations related to their field of study. For example, hospitality majors are required to analyze hotels, restaurants, or a hospitality-related industry.

The third paper, "'Ready to Work' Graduates: Enhancing the Value of Bloomberg in a University Finance Curriculum," by Dominique Gehy and Aimee Hoffman Smith focus on recommendations for incorporating Bloomberg terminals into the finance curricula. The need for additional guidance stems from the fact that many finance departments create trading rooms and rent Bloomberg terminals that are rarely used. Results from a survey reflecting students' knowledge of specific Bloomberg functions and features is provided. The detailed examples on how to tell students how to use these functions and features for sample assignments is very valuable.

Overall, these three manuscripts provide unique approaches for engaging students in the economic way of thinking by connecting the classroom to the world outside, motivating critical thinking, and providing experiential learning. We trust that you will enjoy this issue of the *Journal of Economics and Finance Education*. Our hope is that these papers will provide and inspire ideas that you can incorporate in your classes to capture students' attention and encourage them to fully utilize Bloomberg's powerful capabilities.

Jocelyn D. Evans
Symposium Editor

A Corporate Finance Approach to Integrating Bloomberg and Stock-Trak into the Finance Curriculum

Phyllis Y. Keys¹

ABSTRACT

Evidence from published pedagogical research suggests that trading labs are most often used for a narrow subset of finance courses, those associated with the Investments track. This paper provides finance departments with a guide to incorporating trading lab resources throughout the entire curriculum, particularly into Corporate Finance. A main contribution is the incorporation of Bloomberg (primarily for financial analysis) and Stock-Trak (primarily for trading) throughout the required finance courses, culminating in a capstone experience. This pedagogical approach gives students extensive exposure to trading and analysis tools that provide practical experience in capital budgeting and other areas relevant to financial management.

“Companies in the Standard & Poor’s 500-stock index will spend \$2.2 trillion next year, according to Goldman Sachs. Goldman’s Chief U.S. Equity Strategist David Kostin and his team figure 54 percent of total spending amount will go toward “growth” activities such as capital expenditure, research and development, and mergers and acquisitions – up 3 percent compared with 2015. Meanwhile, some 46 percent will be spent returning cash to shareholders in various forms.”

- Verhage, 2015, *Bloomberg Markets*

Introduction

Goldman Sachs, KPMG, and many other financial institutions provide advisory services to publicly traded corporations and middle market enterprises on mergers, acquisitions, equity/debt issuances, joint ventures, divestitures and management buyouts. These firms need new college hires to understand how investment decisions depend on strategic analysis and different types of valuations for more precise due diligence and capital budgeting decisions. Students’ ability to use both qualitative and quantitative resources is critically important for all corporations and absolutely essential for private equity and venture capital investors.

From a business perspective, choosing the right external acquisitions can be viewed in a similar manner to selecting the correct investments in stock or debt. In both decisions, analysts have to choose an alternative (whether project, target firm, or stock) that yields a return greater than its acceptable hurdle rate. Given that the returns on all these alternative asset allocation decisions are based on estimates of future cash flow, an analyst must become an expert on the firm itself, the industry, the product category, and the financial capital market as a whole. It also helps if the student has a solid understanding of the macroeconomy and its influences on capital markets. Furthermore, the uncertainty of a firm reaching its cash flow targets is related to the industry’s competitive structure and management’s ability, defined as reputation from past performance throughout their career (Trahan and Gitman 1995).

Bloomberg Professional service (also known as the Bloomberg terminal) is used extensively for economic and financial information by professionals (Clifford and Creswell 2009). It is also used by many Treasury

¹ Associate Professor of Finance, Morgan State University, Graves School of Business & Management, 1700 E. Cold Spring Lane, Department of Accounting & Finance, Baltimore, MD 21221. E-mail: Phyllis.Keys@morgan.edu. Phone: 443-885-1693; Fax: 443-885-8251. Acknowledgements: I would like to thank the guest editor, an anonymous referee, Mark Brookshire, Kath Henebry, and the participants at the 2016 meeting of the Academy of Economics and Finance for their helpful comments.

and Controller departments at major corporations.² In contrast, Stock-Trak was developed to give students a virtual trading experience during their college career. Thus, Stock-Trak's users are mostly from higher education, secondary schools, and primary schools. More recently, however, the company's reach has expanded to include many users in the financial services industry due to the promotion of financial literacy skills and client education in retirement and wealth planning. The company is now a leading provider of stock market simulations, games, and trading contests (Stock-Trak 2014).

The purpose of this paper is to present a comprehensive guide on how finance departments can gradually introduce financial resources, include relevant assignments, and create a capstone course (if needed) to fully develop Bloomberg terminal proficiency and Stock-Trak trading skills for their majors while creating a deeper understanding of the role of corporate decision-making in financial markets. The proposed program design provides experiential learning relevant for both investment and corporate career positions. The need for additional guidance for faculty is motivated by Lei and Li's (2012) highlighting of the gap between the widespread use of Bloomberg terminals in the finance profession and "scant" resources available to instructors on how to use them in finance courses. A limited number of published examples exist describing how technology that is widely used in the finance career can be used across the finance curriculum. Coe (2007), a notable exception, provides examples of illustrating Bloomberg functions for several finance classes including financial management, banking, international finance, derivatives, and investments.

In this paper, I illustrate integrated curriculum assignments that uses Bloomberg terminal functions to examine the various capital budgeting decisions that result in a valuation project requiring intermediate knowledge of excel and valuation techniques. The assignments complete several learning goals. At the end of the project, the student will be able to: 1) demonstrate intermediate level knowledge of Bloomberg terminals; 2) use the functions in Bloomberg to obtain qualitative and quantitative data; 3) produce a strategic analysis and valuation report for a publicly traded corporation using appropriate methodologies to communicate the strengths and weaknesses of the corporation relative to its industry peer group, including both a corporate and a security analysis perspective. I also provide the resources to develop a capstone course that uses both Bloomberg terminals and the Stock-Trak trading game to complete the three objectives above while including a team component. Furthermore, the trading game allows for an additional objective; the student will be able to implement a trading strategy and evaluate the performance based on that strategy for a portfolio relative to the benchmark index.

For students, the proposed supplements provide an enriching foundation that will improve their career preparation through a program of activities using both Bloomberg (primarily for financial analysis) and Stock-Trak (primarily for trading) throughout a typical sequence of required finance courses. The design is simple to implement and the suggested assignments can be used with most instructor's existing curriculum content, making it more likely to result in faculty adoption. Moreover, the capstone course enables students to synthesize the knowledge and complete a more thorough fundamental analysis of firms within an industry-focused **Stock Trak portfolio**. The paper is structured as follows: the literature review is followed by sections describing the design of a capstone course and the integration throughout the curriculum a capital budgeting case. Before the conclusion, I identify benefits and potential challenges with this pedagogical approach.

Literature on the Use and Value of Stock-Trak and Bloomberg Professional

To our knowledge, this is the first study to bridge the theory-application gap for capital budgeting using both Bloomberg and Stock Trak to complete various assignments within the sequence of required finance courses at our university. Coe (2007) points out that while faculty enjoy the use of databases for their own research, they rarely utilize trading lab resources for curriculum. He suggests that faculty need more instructional aids on using financial technology in the classroom. Additional instructional supplements should increase usage within classes due to greater faculty competencies in using the technology to effectively support lectures and readings.

Several studies provide examples of how to use one or the other of the technologies within a class room setting, but not both. The most widely used of the two technologies by finance educators is Stock-Trak. For example, Kish and Hogan (2012) describes how to build a financial lab and emphasizes the importance of faculty utilization in class meetings. Other papers focusing on Stock-Trak use it as a tool for independent

² Using Bloomberg's People Search Function, I find that nearly 90,000 Bloomberg users have the following roles: analyst, brokers, chief financial officers, chief investment officers, controllers, fund managers, investment managers, portfolio managers, traders, and treasurers.

trading exercises and portfolio selection (e.g., McClatchey and Kuhlemeyer 2000; Lola et al. 2001; Waggle and Moon 2009; Jankowski and Shank 2010; Huffman et al. 2012, Kish and Hogan 2012) or to track stock price trends (e.g., Felton et al. 2003; Girard et al. 2005; Wann and Lobo 2010; Lee et al. 2013).

Academic papers focusing on Bloomberg tend to cover the following topics: its value and use as a trading lab component (e.g., McClatchey and Kuhlemeyer 2000, Alexander et al. 2001; Holler Phillips 2011; Gendron and Czynnik 2012; Kish and Hogan 2012; Bailey et al. 2014; Sharma 2015); descriptions or evaluations of student's ability to use it or their perceptions about it (e.g., Lambert et al. 2008; Waggle and Moon 2009; Payette and Libertella 2012; Kazemi 2013; Gehy and Smith 2016); its value to students for career preparation (e.g., Kish and Hogan 2012; Sharma 2015; Gehy and Smith 2016, Gray and Todaro 2016).

Both technologies are purported to be beneficial because existing research shows that students believe their learning is improved when they have a chance to develop technological skills outside of the traditional lecture setting (Lambert, Tant, and Watson 2008). Lambert et al. (2008) find that students taking accounting and finance courses show evidence of higher motivation and are willing to come to class more prepared for computer laboratory sessions because they value the applied setting. The authors add that another benefit of learning in this setting is that students are better able to monitor the effectiveness of their learning. Effective use of the trading lab resources can provide a relevant active learning experience, but challenges exist in terms of student ability to use resources like Bloomberg Professional and development of material that faculty find beneficial and easy for classroom use (Lei and Li, 2012).

There is not consensus, however, that the cost of Bloomberg is worth the gain. Payette and Libertella (2012) report less positive student outcomes after introducing the Bloomberg Professional (BP) service in a capstone course for all business majors. They found that since many students did not have class room or lab formal training on how to navigate BP the most cited problem related to technological aspects of the software. In spite of their difficulties, however, nearly 70 percent of these students reported that using BP had been extremely worthwhile. None-the-less, the authors conclude that it is difficult to fit the use of BP within the existing content of a Business Policy and Strategy course. The slow process of integrating the technology into the curriculum redesign is a major obstacle. In the end, they question whether BP should be a regular feature of a business capstone course. We disagree with their conclusion, especially given that Gehy and Smith (2016) show that early introduction to Bloomberg and required completion of the Bloomberg certification are valuable.

As an extension of this literature, I describe how both Bloomberg and Stock Trak can be implemented at an early stage of a student's academic career by integrating them in every required finance course at a university. This approach is more comprehensive than those presented in other studies. Some authors focus on how the technologies can fit into the curriculum for a single course without much detail on particular assignments (e.g., Elan and Sanderson 1991; McClatchey and Khulemeyer 2000; Holowczak 2005; Coe 2007). Other authors develop new courses uniquely suited for the trading lab that manage real money for foundations (e.g., Siam 2005; Coe et al. 2007; Scott 2010).

Another strand of the literature provides detailed guidance on their proprietary assignments using different resources (e.g., Girard et al. 2005; Faulk et al. 2010; Gehy and Smith 2016). The most commonly used assignments provide details on a portfolio management or stock selection project that is tied to fundamental analysis (e.g., Dudley et al. 2001, Peterson 2006; Dolan and Stevens 2010; Huffman et al. 2012; Chen and Yur-Austin 2013). In no case did any of these authors explicitly require the use of both Stock-Trak and Bloomberg or tie investment decisions to corporation's capital budgeting decisions.

Several different papers highlight the importance of integrating technology in an individual class, at an early stage in the major, and in a format that is appropriate for the learner at each stage of the degree program. We focus on those studies demonstrating how trading labs are an integral part of the technology. Elan and Sanderson (1991) give a very good description of a modular format for student use of trading games in the introductory finance course, the first investments course, and the portfolio management course sequence. This more comprehensive approach allows students to gain experience in a wide variety of trading strategies and investment skills. Even though the authors do not use Bloomberg or Stock-Trak in their assignments, their modular approach can readily be adapted for these technologies.

Additional guidance, however, is needed to fully utilize these technologies in investment, corporate finance, and other finance courses. McClatchey and Kuhlemeyer (2000) present survey responses from 88 faculty teaching investments courses. They report that 25 percent do not use any stock trading games, 22 percent use a game they themselves designed, and 38 percent of them use Stock-Trak. Bloomberg is only briefly in a list by 11 percent of the instructors as an information. Most instructors use multiple 'free' information resources including the internet (about 73 percent), financial publications (about 79 percent), and

the library (about 52 percent). After analyzing the survey responses, the authors provide guidance on including trading games in a course by discussing the appropriateness of various games for the expected level of student understanding in a course, highlighting topics that might be illustrated in an investment course through the use of the trading game, and indicating the type of requirements that might be imposed on students based on the course level. We extend their analysis by providing a framework for incorporating both Bloomberg and Stock Trak throughout the entire finance curriculum.

Using Active Learning Technologies throughout the Finance Curriculum

The above research papers document that experiential, interactive methods of learning increase the retention of knowledge, problem-solving skills, and ability to transfer finance concepts to trading decisions and portfolio composition. Few studies state that they use Bloomberg terminals and Stock-Trak simulations throughout the finance curriculum as a more holistic approach to student learning. Incorporating active learning throughout the finance curriculum engages students in an extended process that better enhances learning and development of technological skills. Given that learning is a process that requires relearning concepts, the holistic approach throughout the curriculum is an innovation that allows an extensive amount of reflective cognitive thought and the application of the theories to new situations.

As demand by students for active learning experiences and the number of trading labs with Bloomberg terminals increase, the need for a holistic curriculum design that uses existing course materials will grow. I conclude that a well-functioning trading lab is an essential part of the effective use of both technologies throughout a finance degree program is warranted for at least three reasons:

1. Students are likely to show greater motivation for learning when they have some form of active engagement and when they believe the material is relevant for their career. The Bloomberg terminals, combined with a Stock-Trak simulation, offer the students a chance to see the connection between lectures and real world events.
2. Students are not likely to perform well in upper level courses using new technologies without earlier exposure to trading games and some training using the terminals. It is easy to give all business students some exposure in the Principles of Finance Course (if not sooner) with simple exercises using functions to demonstrate relevant concepts or calculations without having to do a major overhaul of the curriculum.
3. Educators are likely to integrate the use of new technologies into a course when there is overlap between the current course content and the content provided within the new technology. Integration is even more likely when the technology is easy to master for demonstrations or incorporate within existing assignments.

The good news is that finance professors from universities across North America provide a wide variety of assignments, many with very detailed information, using Stock-Trak assignments for both undergraduate and graduate courses.³ Unfortunately, I find no such repository for Bloomberg exercises. The few papers above that give guidance on using the terminals do not present the holistic approach I take below. In the sections that follow, I give guidance on using these resources as support for the existing curriculum in such a way that a student can have a comprehensive set of analytical and technological skills upon graduation. Regardless of choosing the Investments track or the Corporate Finance track, every student in the finance major will have a better understanding of both areas and how they interrelate.

Figure 1 is a visual representation of six typical, required finance courses and a recommended capstone course (in ovals with arrows leading from a prerequisite to the course it precedes)⁴ with a mapping to indicate whether Stock-Trak or Bloomberg or both will be used (in rectangles underneath the associated course). Bloomberg terminal functions are introduced in every class. Before reaching their capstone course, students should be familiar with over 40 Bloomberg terminal functions.

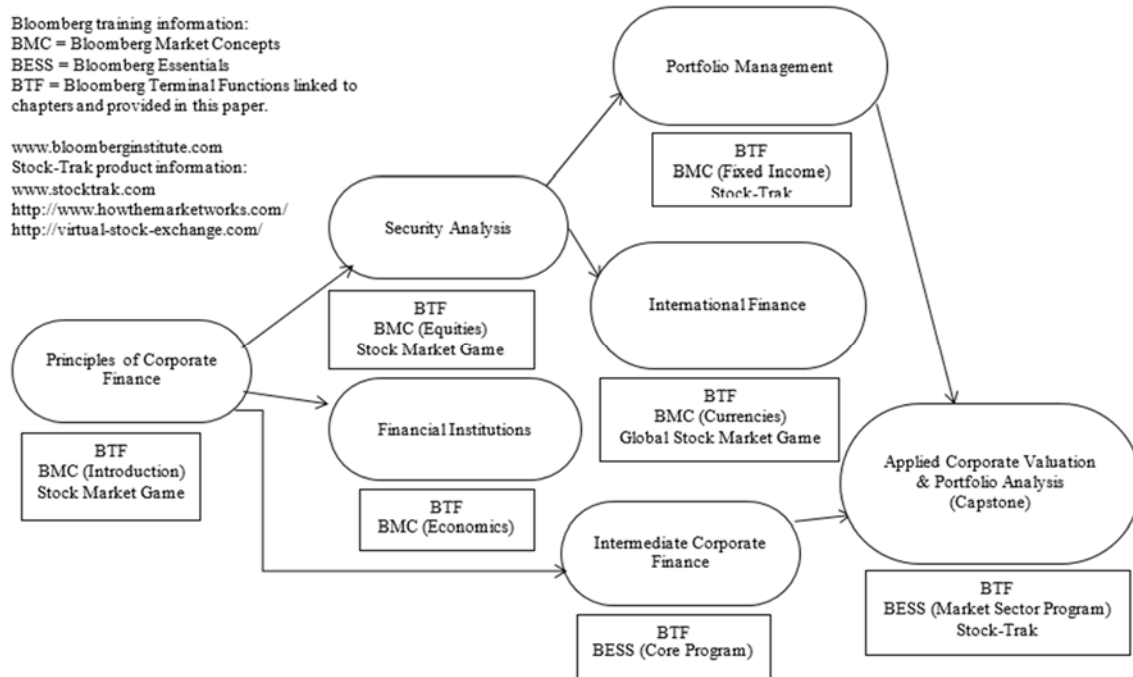
The two Bloomberg training programs can be gained by completing a Bloomberg module in every class. The Bloomberg Market Concepts certificate focuses on understanding the financial markets and has five modules (Introduction, Equities, Economics, Fixed Income, and Currencies). The Introduction module is required prior to any other module, but the others may be taken in any order. The student only has to complete all modules, without regard for scoring to receive a BMC certificate. Professors can request progress reports

³ Examples of class assignments and projects from university professors using Stock-Trak can be downloaded from <http://stocktrak.com/public/members/registrationprofessorspromotion.aspx>.

⁴ Not all universities will use these course names or have the same mapping of the curriculum. The mapping I provide is quite similar, but not identical, to the requirements for finance majors in my home institution.

detailing student scores and completion dates as long as they set up a group code with Bloomberg. Bloomberg Essentials (BESS) training has two main components: one focusing on knowledge of the terminal and the other on the financial markets. The financial markets component has modules focusing on Equities, Fixed Income, Foreign Exchange, and Commodities. The student has to meet a minimum score to earn an acknowledgement of completion for BESS training.

Figure 1 Mapping Finance Curriculum to Bloomberg and Stock-Trak Use



Students typically take their first finance course in the second semester of their sophomore year or the first semester of their junior year. Either way, the proposed program requires the use of Stock-Trak in at least one finance course during every term of their program. Stock-Trak offers several trading games for university students. In the introductory finance course (Principles of Corporate Finance, in this example), the recommendation is to use Stock-Trak's HowtheMarketWorks.com (aka the Stock Market Game), a free trading game that allows the student to trade stock and mutual funds. Because this is the introduction to trading for most students and is a required course for all business majors, I suggest allowing students to trade without trading performance being a component of the assignment. Instead, this would be a good opportunity to incorporate a writing exercise where students would trade and give a written report of their trading decisions, outcomes, and other experiences.

In the next semester, the Stock Market Game can be used in the Securities Analysis course to expose the student to technical analysis and trading with equity securities. In the third semester, the student will gain two trading experiences with the Stock-Trak products, the Global Stock Market Game and Stock-Trak in the International Finance and Portfolio Management courses, respectively. Another free trading game by Stock-Trak, the Global Stock Market Game (found at virtual-stock-exchange.com) allows students to trade stocks, currencies, and commodities from over 30 countries worldwide. This game can be used to require investments in domestic and foreign securities while also learning about currency exchange and its impact on investment performance. In the Portfolio Management course, the focus should be on the asset allocation decision.

Using Stock-Trak, students can trade stocks, options, futures, bonds, and mutual funds while placing market, limit, or stop orders. Finally, in the last semester, I recommend the student use Stock-Trak to perform long equity portfolios based on their fundamental analyses. As an alternative to a trading portfolio (or in addition to it), the instructor could have the student set up and evaluate a passive portfolio in Bloomberg. However, the role of Stock-Trak is to give students the experience of trading in a competitive atmosphere and should occur in at least two of the finance courses. Table 1 contains the recommended activities by semester in the required finance courses. It is the same information presented in Figure 1.

Table 1 Incorporating Stock-Trak and Bloomberg into the Finance Curriculum

Course title	Suggested securities & strategies
<i>First semester in the finance curriculum</i>	
Principles of Corporate Finance	Require students to complete Introductory module of Bloomberg Market Concepts (BMC); Allow students to trade stocks and mutual funds without rules using the Stock Market Game; Require a written summary of their trading experiences at the end of the term or have them journal regularly.
<i>Second semester in the finance curriculum</i>	
Security Analysis	Require students to complete Equities module of BMC; Require students to select a technical trading rule to take long positions in equity securities using the Stock Market Game.
Financial Institutions	Require students to complete Economics module of BMC.
<i>Third semester in the finance curriculum</i>	
Intermediate Corporate Portfolio Management	Require students to complete Bloomberg Essentials (BESS) Core Program. Require students to complete Fixed Income module of BMC; Focus on asset allocation, trading stocks and bonds using Stock-Trak.
International Finance	Require students to complete the Currencies module of BMC Have students create portfolios with allocations in domestic and foreign securities using Stock-Trak.
<i>Fourth semester in the finance curriculum</i>	
Applied Corporate Valuation & Portfolio Analysis (Capstone)	Require the students to show or complete BMC Certificate; Require students to complete BESS Market Sector Program; Require students to create portfolios with long equity positions based on fundamental analysis using Stock-Trak.

Notes: All trading simulations are for Stock-Trak products; All courses introduce some Bloomberg terminal functions.

I assign one of four types (security, portfolio, macroeconomic, or search) to each of the 52 functions. In Table 2, I give instructions for using each type of function (arranged alphabetically by type) and a few pointers about navigating within Bloomberg.

In Table 3, I map appropriate chapters in widely used textbooks for each finance course with the Bloomberg terminal functions along with a brief indication of a task that can be quickly demonstrated by the professor using a Bloomberg terminal or in the regular classroom with a Bloomberg Anywhere Remote License.⁵

Guidance on Including Research Papers with Assignments for Each Class

My paper makes a contribution to the growing literature on trading lab resources by expanding the limited information on how these resources can be used in the classroom. I extend the research of Coe (2007) by giving more specific details regarding the integration of Bloomberg throughout the finance major with set tasks that give the student experiences using the terminals well before their last semester in the program. Rather than only providing examples relevant to a particular course, I give finance faculty an example of how to fully incorporate the resources throughout the finance curriculum in such a way that all finance majors can graduate with trading experience, earn certifications regarded highly by the industry, and gain an in-depth exposure to the Bloomberg terminals. The proposed program encourages faculty use in early finance classes in such a way that the technology is not overwhelming and that does not require excessive amounts of class time or major preparation of the instructor. I provide guidance for all required courses that leads to an advanced level of knowledge required for completing active learning assignments in the capstone course. This approach is a holistic suggestion for finance departments that want to demonstrate active learning throughout the major and promote the use of a trading lab that contains Bloomberg terminals.

⁵ Although the functions have been assigned to particular courses, the information from a particular function will often be relevant for material in other courses, as well as other chapters within the same course. In addition, some of the functions with very different acronyms will actually take the user to an equivalent screen within Bloomberg.

Table 2 Bloomberg Terminal Functions: Instructions for Use

Functions recommended in the curriculum	How to use the function
<i>Security functions</i>	
AZS, BETA, BICO, CAST, CCB, CF, CRPR, DDM, DES, EE, EEB, EQRP, EQRV, EVT, FA, FA DVD, FA ESG, FA WC, GNR, GP, MGMT, MGSN, OVME, RELS, RSKC, RV, RVC, SPLC, TRA, WACC	Start typing a company’s name (for example, Apple Inc.) in the box at the top of screen. The autofill will show suggestions below the entry box. Select the security that matches by clicking on its name. That company will then be loaded. The loaded company shows in the first box at the top left of the screen. Type a security function. The loaded function shows in the second box at the top left of the screen.
<i>Portfolio functions</i>	
PDSP, PORT, PRTU	Type a portfolio function. Choose an item from the red menu bar (these are actions the user can take – e.g., Create, Analyze, Action, etc.) and follow through.
<i>Macroeconomic functions</i>	
COUN, ECFC, ECST, EPR, FCON, FED	Type a macroeconomic function. Fields with orange backgrounds or toggle buttons can be changed by the user. The red menu bar provides the users with other actions.
<i>Search functions (or “See all”)</i>	
CFS, FSRC, FUND, FXC, FXFC, MA, MOSO, NSE, RES, SRCH, TECH, USXC, WEI	Type a search function. Fields with orange backgrounds or toggle buttons can be changed by user. The red menu bar provides users with other actions. Some fields provide additional prompts (e.g., dropdown lists) for users to add other criteria. Some functions require user to click on a Results button to see the outcome of all criteria. Some only require a new input followed by the enter key, but user may have to wait several seconds for updated information to appear on screen.

Notes: All courses introduce some Bloomberg terminal functions; Only recommended functions are listed in this table. **Help:** HL followed by a function name will give a description of the function’s purpose. **Fields on a Function’s Page:** After going to a page associated with a function, hovering over most fields will give more information and indicate to the user what will happen by clicking on the field. **Related Functions:** Clicking on the third box at the top left of the screen (Related Functions Menu) will give a menu-driven list of related functions the instructor may wish to explore. Also, the breadcrumbs at the top of the Related Functions Menu will show where a function fits relative to the overall Main Menu of Bloomberg’s Functions.

This section contains a brief description of papers that provide enough detail for faculty to use as assignments in their own courses using Bloomberg and Stock-Trak. Given that my focus is holistic approach to incorporating these technologies across several different classes, I require students to read several published papers to understand the learning goals associated with assignments in individual classes. For example, in the introduction to finance class we require students to recreate screenshots from several data resources, including Bloomberg, to indicate how real-time financial data can be included in a class setting discussed in Holowczak (2005).

Table 3 Textbook Mapping of Bloomberg Terminal Functions by Course

Chapter number: Title	Bloomberg function(s)	Task(s) to demonstrate or resource to view
<i>Principles of Corporate Finance - Essentials of Corporate Finance. McGraw-Hill, 9th ed. (Ross, Westerfield, & Jordan)</i>		
1: Introduction to Financial Management	MGMT	Examine boards and ownership
1: Introduction to Financial Management	BICO	Show company and industry overview
2: Financial Statements, Taxes, and Cash Flows	CFS	Complete a company filings search
2: Financial Statements, Taxes, and Cash Flows	SPLC	Discuss receivables vs payables
3: Working with Financial Statements	FA	Show Du Pont analysis
7: Stock Valuation	DES	Show price, dividend yield, P/E, etc.
10: Some Lessons from Capital Market History	GP	Show pattern of returns over time
<i>Intermediate Corporate Finance - Essentials of Corporate Finance. McGraw-Hill, 9th ed. and *Fundamentals of Corporate Finance. McGraw-Hill, 11th ed. (Ross, Westerfield, & Jordan)</i>		

12: Cost of Capital	WACC	See the computed cost of capital
12: Cost of Capital	DDM	Change inputs to see effect on price
13: Leverage and Capital Structure	AZS	Change inputs to see Altman's z-score
14: Dividends and Dividend Policy	FA DVD	See a summary of dividend payouts
15: Raising Capital	CAST	Look at securities in capital structure
16: Short Term Financial Planning	FA WC	See analysis of working capital
*4: Long Term Financial Planning and Growth	EE	See information on earnings estimates
*4: Long Term Financial Planning and Growth	RV	See the company's peer group
*4: Long Term Financial Planning and Growth	RVC	See a graphical representation of peers
<i>Security Analysis- Essentials of Investment, McGraw-Hill, 9th ed. (Bodie, Kane, & Marcus)</i>		
1: Investments: Background and Issues	RES	Show how to do research on a security
2: Asset Classes and Financial Instruments	RELS	See the firm's related securities
3: Securities Markets	BETA	Show security market line
3: Securities Markets	USXC	See details on US exchanges
4: Mutual Funds & Other Investment Companies	FUND	See a list of screens for mutual funds
7: Capital Asset Pricing & APT	EQRP	Compute the equity risk premium
9: Behavioral Finance and Technical Analysis	TECH	Use technical analysis tools
<i>Portfolio Management - Essentials of Investment, McGraw-Hill, 9th ed. (Bodie, Kane, & Marcus)</i>		
11: Managing Bond Portfolios	PRTU	Set up a portfolio
12: Macroeconomic and Industry Analysis	CCB	See company's industry data
13: Equity Valuation	TRA	See the security's total return analysis
15: Options Markets	MOSO	See a list of the most active options
16: Option Valuation	OVME	Compute option prices
18: Portfolio Performance Evaluation	PORT	See metrics on set portfolio (PRTU)
20: Hedge Funds	FSRC	Use screener to search for hedge funds
<i>Financial Institutions - International Financial Management, Cengage Learning, 12th ed. (Madura)</i>		
1: Role of Financial Markets and Institutions	ECFC	See economic forecasts
2: Determination of Interest Rates	ECST	See a snapshot of economic statistics
3: Structure of Interest Rates	FCON	See financial conditions statistics
4: Functions of the Fed	FED	See Fed statistics and events
7: Bond Markets	CRPR	See credit ratings for a corporate bond
8: Bond Valuation and Risk	SRCH	Show features of company bonds
11: Stock Valuation and Risk	RSKC	Look at measures of a company's risk
<i>International Finance - Financial Markets & Institutions, Cengage Learning, 11th ed. (Madura)</i>		
3: International Financial Markets	EPRX	See a list of exchanges worldwide
3: International Financial Markets	WEI	See world equity indices
5: Currency Derivatives	FXC	See matrix of spot or forward rates
9: Forecasting Exchange Rates	FXFC	See FX quarterly forecasts
13: Direct Foreign Investment	MA	See the M&A for companies
15: International Corporate Governance	FA ESG	See scores from governance indices
16: Country Risk Analysis	COUN	See country profile, risk, & statistics
<i>Applied Corporate Valuation & Portfolio Analysis – no text chosen</i>		
Earnings Forecasts	EEB	See earnings consensus data
Relative Valuation & Benchmarking	EQRV	See valuation relative to peers
Management Strategy	EVT	See a calendar of corporate events
Management Outlook	CF	Get the MD&A report
Structural Changes	GNR	Read regulatory & government news
Competition & Industry Effects	NSE	Get news for a specific company
Organizational Efficiency	MGSN	See a snapshot about management
Portfolio Evaluation Measures	PDSP	See portfolio display (components)

Note: This table only shows the chapters that are used to coincide with Bloomberg terminal functions. Additional chapters, not included in this table, are covered in the courses. To use a terminal function, load the security first. Start typing the name of the company and appropriate choices will appear. Select the security you want by clicking on its name. The loaded security's name will show in the upper left on the first gray bar. Enter the acronym for the function you want to use at the prompt and hit enter. The loaded function will show in the second gray bar from the left at the top of the screen.

Introduction to Finance

Coe (2007) is required reading in the introduction to finance course because the paper illustrates how Bloomberg can be used in other finance courses by highlighting the terminals' value beyond functions related to investments. It is also required reading in the intermediate finance and corporate finance class because he identifies selected functions that provide detail on ratio analysis and weighted average cost of capital calculations. In the international finance course, his paper explains how Bloomberg tracks cross currency rates, world equity indices, options and commodities markets, as well as the yield curve and Altman Z score calculation needed for credit risk modeling. An example assignment is the graphical representation of the relationship between the S&P 500 and several foreign indices within Bloomberg's multiple regression analysis function.

Dudley, Davis, and McGrady (2001) list several portfolio websites including Stock-Trak in their description of the investment project that they assigned to the introductory financial accounting course. They give a detailed description of their six phase project and include a full example of the project evaluation form that had to be completed by the students. They also provide an appendix of additional class exercises that were assigned during the first four phases of the project.

Evans and Jones (2016) use Stock-Trak in the introductory finance course to add an experiential component to student learning. They provide very detailed instructions, grading criteria, and assessments items for a five-module teaching plan. Using the student outcomes, they find improvement for all majors and learning styles using the trading simulation in comparison to the course with traditional lecture format.

Investments

For example, Girard, Pondillo, and Proctor (2005) give a very detailed example and a template for using performance attribution analysis in an investments or portfolio management course. The authors use Stock-Trak for the trading simulations and a Morningstar function for sector weighting. The sector weighting can be completed using data from Bloomberg.

Huffman, Beyer, and Schellenger (2012) implement the top-down approach for trading by dividing the activity into four projects including a global economic analysis, a market analysis, an industry analysis, and an individual company analysis. Students are also required to make a presentation based on portfolio simulations using Stock-Trak. The authors include the details of all components, as well as calendar of the weekly activities, in an appendix.

International Finance

Faulk, Smolira, and Yoo (2010) provide an example that integrates investment and foreign exchange. They mention a drawback of using Stock-Trak for trading securities was that it did not allow for consideration of the exchange rate risk of international investing. However, the assignment that they describe can be adapted for use with Global Stock-Trak or data on currencies can be extracted using Bloomberg.

Peterson (2006) describes the activities required of students in an international marketing research course that used Stock-Trak to invest in hedge funds from an international country chosen by the instructor. He indicates that the research and trading activities are appropriate for upper level undergraduate and graduate level marketing students. He provides a guide sheet for students used during a term in which he focused on Latin American hedge funds.

Special Topics

Dolan and Stevens (2010) present the experiential learning program that they used to combine the competencies of economics and finance majors while running their university's student managed investment fund. In their program, the economics students primarily performed analysis at the top, i.e., global macroeconomic analysis and sector analysis. Finance students completed fundamental analysis, made security recommendations, and functioned primarily in roles as senior or junior security analysts, depending upon the number of finance, accounting, and information systems courses they had completed. The strategic portfolio committee, which made the final buy and sell decisions, was equally divided between finance and economics majors. The Bloomberg terminal was among the list of data sources that the students used to complete their analyses.

Cap-Stone

Lei and Li (2012) divide Bloomberg functions into security analysis functions, economic and industry analysis functions, and portfolio management functions to guide users toward a comprehensive analyst's

report in a one semester course in security analysis and portfolio management. They provide a full example of a report using Western Digital Corporation and point out the use of terminal functions to generate data or graphs for their report. Students taking their courses were not required to use Bloomberg for their project grade, but could earn bonus points by completing the Bloomberg Essentials Online Training Program. Although the authors present many portfolio management functions, they do not give extensive details on the portfolio management component of the course. For example, it is not clear whether the students were reporting on a portfolio with trading activity or limited to evaluating the performance of a portfolio they selected early in the semester.

Graduate Finance

Chen and Yur-Austin (2013) describe a portfolio simulation project that they indicate is best for the MBA investments course. The authors present a very thorough description of all the components of the project which requires students to complete Excel and writing assignments and to make presentations. The authors map the project components to their AACSB learning goals for the accelerated MBA program at their university. Although the authors do not explicitly mention the use of Bloomberg for the project, they point out that they encourage the students to complete the certification.

Intermediate Finance

Gehy and Smith (2016) survey finance students to determine their familiarity with specific Bloomberg functions and features as well as their perceptions about the usefulness of these specific function and Bloomberg overall to their degree program and careers. The authors point out that fewer than 20 percent of the students surveyed had used the jobs feature and nearly 61 percent had never even heard of it. Gehy and Smith provide specific details for some unique assignments that will require the use of Bloomberg, effectively assuring the professor that the student cannot generate solutions from alternative sources when the goal of the activity is to promote the use of this particular resource. The assignments cover the topics of initial public offerings, mergers & acquisitions, social media, and graphing firm performance over time.

The Capstone Course

The active learning experiences described above culminate in a capstone experience that I describe here. It brings together aspects of corporate finance and investments to give students sell-side analysis and portfolio management experiences. In this section, I provide a complete course design with objectives, assignments, a calendar, and suggested grading points for oral and written presentations for a capstone course, called Applied Corporate Valuation & Portfolio Analysis. Students should be warned that the capstone course is an intensive, fast-paced course which requires a lot of work beyond the classroom which is not explicitly designed by the professor. In my curriculum design, I use five values that business schools often use for their degree programs and map them to learning objectives that I expect such a course to meet (see Table 4). These values include: Knowledge, Application, Effective Communication, Effective Use of Technology, and Teamwork.

To describe the activities in the capstone course, I will assume a class size of 21 students. For this course, I recommend between five to eight minutes for each stock market recommendation presentation.⁶ In addition to an overview of the course structure and expectations, the professor should assign two or three firms within the same sector to each student on the first day of class (or earlier, if using a learning management system). Bloomberg divides the market into 10 sectors: consumer discretionary, consumer staples, energy, financials, health care, industrials, information technology, material, telecommunication services, and utilities. For a group of 21 students, I recommend assigning the sectors so that there is the potential for at least one competing recommendation in each sector. This will allow for the professor to add a bonus component to students' grades based on whether (or what percent of) teams choose their recommendation. It may be interesting, at least the first time around, not to disclose the bonus so as to avoid out-of-class solicitations for trades or to reduce the likelihood that teams will pick their own recommendations to increase their individual bonuses. Also, if a bonus is given, some consideration about the luck of the draw if equities are assigned by the professor (to avoid student analysts from the same sector making the same recommendation) must go into the design of this reward.

⁶ Huffman, Beyer, & Schellenger (2012) report that over 80 percent of students completing a recommendation presentation disagreed that a five-minute presentation was too short.

Table 4 Mapping School Values to Course Objectives in the Capstone Course

Upon completion of this course, students shall be able to:

Knowledge

Demonstrate an increased knowledge of:

- a. The tools and methods associated with fundamental analysis of corporations;
- b. The role of the economy, regulators, and market forces in equity markets;
- c. The activities of sell-side analysts; and
- d. The resources provided by the Bloomberg Professional service.

Application

Apply financial tools and concepts to select equity securities and benchmarks, to evaluate trends (whether firm-specific, microeconomic, industry, or sector), and to calculate portfolio performance;

Effective Written and Oral Communication

Adequately communicate the results of fundamental analyses and portfolio outcomes in a manner consistent with business practices;

Effective Use of Technology

Use Bloomberg terminals and Stock-Trak's virtual trading simulation, as well as other technologies (e.g., Microsoft Office software), to gather relevant information for financial decision-making and analysis where appropriate; and

Teamwork

Demonstrate interpersonal skills appropriate for professional interactions.

The calendar in Table 5 provides a guide on how to incorporate the topics and activities over a 15-week semester. Most semester courses will meet for three hours a week. The recommended formats are best for classes that meet twice weekly for 90 minutes or once a week for 3 hours. A review of the calendar does not make it clearly evident, but financial analysis is an ongoing aspect of the course as teams should use the Bloomberg data and news to inform their trading decisions. Likewise the portfolio analysis can begin immediately as students warm up to team trading during the first few weeks by practice trading with their Stock-Trak accounts.

On the first day of class, the professor should also assign teams of three, or allow students to select among themselves. With 21 students, this course will have seven teams. After team assignments, the professor should explain the course rules regarding portfolio trading and the Stock-Trak component (Appendix 1, Exhibit 1.1). If the components of the financial markets lab have been introduced in the courses as proposed above, students should be quite familiar with both Bloomberg and Stock -Trak and the professor need not use too much class time on them.

The professor can also use the initial course meeting to make clear the separate sector role of the student in the weekly meeting (included in Exhibit 1.2). Because the students have been divided into small teams, having students retain their sector roles can help in the team decision making as news is shared about sector outcomes due to global, economic, government, regulatory, and firm-level influences. One-half of the course time each week can be used for the individual sector announcements and other topics chosen by the professor; the other half can be used for the team oral presentations.

There are likely to be advanced corporate and microeconomic topics to introduce, as well as intermediate corporate and investments tools and concepts to review. Therefore, I recommend about four weeks of lecture style course activities as shown in Table 7 (weeks 1, 2, 3, and 5) with suggested course weightings for the students' activities each week. I provide topics for discussion, including material that corresponds with the Bloomberg terminal functions from the curriculum mapping described earlier. In the course calendar, I have indicated weekly quizzes to test student knowledge or application of the material from these lectures. To limit the use of class meeting time for discussions and examples, I recommend online quizzes through the course learning management system. Alternatively, some professors may prefer to skip the weekly quizzes and give one major examination at the end of the lecture sessions.

To allow for ten weeks of official team trading, I have set the stock recommendation presentations for Week 4. Teams should be required to make their first trading decisions soon after the presentations. The reason for this is so that the student may use a full one week evaluation period for their portfolio's performance throughout the term. The first week does not present a problem because I have built a lecture week before the team's first presentation. However, if teams delay their portfolio selections, there may be a delay in their final presentation while they wait on the last values for their portfolio components. From Week 6 onward, the students (as teams) take the greater role in weekly meetings by making either team presentations of their portfolio choices and outcomes or individual sector announcements.

Table 5 Capstone Course Calendar

Weight (%)	Topics
	<i>Week 1</i>
	Course Overview, Syllabus Review Individual & Team Assignments A Review of Corporate Financial Analysis - Capital Structure & Cost of Capital - Relative Valuation & Benchmarking - Earnings Forecasts Activities of the Sell-Side Analyst
	<i>Week 2</i>
4	Governance & Corporate Performance - Organizational Efficiency - Management Strategy Quiz on Material Covered in Week 1
	<i>Week 3</i>
4	The Effect of Structural Changes & Outside Forces on Firms - Mergers & Acquisitions - Government Regulations - Competition, Industry Effects, & Economic Indicators Quiz on Material Covered in Week 2
	<i>Week 4</i>
15	Stock Recommendation Presentations - Stock-Trak Portfolio due for setup/reset
	<i>Week 5</i>
4	A Review of Portfolio Evaluation Measures - Quiz on Material Covered in Weeks 3 & 5
	<i>Week 6</i>
3	Team Initial Written Reports & Oral Presentations
	<i>Week 7 – 14</i>
20	Assignment Due: Stock Recommendation Written Report
24	Team Weekly Written Reports & Oral Presentations
6	Individual Oral Sector Announcements (Every student must be prepared each week, but not every student will be required to act.)
	<i>Week 15</i>
20	Assignment Due: Portfolio Final Written Report

The components of each student's course grade are as follows: the stock recommendation presentation (15 percent), the written stock recommendation report (20 percent), and the final written portfolio report (20 percent), the combined quizzes (totaling 12 percent), the combined team reports (totaling 27 percent), and the individual reports and team reports, respectively. Exhibit 1.4 contains some suggested grading points for effective communication (both written and oral). These can be used to create a rubric for evaluating student or team performance on relevant assignments in the course.

Integrative Exercises: Capital Budgeting

Every finance course in a School of Business should not only teach capital budgeting and business valuation concepts, but instructors should use experiential learning with case studies, valuation analyses, or trading simulations to transfer this knowledge to real world applications (Bruner et. al. 1998). Yet, it is not uncommon for finance departments with trading labs to only incorporate technology platforms like Bloomberg terminals or Stock-Trak into the investments and the international finance courses (Lei and Li 2012). Very few studies provide a guideline of how to combine these platforms, reinforcing corporate finance concepts from a valuation and capital budgeting perspective (Waggle and Moon 2009).

Table 7 contains a brief description of exercises that can be linked to capital budgeting, but completed in the upper level finance courses using Bloomberg terminal functions that have been introduced above.

Table 7 Capital Budgeting after the Introductory Finance Course

Topic	Assignment
	<i>Security Analysis</i>
Capital Asset Pricing Model	Calculate the cost of equity for a private firm using the average unlevered betas of comparable firms from the same sector and the return on proxies for the risk-free rate and the equity risk premium.
	<i>Financial Institutions</i>
Credit Risk	Calculate the cost of debt using various methods: for a public firm, using the yield on offerings of similarly rated debt; for a private firm, using an adjustment for the risk-free rate
	<i>Intermediate Corporate Finance</i>
Long Term Growth	Calculate the free cash flow to the firm for a public firm. Using given assumptions, generate pro forma statements to get cash flow estimates for a five-year period and a terminal value.
	<i>Portfolio Management</i>
Portfolio Evaluation	Evaluate the performance of M&A focused funds.
	<i>International Finance</i>
Direct Foreign Investment	Compare potential target firms from a foreign country and the domestic country under a set of given assumptions.
	<i>Applied Corporate Valuation & Portfolio Analysis</i>
Mergers & Acquisitions	Complete a potential target analysis using discounted cash flow analysis and comparables.

Benefits, Challenges, and Opportunities

Additional opportunities exist where the capstone course experience can provide faculty with pedagogical research opportunities, as well as assessment feedback for accreditation or their own purposes. For example, the professor might choose to do pre- and post- tests or surveys to capture ungraded aspects of the course such as student preparedness on related topics, student interest, experiential learning effects, student comfort and capabilities with the required technologies, or student satisfaction with the course activities. The proposed curriculum is not, however, without its challenges.

The addition of a capstone course or the requirement that students take all of seven of the courses in my curriculum design presents challenges at some universities as we move toward allowing students more electives rather than required courses. Two alternative designs that avoid adding a capstone into the program are possible. One option is to modify the Intermediate Corporate class (see Figure 1) to include the activities from the proposed capstone course. Topics from a typical syllabus for the Intermediate Corporate class could be covered in the weeks 7 to 14 rather than having the group presentations and sector announcements. In that case, the groups might need frequent reminding that portfolio activity is going on. A second option is to treat the Intermediate Corporate and Portfolio Management courses as a sequence.

A challenge to requiring the use of Bloomberg for all finance majors often exists due to the limited resources available. Even when trading labs already have Bloomberg terminals, difficulty in servicing all majors is likely if the number of terminals is too low or when the lab availability is restricted by course use or operating hours. One recommendation is to keep some blocked hours where no classes are allowed in the lab and where users are allowed to make reservations and the length of time for each session is limited.

Although I have made some recommendations quite specific, room exists for modifications. For example, the course can still fit into the curriculum of schools with other objectives, and components that are suitable can be added to the course. Some values that universities might prefer include Ethics or Globalism. Additionally, a corporate topic other than capital budgeting might be integrated throughout the curriculum and used in conjunction with a financial markets lab. Some professors may want to consider how Bloomberg and Stock-Trak can be combined to maximize their course topics (e.g., banking or financial institutions). Despite the limitations mentioned above, the guided design and instructional aids given here should promote the use of valuable resources in relevant ways to improve student understanding and career preparation.

Conclusions

In this paper, I provide a suggested support to the current finance curriculum that incorporates the use of two prominent trading lab components in a holistic manner: Bloomberg Professional terminals and Stock-Trak. One benefit of the suggested curriculum is that students who complete the entire program using this curriculum will be introduced to more than 50 Bloomberg terminal functions and will be exposed to trading a variety of financial securities using multiple strategies through Stock-Trak. According to the Bloomberg Market Concepts introductory training module, the ability to recall and be familiar with Bloomberg terminal acronyms is highly regarded among finance professionals that use the terminals regularly. The Stock-Trak experience is beneficial because it allows students to evaluate their own skills in trading in early classes without the pressures associated with poor performance. In later classes, an added penalty feature for underperforming can help them to determine whether they are cut out for the high stakes environment that is considered par for the course among traders.

I believe the suggested additions enhance the finance curriculum in several ways and show how instructors can incorporate trading rooms within a Business School's overall strategy for the finance department. Equally as important, faculty can expose students to employment options connected to both Wall Street and corporations on Main Street that need capital budgeting analysts. The allure of the trading floor and the ups and downs of the stock market that are often at the forefront of business news about finance may lead students (and some faculty) to think of trading labs in a one-dimensional way. Hopefully, this paper will lead to an increased interest in some aspects of corporate finance and related careers that have not been fully considered by students majoring in the discipline.

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Appendix 1 Material for the Capstone Course

Exhibit 1.1 Portfolio Rules

Teams must follow these portfolio rules to avoid penalties:

- (1) Each team will initially have \$100,000 in their Stock-Trak accounts to build a portfolio.
- (2) Each team must set up a Stock-Trak portfolio immediately after all individual stock recommendations are complete. Teams may set up their portfolios on the first day of class so that they will have time to practice trading. Portfolios will be reset to \$100,000 on the first required trading day.
- (3) Teams must take long positions in at least one security from each sector based on the recommendations from the class presentations. These positions must be held for at least three weeks and must total an initial investment that equals at least \$40,000. Additional funds may be spent on any other common stock purchases chosen by the team.
- (4) The recommended securities may be sold after the restricted period. However, the portfolio must contain at least one stock from each sector represented in the recommendation phase at all times.
- (5) Teams may not take short positions nor may they trade derivatives or commodities in this portfolio.

Exhibit 1.2 Capstone Course Individual Reports

The content of all written reports constitute 80 percent of the report grade while written communication skills make up the remaining 20 percent. For completion of this course each student must individually complete the following:

- (1) an oral presentation on the individually analyzed common equity of a public firm,
- (2) a written report on the individually analyzed common equity of a public firm,
- (3) an individual oral sector report at least once during Weeks 7-14, and
- (4) a written portfolio report on the team analyzed portfolio.

Oral Equity Report

The student will give an 8-minute presentation on the basis of his/her financial analysis of the firms in their assigned sector. The objective of the report is for the student to make a recommendation to his/her classmates on which of two stocks to purchase for the portfolio. Due: Week 4.

Written Equity Report

The student will write a report on the stock recommended in the oral equity report. This report must contain the following (potential grading weights in parentheses):

- Cover page including company name, exchange, ticker symbol, sector, industry, current price, and target price (2%)
- Company business description (2%)
- Industry overview (8%)
- Investment summary (8%)
- Valuation (15%)
- Financial analysis (15%)
- Investment risks (10%)
- Fundamental analysis experiences (15%)
- Summary/Conclusions (5%)

I adapt the CFA Institute Research Challenge Rules for the structure of the written equity report. To see the rules go to <https://www.cfainstitute.org/community/challenge/Pages/index.aspx>. The total weight shows 80 percent because the oral component is 20 percent. Due: Week 6.

Individual Sector Announcements

Each student will receive an individual grade based on responsiveness to the weekly call for individual sector announcements. This is basically a participation grade, requiring the student to be aware of current events for his/her assigned sector. This includes awareness of firm-level activity, relevant government or regulatory actions, and economic or global situations that might influence outcomes in the sector.

I recommend the instructor identify students for the sector announcements in an attempt to give everyone the chance to participate. In this case, the student would receive a grade on the basis of whether he/she was prepared when called upon. Alternatively, the instructor could make called upon participation the acceptable standard and include additional quality effort from voluntary participants, resulting in finer grade distinctions.

Written Portfolio Report

The student will submit a written portfolio report at the end of the course. The portfolio report will focus on the student's experience using Stock-Trak. This report must contain the following:

- Cover page including portfolio name, all team members' names (5%)
- Initial and final portfolio descriptions (5%)
- Written overview of outcomes and outlook (20%)
- Portfolio evaluation, including benchmark comparisons over the 10-week period (40%)
- Team evaluation (10%)
- Trading experiences (15%)
- Summary/conclusions (5%)

Due: Week 15.

Exhibit 1.3 Capstone Course Team Reports

For completion of this course each student will receive a grade common to his/her team based on the following, which the team must complete (i.e., only one submission per team):

- (1) nine weekly oral presentations on the team analyzed portfolio and
- (2) nine weekly written brief reports on the team analyzed portfolio.

Team Weekly Oral Report

The team will give a 15-minute presentation on the basis of their portfolio trading for the week. The presentation should include the following components:

- Weekly returns and index comparison
- News reports (firm, industry, economy, etc.)
- Sales and purchases, if any, and rationale

Due: Weeks 5 and 7-14.

Team Weekly Written Report

The team will submit a weekly written report that must not exceed three pages. The written report should include the following components (grading weights in parentheses):

- Summary (30%)
 - Factors that influenced portfolio outcomes
 - Any trading experiences that the students want to include
- Graphs and Tables
 - Portfolio composition and performance (25%)
 - Comparison to index or other benchmarks (25%)

The total weight shows 80 percent because the oral component is 20 percent. Due: Weeks 5 and 7-14.

Exhibit 1.4 Suggested grading points

Research and information gathering

Quality & accuracy of analysis and evaluation

Presentation and organization of ideas, including formatting and flow

Proper context of presentation

Proper evidence and sources

Grammar & syntax (for written) or Mannerisms & eye contact (for oral)

Team effects (for group presentations and reports)

The Effectiveness of Stock Simulations and Technology: The Importance of Kolb Student Learning Styles in Introduction to Finance Courses

Jocelyn D. Evans¹ and Timothy A. Jones²

ABSTRACT

In this paper, results are provided for one course taught with the traditional lecture, homework and test format and another class that also integrates Stock Trak into the curriculum. Surveys and assessment measures reveal that incorporating Stock Trak into the format increases both students' satisfaction with the class and performance (as measured by graded Stock Trak assignments, written papers, traditional test scores, and student evaluation responses). Increased satisfaction and performance in the Stock Trak class is observed across several learning styles (Kolb 4.0 (KLS) Inventory survey) and for non-analytical academic majors.

Introduction

The New York Times and The Chronicle of Higher Education provide a commentary on the National Survey of Student Engagement's finding that many business school students do not study hard or read their textbooks. The explanation is academic disengagement and apathy. In our opinion, disengagement and apathy (dissatisfaction) could be linked to a common concern voiced by instructors that the introduction to finance course has too many different majors. The diversity of majors makes it difficult to keep students alert, motivated and satisfied with the class, particularly in large sections with hundreds of students or in an online class format (see, for example, Leinberger, 2014).

Our study examines whether instructors can improve satisfaction with the course, learning effectiveness, and skill development for students with different Kolb learning styles by integrating the Stock Trak stock simulation game into the curriculum. To our knowledge, with the exception of Stowe and Clinebell (2014), little is known about whether adding stock market simulations successfully delivers content and skills to marketing, finance, accounting, management, hospitality, international business and decision science majors. For traditional courses, Stowe and Clinebell (2014) find that non-finance and non-accounting majors do poorly on exams in the introduction finance course because instructors do not adequately relate the topics to their future careers or preferred learning style.

Their findings and our teaching experiences motivate this research study. We know that many hospitality, management, and marketing majors do not easily conceptualize finance topics such as calculating return and risk measures. The often state that finance knowledge will not make them a better brand manager or hotel operator/restaurateur. In addition, from our AACSB assessment reports, it is clear that non-accounting and non-finance students consistently have a weak grasp of finance analytical investment concepts. Marketing, hospitality, and management majors consistently score substantially lower than accounting/economics/decision science/finance majors on both qualitative and quantitative ETS questions.

To explore why non-analytical majors are often disengaged in introduction to finance courses, we investigate if active learning methods such as the Stock Trak trading simulation game help explain investment subjects to non-finance majors more effectively than a traditional lecture format. Three questions are examined: 1) do preferred learning styles vary by major; 2) is the integration of Stock Trak into the introduction to finance curriculum associated with higher learning outcomes such as grades for all students and greater satisfaction with the course. The answer to these questions will determine whether the integration of Stock Trak into the curriculum is an important determinant of student satisfaction and performance. We find empirical evidence consistent with the above questions.

¹Jocelyn Evans is a Professor of Finance, School of Business, College of Charleston, 66 George Street, Charleston, S.C. 29424, Phone 843-953-6405, Fax 843-953-0754. We would like to thank an anonymous referee, Denise Fugo, and James Malm, and participants at the 2016 Academy of Economics and Finance conference.

²Timothy Jones is an Assistant Professor of Finance, Williams College of Business, Xavier University, 3800 Victory Parkway, Cincinnati, Ohio, 45207, Phone 513-745-4818, Fax 513-745-4383.

A suggestion to other academics for continuous improvement is to incorporate trading simulations in a variety of ways when explaining investment theoretical concepts. When completed within a group setting, students in non-quantitative majors appear to benefit from this type of experiential learning, whereas finance, accounting and decision science majors score equally well on tests and assignments irrespective of the pedagogical approach. Finance, accounting and decision science majors generally prefer to work individually and do not need as much direction on how to play the game or constant feedback on how it relates to theoretical concepts. Economics majors are the only subgroup that prefer theoretical instruction to practical application.

Student Learning Styles

Our research focuses on two prominent learning styles paradigms, Kolb, which are frequently discussed in the educational psychology literature (Kolb, 1984, and Wilson and Hill, 1994). According to Kolb's (1984) Learning Style Inventory and McLeod's (2013) experiential learning cycle, some students prefer to learn by doing (experiential learning) in addition to reflecting (thinking), whereas others need abstract theoretical conceptualization. The experiential learning cycle begins with a concrete experience that enables the student to apply their finance knowledge. Then, the student must be encouraged to reflect upon the trading experience and theoretical knowledge to find inconsistencies or commonalities. S/he will be asked to explain how well the finance theory explains the trading portfolio outcomes. Afterward, the student must complete an abstract conceptualization about how finance concepts apply to the industry related to their major within an analyst report. The explanation for how industry-specific factors affect portfolio risks and returns is a new experience. Before each new trade, the student is required to write an update in the active experimentation stage that re-evaluates each stage of the experiential learning cycle. The effectiveness of Stock Trak in teaching investment subjects is determined for students with different learning styles and different majors. Table 1 briefly describes the Kolb (1984) Learning Style Inventory classifications.

Table 1: Kolb (1984) 4.0 Learning Style Inventory

***Divergers** learn best through concrete experience and reflective observation. These students need the concepts and theories to be related to specific experience from a number of different perspectives. These type learners ask why and need the teacher to motivate them with practical application. They like to view existing situations from many points of view which requires new ideas and brainstorming.*

***Assimilators** learn from abstract theoretical conceptualization and reflective observation because they are organized and structured. These students understand theoretical frameworks that focus on logic more than practical application. Their reliance on inductive reasoning and theoretical models makes them more independent and reliant on quantitative analysis and mathematical derivation for finite answers.*

***Convergers** combine abstract conceptualization and active experimentation to test the implication of theories with trial and error. These students ask how things are done. As a result, they seek guided practice and frequent feedback. They like technical analysis and problems solving.*

***Accommodators** combine concrete experience and active experimentation to enhance learning by using the results of their testing as a basis for new learning. These students consider what if scenarios and respond well to open ended questions. They also learn well from problems and want to discover answers for themselves. They like to process the information through active experimentation from hands-on activities. Since they often act on their feelings rather than strictly rational logic, they tend to rely on external sources rather than their own technical or fundamental analysis.*

Our study uses the Index of Learning Styles Questionnaire written by Barbara Solomon and Richard Felder from North Carolina State University to assign a learning style to each student. Their questionnaire is a derivation of Kolb (1984).

Active Learning within the Stock Trak Trading Game

Dewey (1933) is a pioneer in experiential, activity-based learning. Kolb (1984) expands on this concept and advocates that students learn most when they apply knowledge by doing in order to deliberate and reflect upon experimentation. Using these concepts, Welch (2014) describes how stock market simulations can increase active

learning in investment courses and can enable them to increase their knowledge about how management's strategic decision outcomes are reflected in stock prices and other financial instruments. Supporters of active learning believe that it promotes intrinsic learning satisfaction and higher test scores.

Consistent with the above conjecture, Stewart, Houghton, and Rogers (2012) report a positive impact of active learning on test scores in two undergraduate strategy capstones. Their analysis uses a quasi-experimental design that compares student performance in classes taught with the traditional lecture approach to a class with active learning (financial trading room assignments) instructional design. Several other studies also evaluate the effectiveness of stock trading simulation games within a number of settings outside of an introduction to finance course (Welch (2014), Seiver (2013), Huffman, Beyer, and Schellenger (2012), Noguera, Budden, and Silva (2011), Luck and Estes (2011), and Wilson and Cronin (1982)).

Moffit, Stull, and McKinney (2010) provide an illustration of an equity trading simulation and report significant improvement in student test grades and overall satisfaction with the trading game. Simulations and trading activities may be especially appropriate for millennials (born 1980 to 2000) because these students are technologically sophisticated (Stewart and Bernhardt, 2000) and need specific feedback and instruction to sustain or improve performance. It is surprising that Noguera, Budden, and Silva (2011) find that even though students value Finance labs they often don't fully use them.

We extend the literature by evaluating whether active learning through Stock Trak increases student satisfaction and performance across different majors and learning styles. The analysis specifically questions whether the Stock Trak technology makes the subject matter relevant to non-finance majors by developing concrete business and technology skills as well as cognitive and reasoning skills (math and analytical thinking) for an industry-based portfolio. Stock Trak may increase active learning and, hopefully, satisfaction by allowing non-finance students to make "real life" investment decisions with real-time data (How the Market Works) for firms within their major-related industry. If the chosen stocks are from the industry related to each student's major, the portfolio selection process will likely be relevant to them and enable them to retain basic finance principles. The importance of finance within any industry is reinforced through an analyst paper as well as analytical and computational assignments that enhance lectures and foster general industry-focused strategic discussions. The industry-related application should make class both relevant and interesting to all business majors when it is applied to organizations they could work for. Hawtrey (2007) says that "Students remember only a fraction of what they hear but a majority of what they actively do."

Implementation of Stock Trak for Different Learning Styles

We recommend that professors create exercises within the Stock Trak game that relate to specific lecture topics, while also using recent market-related information and industry trends. The best designed curriculum for investment topics shows a clear relationship between the Stock Trak game assignments and the theoretical concepts, mathematical computations, and grading evaluation. For example, the logic derived from the mathematical computation of return and volatility should be reflected in the portfolio's performance.

Every business school teaches investments at a detailed, comprehensive level because it is a prerequisite to advanced finance, accounting, and capstone courses as well as internships and full time employment in numerous fields. The investment learning goals that are typically taught in an introduction to finance class are as follow:

Learning Goal 1: Computation of stock return/ risk under different macroeconomic scenarios

Learning Goal 2: Stock and bond price valuation

Learning Goal 3: Different investment alternatives

Learning Goal 4: An understand of how securities are traded in the capital market

Learning Goal 5: Foreign exchange rates

Learning Goal 6: Option pricing valuation

These learning outcomes should be clearly communicated during lectures, tests, and Stock Track assignments. The assignments link theoretical concepts underlying the investment learning goals to the applied portfolio selection and trading context over 7 weeks. The investment platform (a student-directed learning approach) complements lectures (a teacher-directed form of learning) in order to provide a frame of reference for why the theoretical concepts are important.

The course should be divided into five modules. Assessment tests should be given to students both on the first day of class and after the each module to measure students' understanding of the six learning goals. The modules are as follows:

Module 1 (weeks 1-4): Teach students how the stock market works and basic finance concepts from passive learning (lectures, homework, and test)

After a lecture, the instructor should go over assigned text book questions and problems together with students on the board instead of just the PowerPoint or electronically. After computing the problems in class or in a study session the solutions can be placed on a web based program or PowerPoint slides. Classes should also include a discussion about how investment knowledge is related to different career paths to encourage reflection from abstract thinking and concrete experience. Several questions that link finance to other majors are as follows:

1. Is the firm's management effective at corporate governance and well respected in the industry? Do firms with stronger management have higher stock prices in the industry? [Management and Organizational Behavior]
2. Have the product/service selections and innovations led to increases in cash flows and therefore higher stock prices? [Marketing and Hospitality]
3. Are the employees productive, which should lead to lower costs and higher stock prices? [Human Resources]
4. Are cash flows increasing and does the firm have the correct funding mix? [Finance]
5. Does the firm have effective cost control measures and financial statement transparency, which should lead to higher stock prices [Accounting]
6. Does the firm effectively use technology such as online and mobile phone delivery methods, which should lead to higher stock prices? [Supply Chain and Decision Science]
7. Has globalization helped or hurt firm performance and stock prices? [International Business]
8. How does the macroeconomic environment affect cash flows for the firm and the industry and, hence, stock prices? [Economics]
9. What the risk/return trade-off is as reflected by the annual return, Beta and standard deviation for five firms within the industry related to your major? [All Majors]

Module 2 (week 5): Lesson Plans for integrating Stock Trak into the curriculum related to stocks, bonds, and mutual funds (conceptualization of theory for portfolio selection from passive learning).

Module 3 (weeks 6): Have students relate investment theories to the selection of stocks within their industry and complete an industry paper. This part of the analysis requires reflection and re-examination of the theoretical concepts.

Have the students analyze between five to ten firms in their Stock Trak portfolio for an industry related to their major and discuss how the financial analysis can qualitatively measures the risk/return performance of the stocks. The industry research paper explains their critical thinking and cognitive analyses, which is the basis for the stock, mutual fund or bond selection. This stage is intended to provide concrete application and reflection of investment theory and enable students to generalize their knowledge to the Stock Trak game.

Module 4 (6-12 weeks): Play the game

The specific pedagogy approach in which the Stock Trak simulation is described. The simulation will give them experience with researching firms within an industry and technical analysis of historical stock price performance. Reflective observation from organizing and examining the trading data results from concrete experience. In addition, students learn from abstract conceptualization because the written investment analysis requires them to generalize their conclusions and assessments from reflective observation to the capital markets as a whole and for firms within the industry related to their major. In essence, the research paper makes them reconcile their observations with the theories and problems from the text book.

The game itself is active experimentation that allows students to use their knowledge from lectures, the text book, and other assignments and activities. Stock Trak provides continuous feedback so that students can assess their knowledge level and participate in class. This approach leads to meaningful active rather than passive learning. For a specific industry, students will be able to take action by trading stocks and seeing the effects of current news events on the stock prices.

A journal of trades and outcomes must be kept each day to ensure that students track the market value of individual stocks and the portfolio. The journal will document active experimentation, reflective observation, and synthesis of the subject matter. The journal entries also report the level of student satisfaction with the stock trading experiential learning experiences and group discussions. To reinforce abstract conceptualization, the instructor should have a student present their Stock Trak findings as how it relates to the theoretical concept taught in the last period at the

beginning of each class (5 minutes). The oral presentation and class discuss will facilitate information sharing. Each student can extend the concepts to practical application in online threaded discussions and post news articles about the firms they are investing in. This activity will create group and individual critical analysis as well as problem solving using Stock Trak portfolio as examples (e.g., abstract conceptualization through consideration of ethical, global and innovation issues is included). A survey is used to assess the perceived benefits/problems with this approach for students with different majors and learning styles.

Module 5 (week 12): Turn in written investment portfolio analysis and give post-assessment tests.

The students will be required to use higher levels of cognitive learning by communicating the effects of management decisions within their industry on the stock prices with an investment analysis report. The report should explain the effectiveness of corporation's strategic decisions using finance concepts and statistics within a balanced score card framework. Then, the report should explain how the students extrapolate their knowledge from the Stock Trak exercise to forecasted cash flows for the selected stocks. The assignment will increase written communication skills and provide evidence that students can perform basic financial analysis for stocks within their major-related industry.

Effect of a Trading Simulation on Student Satisfaction and Academic Performance

We conjecture that industry-based experiential learning through Stock Trak improves academic outcomes and satisfaction for students with differences in learning styles due to a higher level integration and reflection on investment subjects. The first learning stage relies on *concrete experience* (solving problems and mathematics). After the concrete experience stage, there is *reflective observation* on the experience then *abstract theoretical conceptualization* (lectures) and active experimentation (Stock Trak). Combined, the assignments in the modules and lectures should enable students to generalize and reflect upon how different marketing, management, and accounting or finance strategies affect corporations' financial performance, which should be their guide for making new trading decisions (*reflective observation*).

By examining finance decisions in different contexts such as the hospitality and tourism industry, an instructor can require the students to use *abstract conceptualization*, *reflective observation*, *abstract theoretical conceptualization* and *active experimentation* to explain stock price trends and volatility. Instructors should measure the student's performance for and understanding of each learning goal after each module/learning stage in addition to using mathematical, writing and visual assignments to improve the students' retention of concept to answer following questions:

What is the dominant learning style used most frequently by students in each major in the School of Business?

How students with different majors prefer to absorb, think and evaluate investment knowledge and problems?

Does Stock Trak technology improve achievement and satisfaction for non-finance majors?

To examine this issue, we first provide summary statistics describing student profiles. Table 2 provides the profile of the 86 students with different primary majors. The statistics show that the majority of students in the introduction to finance class are white male (58%). As expected, a gender gap exists across majors: the majority of females select hospitality or marketing instead of finance. This gender gap in finance is pervasive across many business schools. The male/female gap is greatest in management information systems, finance, and logistics. In contrast, accounting and general management have gender parity, whereas women dominate international business and marketing.

Bloomberg, for example, reports that the University of North Carolina at Chapel Hill asked women about preferred business majors ranging from consulting to international business in a focus group. At their university, 40 percent of the undergraduate business majors are women, despite the fact that females represent 50 percent of college business graduates nationally according to the National Center for Education Statistics (NCES). Another alarming statistic is, in 2012, 39 percent of their incoming female freshmen stated intentions to major in business compared to 42 percent in 2006 at UCLA. What is surprising in our study is that the majority of males (60%) also tend to choose non-analytical majors and that among males and females the initial interest in finance is low. Only 17 students, mostly males, initially expressed interest in careers in finance.

Table 2 Primary Major for Both Introduction to Finance Courses

Majors	Number	Males	Females	Minority Interest in Fin.	
Accounting	6	5	1	0	1
Management	18	14	4	1	4
Economics	4	4	0	0	1
Finance	10	9	1	0	10
Hospitality	15	0	15	0	0
International Bus.	10	7	3	0	1
Marketing	20	8	12	0	0
Supply Chain	2	2	0	0	0
Other	1	1	0	0	0
Total	86	50	36	1	17

Table 3 investigates why most of the students in the introduction to finance class are not initially interested in the subject matter or potential related careers. The response from most people is the belief that finance and investment topics are unrelated to their major. Other reasons include perceiving that finance is either a hard, mathematical subject that is very complicated or that the subjects appear to be vague or boring.

Table 3 Initial Disinterest in Finance for Both Courses for Students that Responded

Reason	Total	Female	Minority
Subject Matter Vague	7	5	0
Boring	6	3	0
Not Related to Major	30	17	0
Hard and Complicated Subjects	13	7	1
Math/Quantitative	11	2	0
Scary in General	1	1	0
Too Hypothetical	1	0	0
Total	69	35	1

Table 4 gives student profiles for both the class with traditional lectures and the course that integrates the Stock Trak technology into the curriculum. The data shows that students are similar in both courses.

Table 4 Descriptive statistics of respondents in the traditional and integrated courses

Demographics	Traditional Design	Integrated Instructional Design
Total	40	46
Female	16	20
Male	24	36
Age		
<20	0	0
20-22	39	46
23-29	0	0
>30	1	0
Years in College	3	3
GPA		
2.50-2.74	2	4
2.75-2.99	15	18
3.00-3.24	14	10
3.25-3.49	4	6
3.50-3.74	2	2
3.75-4.00	3	6
Work Experience in finance	7	5
Number of Previous Online Classes	0	0

The statistics in Table 5 show that different types of students with disparate majors could create disengagement due to varying learning preferences for instruction. The majority of students have the following learning styles:

accounting (Convergers), finance (Convergers), marketing (Divergers), management (Accommodators), economics (Assimilator), decision science and supply chain (Assimilators), international business (Divergers), and hospitality (Accommodators). The students were categorized based on an index of learning styles questionnaire.

Table 5 Different Ways that Students State They Process Information (Kolb LSI 4.0)

Major	Accommodator	Converger	Diverger	Assimilator
<i>Traditional:</i>				
Accounting	0	2	0	0
Finance	0	3	1	0
Marketing	3	0	5	0
Management	4	1	0	2
Economics	0	1	0	1
Decision Sc.	0	0	0	1
Hospitality	8	0	0	3
Internat. Bus.	1	0	3	0
Total	16	7	9	7
<i>Integrated Instructional Design:</i>				
Accountants	0	3	1	0
Finance	0	4	1	1
Marketing	4	0	7	1
Management	6	1	1	3
Economics	0	0	0	2
Decision Sc.	0	0	0	1
Hospitality	4	0	0	0
Internat. Bus.	1	0	4	1
Total	15	8	14	9

The majority of students are either accommodators or divergers in both classes. Divergers like to work in groups, listen to the instructor lectures to learn concepts/theories, and seek personal feedback to increase their understanding of the theoretical topics or performance on tests. These students are auditory learners that want lectures, extensive class discussion, and professional life experiences. They are also visual learners that focus on stock charts showing trends and volatility in a graph. Their need for ocular stimulation favors reading PowerPoint slides over writing on the board. Marketing and international business majors dominate the diverger classification at our universities.

Unfortunately, divergers do not initially like to write papers or apply concepts to this particular new settings - the stock simulation game. They scored high on kinesthetic instruction and a variety of learning styles. As a result, the optimal curriculum for them will teach subjects over short time spans using different approaches in each lecture such as individual and group activities. Stock Trak allows them to read and convert the theoretical concepts into graphical images. We observe that divergers on average write effectively, even though it is not their preference, which makes them a valuable member of a group and increases their grade on the final paper. Industry-relevant financial analyses also facilitates their learning within Stock Trak.

The non-analytical majors (marketing, management, and hospitality) also tended to be accommodators. Accommodators are similar to divergers in that they like to work in groups to complete assignment. These students, however, are more focused in regard to setting goals for investment portfolio targets and grades. Their focus on goals makes simulated trading and trying different approaches to designing their portfolio enjoyable. It is hard to teach these students to reflect on theory because they tend to create portfolios based on intuitive trial and error rather than technical analysis, statistical computation, or hypotheses driven by theories. We observed that they let other people due the mathematical, technical and analytical analysis. Instead, they prefer the research stage of the process and learn through visual and auditory approaches to pedagogy.

They enjoy talking and listening more than writing. As a result, these students need the instructor to explain every concept within a lecture format before they can apply it to the results from the Stock Trak game. In fact, the instructor will have to repeat a lecture in different ways. With respect to problems, they need study sessions outside of class to discuss the solution in addition to class discussions of these problems.

Assimilators are more diverse with respect to majors in both classes. They prefer mathematical computation, statistics, analytical modeling, and evaluating stock trading data through the lens of theoretical concepts. We observe that they tend to spend a relatively small part of their paper on the results from the trading activity to explain their performance. Consequently, these students often must redo this part of the assignment.

These students prefer to use theoretical concepts to explain the majority of their results and conclusions from the simulation. Their learning style is reading articles/textbook and writing financial analyses with guidance from rubrics, but they also benefit from auditory learning through lectures and discussions. Surprisingly, some of them state that they do not want too many industry or professional related examples interjected into the lecture because it is distracting. A typical question is, “why am I being tested on the book but you (the instructor) focus on real world concepts and why do I have to teach myself?” They challenge instructors’ knowledge of theoretical concepts to real world application based on personal research. They appear to be bored when guest speakers that base a lot of their lecture on job or consulting experience are invited to class. We believe that instructors with masters degrees and substantial work experience need to be given assistance with the theoretical part of their lectures. Beware that assimilators are uncomfortable with using the Stock Trak simulation prior to lectures on theoretical concepts and mathematical computations. They prefer to reason and solve problems and are more individual learners who enjoy writing about Stock Trak more so than trying to gain a high risk-adjusted return.

In contrast, convergers are accounting and finance students who like to experiment with new ideas, stock simulations, and understand practical applications of the assignment. They tend to want traditional tests that require a single correct answer, but they enjoy the sequential learning associated with the trading. These students focus on the computations from statistical analysis to explain the theoretical concepts that were presented in lectures and the text book. They are also visual, auditory, and kinesthetic learners who enjoy learning by doing hands-on activities more so than tests or writing papers. We observe that they do not enjoy lecture-based instruction only. Although they do not often score the highest on tests that teach them theoretical knowledge, convergers do very well on Stock-Trak.

Table 6 reveals that incorporating the Stock Trak trading simulation into the curriculum (integrated instructional design) provides exposure to trading that increases student satisfaction with the introduction to finance course. The statistics show that the active learning is an important component of the curriculum.

Table 6 Learning Style and Student Satisfaction/Interest in Class Subject Matter

Learning Style	<u>Accommodator</u>	<u>Converger</u>	<u>Diverger</u>	<u>Assimilator</u>
<i>Traditional:</i>				
5: Highly Satisfied	3	3	0	0
4: Satisfied	10	4	5	4
3: No Opinion	1	0	2	0
2: Dissatisfied	2	0	2	3
1: Highly Dissatisfied	0	0	0	0
Total	16	7	9	7
<i>Integrated Instructional Design:</i>				
5: Highly Satisfied	6	6	4	3
4: Satisfied	8	2	8	6
3: No Opinion	0	0	2	0
2: Dissatisfied	1	0	0	0
1: Highly Dissatisfied	0	0	0	0
Total	15	8	14	9

Table 7 Student Academic Performance (and * are 5% and 10% significance based on a t-test)**

	<i>Mean</i>	<i>Median</i>	<i>Std Dev</i>
<i>Traditional:</i>			
Written Analyst Paper (individual) (100-0)	87**	84**	4.3
Final Exam (100-0)	71**	68**	9.9
Student evaluation responses (5 best-1 worst)	4.1*	4.0*	0.93
<i>Integrated Instructional Design:</i>			
Written Analyst Paper (100-0)	95	92	2.1
Final Exam (100-0)	84	81	5.8
Student evaluation responses (5 best-1 worst)	4.6	4.5	0.57

Table 7 similarly reports grade statistics and student evaluation score averages for the two different classes. Students that had the Stock Trak game performed better on tests and rated the class more highly.

Conclusion and Discussion

The results from our study have important implications for finance pedagogy. Including Stock Trak into the curriculum enables instructors to take students through the stages of the learning for students with different learning styles. When Stock Trak is used in an active learning format, it effectively makes students integrate, synthesize, reflect on and analyze data as well as use qualitative sources of information to increase critical thinking about investment topics after the introductory concepts are introduced. The software provides structure, guidance, and regular feedback that reinforces instructors' lectures in the classroom.

Assigning projects and papers that are tied to the industry related to each student's major increases the extent that the stock simulation will be embraced and seen as valuable. It appears that most students are interested in the practical application of Stock Trak in terms of how the knowledge relates to their academic and professional career paths. Finally, faculty should be warned that integrating Stock Trak into the curriculum is time consuming and a lot of work. For those willing to devote the time and effort, trading simulations are effective when they are coupled with real world examples, class discussions, and written assignments.

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Appendix

Trading Game Instructions

1. Read commission structure and eligible securities and exchanges
2. You have an initial cash balance of \$1,000,000 (U.S. currency) in your brokerage account at least \$100,000 must be invested in equities, mutual funds including ETFs, or bonds. Buy-Hold in the first two weeks, 20 trades
3. Form a group with up to 3 members from the same major
4. Each student will make their own trades in individual accounts
5. Before forming your first portfolio, submit a "policy statement" clearly stating the following: You cannot diversify your portfolio outside of your industry.
6. State your investment policy (industry sector, return, and volatility)
7. Select portfolio style (asset classes and allocation) based on a specific industry
8. Determine industry and macroeconomic risks that your portfolio faces
9. Choose one benchmark portfolios
10. Sell all investments at the end of Module 5

Grade Criteria for the Final Report

1. Policy Statement (Importance of Firm's Strategic Business Plan, Mission Statement, Customer Base, Market Share, Management Reputation, Target Expected Risk, Target Expected Return)
2. Industry Analysis (P/E, earning yield, P/CF. P/S. P/B, DuPont Ratio Formula, Risk Ratios, Indirect Cash Flows, Cash Flow Identities, Qualitative Characteristics, SWOT, current events for each firm and the industry as a whole)
3. Performance consistent with the policy statement
4. Computation of return/risk and analysis and Rational for Trading Activity (discuss gains and losses)
5. Explain changes you would make going forward based upon the portfolio's actual performance and the theoretical concepts from the class
6. Summarize business articles interviewing industry experts that explain why stock prices moved during the trading period for each firm and the industry as a whole
7. Assessment Test

Assessment

Part A: Pre- and Post- Questionnaire

Part B: Stock Trak Assignments Given During the Semester:

1. Assignment 1: Stock Valuation
The following assessment tools will be used to evaluate how Stock Trak affects student learning, retention and interest: pre-simulation survey, a pre-simulation investment test, a post-simulation survey, a post-simulation investment test, AASCB assessment questions, and statistics from graded parts of the trading simulation. Each student will choose from 5-10 stocks in the industry related to their major to perform an investment analysis. You should incorporate aspects of the fundamental analysis that are taught in class. You may use any data sources you wish and any specific methods, as long as you justify the reasons for inclusion. At the end, I need to receive two things:
 - I. Much of your work, including virtually all of the calculations, need to be done in Excel. More specifically, they need to be done in a manner that facilitates flexibility. You should set up your model so that the inputs can be changed and the calculations automatically adjust. You should turn in the completed Excel sheet in an OAKS drop box. The completed sheet will be graded both on accuracy and ease of use/appearance.
 - II. In addition, you are required to complete a written report. In this report, you are to do the following:
 1. Overview
 - a. Write a brief introduction detailing the company you choose and, more importantly, why you chose it. This section should not be more than 1 page in length.
 - b. Describe the quantitative methods used to arrive at your valuation.
 - c. Provide a summary of your numerical conclusions.
 - d. Provide a short (less than 1 page) conclusion, detailing your recommendation for investment and an exit plan. The completed paper will be graded both on content and exposition.
 2. Investment Simulation Report
Following completion of the trading period, each student must submit a report including the following:
 - a. Title Page with name, date, course, etc.
 - b. A final Portfolio printout from Stock-Trak.
 - c. A summary that consists of the following:
 - Section 1: Strategy
 - i. What are you looking for in a portfolio in broad terms?
 - ii. What mixture of asset types would you like in your portfolio?
 - iii. How do you then pick individual investments?
 - Section 2: Portfolio
 - i. Characteristics of your individual investments.
 - ii. Characteristics of your portfolio.
 - iii. Does your current portfolio match your desires from Section 1?
 - Section 3: Performance

- i. Individual investment performance.
 - ii. Overall portfolio performance.
- Section 4: What have you learned?

Part C: Instructor and Peer Evaluation (grades and survey)

1. Demonstrate the ability to use quantitative models in solving investment problems-quantitative competence will be demonstrated through exam questions, text book homework assignments, and Aplia trading assignments.
2. Demonstrate the ability to qualitatively relate all business subjects to the Aplia trading assignment-Proficiency will be assessed through a written analysis of the Stock Trak trading experience that relates the outcomes to theory.
3. Demonstrate the ability to use current technology-based tools to acquire, store, retrieve, and analyze firm and industry data through Stock Trak-graded assignments.
4. Demonstrate proficiency in both oral and written communication through the preparation and presentation of firm and industry data to make investment decisions. The ability to communicate will be demonstrated through grades on presentations and the written Stock Trak assignments as well as instructor and peer evaluations.
5. Demonstrate the ability to integrate knowledge from multiple disciplines incorporating classroom and Stock Trak experiences and knowledge in the completion of complex and comprehensive tasks-grade on written investment analysis

Part D: Student Self Evaluation (survey)

1. Improved retention of investment knowledge (1 none to 5 substantial)
2. Improved transference of knowledge to trading decision making (application and integration) (1 none to 5 substantial)
3. Improved interest in finance investment topics (1 none to 5 substantial)
The goal is to have at least 80% of the finance majors and 70% of the non-finance majors receive scores on these measures of 75 or higher.

“Ready to Work” Graduates: Enhancing the Value of Bloomberg in a University Finance Curriculum

Dominique Gehy¹ and Aimee Hoffmann Smith²

ABSTRACT

This paper offers recommendations to faculty on how to incorporate Bloomberg terminals into Finance curricula. Additional guidance is needed because existing studies find that although students value trading rooms and Bloomberg terminals, they rarely use them. Reasons for this underutilization include the large amount of time and effort required to learn the software and the availability of free Internet-based or lower cost data sources. We describe several assignments that explicitly provide learning goals, detailed guidelines for using specific Bloomberg functions to collect data, expected outcomes/analysis, and assessment questions. We also present survey results which indicate that professors of finance courses should teach students Bloomberg’s powerful capabilities early in their academic career and emphasize how this technology is a job-related skill.

Introduction

Many constituents within universities argue that Schools of Business should be required to provide evidence that class instruction leads to student learning that can be transferred into improving graduate school or professional employment performance. According to a January 2016 Wall Street Journal article, federal regulators initiated investigations on several for-profit colleges advertising unsubstantiated employment and earning statistics for graduates. This regulatory scrutiny of post-graduate employment should be a concern for deans of all Schools of Business that tout the jobs and employment of their former students six months after graduation. The universities in litigation are required to give students refunds and other forms of restitution because these universities could not provide evidence of work-related skills in their curriculum (Mitchell and Kendall, 2016).

As a result of these investigations, many universities are pushing to incorporate real-time technology into the classroom. The goal is to better prepare students for the progressively competitive workforce and increase the graduate placement rate, which should improve the university’s reputation. For example, many corporations assume that students have expertise in firm valuation and related analytical decision-making using real-time publicly available data. These skill sets are best learned with experiential assignments that incorporate technology in a manner that enhances students’ understanding and appreciation of the subject. Yet, the best approach for accomplishing the integration of technology into the curriculum is unclear. Deans prefer less costly tools such as Stock Trak, but existing research shows that Bloomberg is the most widely used platform at AACSB Schools of Business. Our paper contributes to the literature that evaluates the trade-off between the cost and students’ perceived value of the Bloomberg Professional service.

Prevalence of Bloomberg Terminals

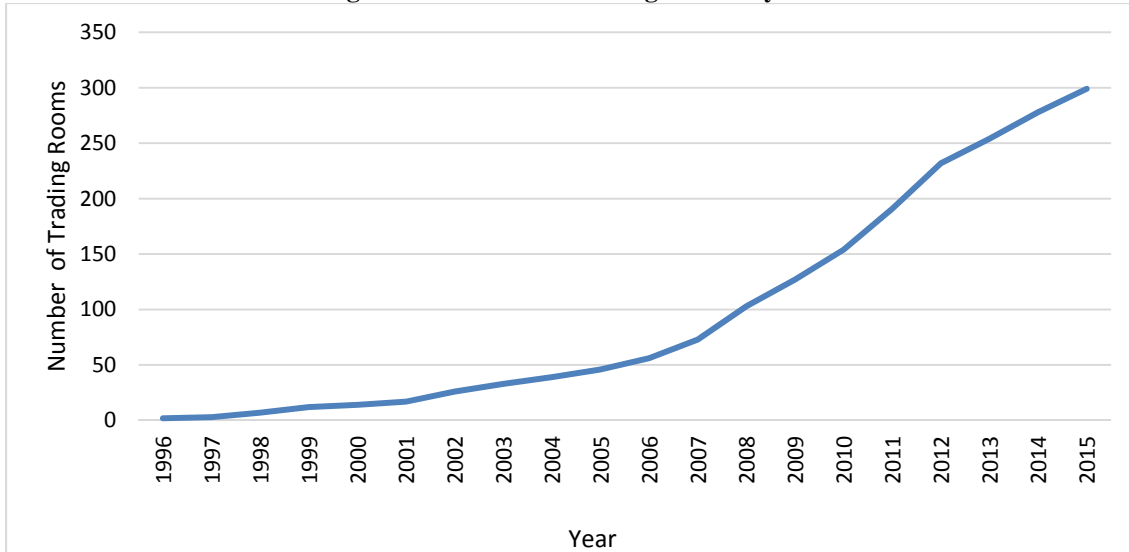
The perceived effectiveness of the Bloomberg platform is a particularly interesting topic in most Finance departments, especially since trading rooms have gained popularity in business schools over the past decade. University Finance Lab, a leading consulting firm focusing on the design of university trading rooms

¹ Assistant Professor of Finance, Department of Finance, Frank G. Zarb School of Business, Hofstra University, 1000 Fulton Avenue, Hempstead, NY 115549 USA; email: dominique.gehy@hofstra.edu.

² Assistant Professor of Finance, Department of Finance, School of Business, Bentley University, 175 Forest Street, Waltham, MA 02452 USA; email: asmith@bentley.edu.

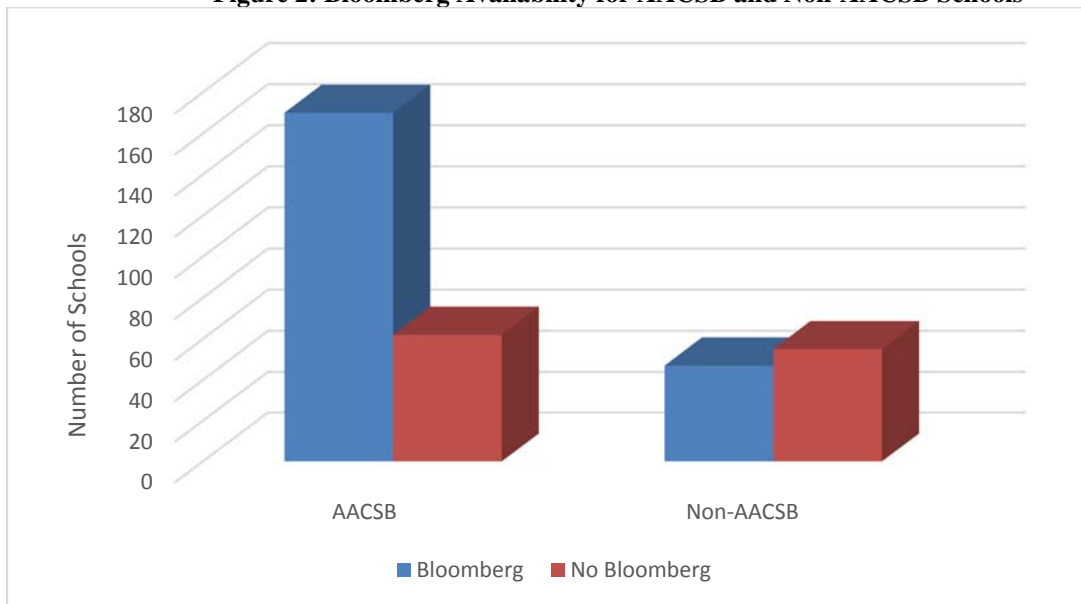
and labs, reports that 334 trading rooms exist in the United States and Canada. Since 1996, the number of trading rooms has increased exponentially (see Figure 1). Of all the trading rooms, most (65.3%) have Bloomberg terminals. The remaining trading rooms use other professional data services and simulation tools, such as FactSet, Morningstar, Capital IQ, or StockTrak.

Figure 1: Number of Trading Rooms by Year



The majority of universities with trading labs (69.4%) are AACSB-accredited, and as shown in Figure 2, 73.2% of the AACSB-accredited schools with trading labs offer Bloomberg. Moreover, nearly half of the non-accredited schools with trading labs also have Bloomberg terminals. These schools presumably have fewer resources, but consider Bloomberg valuable enough to pay the substantial cost of terminal fees rather than purchase other programs. What is unknown is if students perceive that expertise on Bloomberg gives them a competitive advantage.

Figure 2: Bloomberg Availability for AACSB and Non-AACSB Schools



An increasing number of universities are realizing the importance of investing in financial technologies and acting upon this need. Apparently, the presence of a trading room with Bloomberg terminals is a standard at prestigious universities with AACSB accreditation. According to Professor Erwan Quintin at

the University of Wisconsin School of Business, “the Bloomberg Terminal is the gold standard in the industry that is used on the trading floors of all the leading financial institutions...approximately 250,000 Bloomberg Terminals are used by investment professionals worldwide.”³ It is an expectation among employers that students will be proficient on Bloomberg terminals, and their level of proficiency differentiates job candidates.

Existing Literature

Several studies provide examples of how professors can incorporate Bloomberg into the curriculum. With the exception of Lei and Li (2012), these studies do not provide specific learning goals that integrate the technology into the curriculum. Lei and Li (2012) describe how students can use Bloomberg to construct an analyst report within a Securities Analysis and Portfolio Management course. According to their course-specific learning goals, students should be able to 1) understand the investment policy statement, 2) choose among asset allocation and portfolio diversification strategies, 3) use both single- and multi-factor asset pricing models, 4) conduct common stock valuation and analysis, and 5) evaluate portfolio performance. Following Lei and Li (2012), we incorporate a selection of these learning objectives in our projects and also encourage the implementation of a Bloomberg training requirement in order to ensure that students know how Bloomberg works in general. However, our study is different from theirs because we design projects that demonstrate to students not only how to extract data, but also how to use higher level functions to complete tasks that enable them to construct graphs that facilitate student presentations. In most firms, graphs compliment written analysis in order to facilitate critical analysis and evaluation of the firms’ financial performance. Thus, higher level functions similar to those we use in our projects are employed frequently within corporations for management reports.

Some studies provide more specific recommendations involving the implementation of Bloomberg or other trading platforms in the classroom. Holowczak (2005) discusses simulation trading and arbitrage assignments using Reuters Kobra and Power Plus Pro applications. He highlights the advantages of comprehensive real-time data platforms versus free online trading websites and argues that the free online trading websites do not provide continual training and certification or live customer support. Furthermore, the university web server may not have the capacity to support large internet usage, especially during midterms and finals. When several students are using the online platforms simultaneously, school web servers sometimes temporarily shut down. Holowczak also finds that most free online platforms do not provide real-time data or live news coverage of firm-specific and macroeconomic events, such as Federal Reserve announcements, using an easily accessible format. Our paper similarly demonstrates that Bloomberg can provide unique task capabilities. Additionally, we show professors and students how the technology is integrated into the curriculum by providing learning goals, step-by-step instructions on how students should complete the assignments, and guidance on how to use the assignments within the learning goals they have designated for AACSB accreditation.

Other studies discuss how Bloomberg technology can be integrated within a classroom setting focusing on market microstructure (Coe, Killic, and Isik, 2007) and investing (Coe, 2007; Scott, 2010). Coe (2007) highlights several advantages of using Bloomberg data in the classroom and documents the rising availability of Bloomberg terminals at business schools. Scott (2010) discusses the Bloomberg Essentials certification program, which is freely available to anyone with access to the Bloomberg terminals. The certification program is an interactive, independent self-study course that can be taken at one’s own pace. Users can seek additional guidance by asking questions through the Bloomberg help portal. Since Bloomberg is highly recognized in the field and provides useful, practical information, Scott suggests that educators encourage student participation in the certification program by offering a one-credit course. However, despite these trends, there appears to be a disconnect in that Bloomberg is vastly underutilized among university students. Based on a survey of undergraduate and graduate Finance students who take classes in a trading room, Noguera, Budden, and Silva (2011) report that 50.3% of students have never used Bloomberg and 26.4% of students have never heard of Bloomberg. Only 4.5% of the students use the financial resource regularly.

It is surprising that students are not utilizing this important resource given the abundance of guidance available to educators. Contributing to the problem is the fact that some students only use Bloomberg to satisfy minimal course requirements, while others manage to avoid it altogether by relying on alternative

³ <https://bus.wisc.edu/mba/real-estate/news/2011/03/03/bloomberg-terminal-gives-students-a-competitive-edge-in-a-demanding-job-market>

sources of financial data. Hence, we reexamine this issue by surveying students about the reasons for underutilization and providing useful examples to instructors that lead to the required use of Bloomberg.

Survey Sample Selection Process

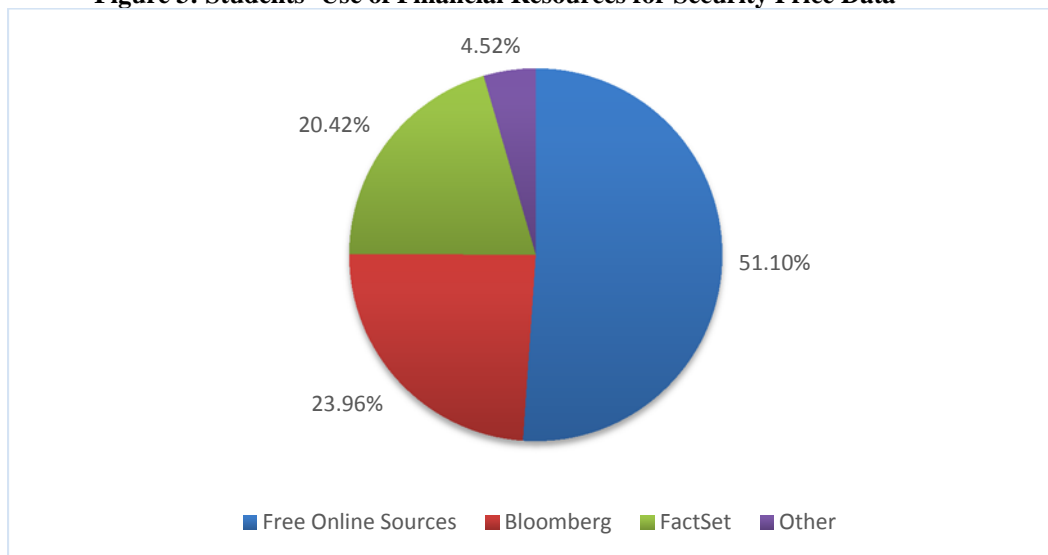
In order to better serve students and enhance the value derived from educational institutions' investment in Bloomberg, it is imperative that we understand students' perceptions of Bloomberg as well as their acknowledgement of the platform's unique capabilities. In March of 2016, we conducted an electronic survey of 130 undergraduate and graduate students in Finance at Bentley University. The sample consists of 110 undergraduate students, all of whom are pursuing one of the three Finance-oriented degrees: Finance (48), Economics-Finance (35), and Corporate Finance and Accounting (27). The students are currently at various stages of their programs, although most are sophomores (36), juniors (47), and seniors (26) due to the fact that the majority of freshman have yet to declare a major. Of the 20 graduate students surveyed, 12 are pursuing a Master's degree in Finance and 2 are pursuing a Master's degree in Business Administration with a concentration in Finance. Twelve of the graduate students are presently in the first year of their program, while the remaining 8 graduate students are in the midst of their second year. The average survey respondent is currently 21 years of age. Approximately 65% of the respondents are male.

Survey Results

Exposure to Bloomberg

We begin by examining the relative frequency with which students use various financial resources when they need to collect security price data. In Figure 3, we find that the average student relies on free online sources 51.1% of the time, whereas Bloomberg and FactSet are only used 24.0% and 20.4% of the time, respectively. This result suggests that in the absence of course assignments that explicitly require the use of Bloomberg, many students would rely on free online trading websites to satisfy their financial data needs. The result also motivates the search for new ways to introduce students to more advanced applications in Bloomberg in order to demonstrate the unique capabilities of the platform.

Figure 3: Students' Use of Financial Resources for Security Price Data

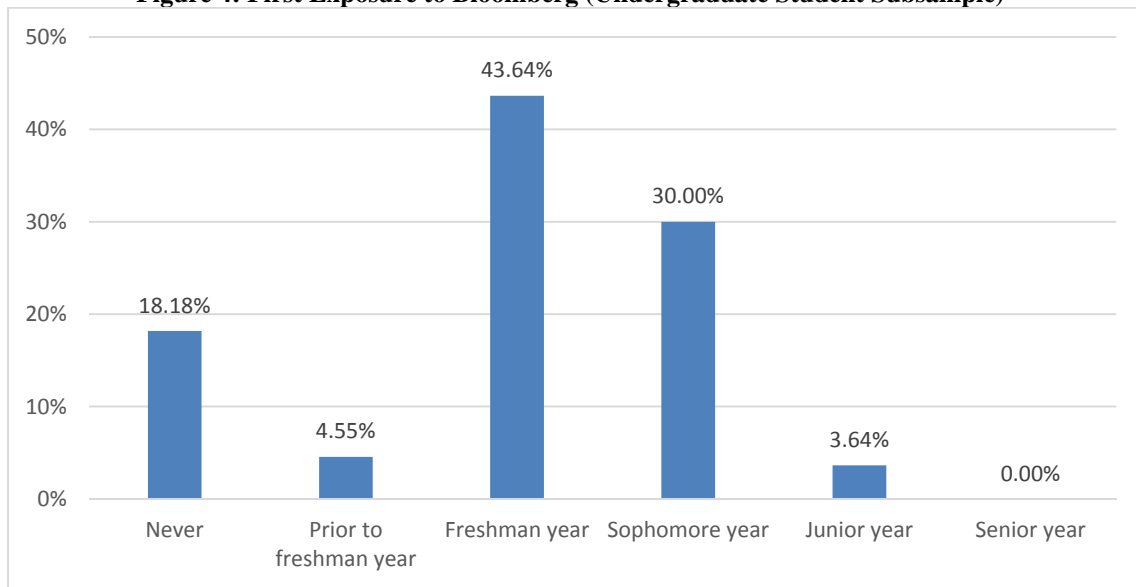


Next, we explore the extent to which students take advantage of their access to Bloomberg. Of the 130 participants, 108 (83%) used Bloomberg prior to completing the survey. As a comparison, Nogeura, Budden, and Silva (2011) report that 73.6% of their sample have *never* used Bloomberg or the Financial Trading System in the trading labs. They also find that students predominantly use the trading labs for checking emails

and surfing the web: 54.2% use the lab for emails, 29.6% for surfing the net, and 27.8% use it to conduct financial research. One explanation for the higher Bloomberg utilization rates that we report is that Bentley University recently required students to complete the Bloomberg certification in the introductory Corporate Finance course, which is generally taken during the students' sophomore year. Previously, the certification was treated as a course component in an upper-level Finance class, which is required for Finance and Corporate Finance and Accounting majors but is treated as an elective for students majoring in Economics-Finance. However, the certification requirement was moved to the introductory Corporate Finance course in response to student feedback suggesting that the benefits of the certification would be greater if the certification were required earlier in the curriculum. Since upcoming classes of Finance students will be subject to the new curriculum requirements, we expect to see a rise in the future number of students who become Bloomberg certified by the end of their sophomore year. Soon, 100% of undergraduate students who graduate with one of the three Finance degrees will be Bloomberg certified due to the new curriculum requirement. Finance students at other universities could benefit from a similar requirement.

Figures 4 and 5 examine when students first start using Bloomberg, distinguishing between undergraduate and graduate students. In Figure 4, we find that 78.2% of the undergraduate respondents have used Bloomberg by the end of their sophomore year. Hence, the bar chart shows that for the majority of students, exposure to Bloomberg began during their freshman and sophomore years. Very few juniors and seniors (3.64%) report not using this platform. Yet, 18.18% of the students reported never being trained on the platform. Most of those students are sophomores who can expect to use Bloomberg in several of their future courses.

Figure 4: First Exposure to Bloomberg (Undergraduate Student Subsample)



In contrast, in Figure 5, graduate students tend to gain exposure to Bloomberg at a much later stage in their academic career. Given the extent of Bloomberg exposure offered to undergraduate students pursuing one of the three Finance-oriented degrees from Bentley University, we can assume that the average university does not provide a comparable level of exposure to undergraduate students. This pattern may be attributable to fact that most universities do not require the Bloomberg certification. Within the graduate student subsample, 70% of students learned Bloomberg in the Master's program. The majority (60.0%) were first exposed during the first year of the graduate program, while 10.0% used it for the first time during the second year. Only 20.0% used it for the first time prior to their junior year in their undergraduate program. Previous studies have not documented when students first start using the platform.

Timing of Bloomberg Certification

Next, we explore the extent to which students take advantage of their free access to the Bloomberg Essentials certification program. This program can be used to educate students on fundamental applications

in Bloomberg, therefore we encourage educators to require the completion of this certification early in the Finance curriculum. The survey results indicate that the Bloomberg Essentials certification has been completed by 60% of students from the full sample. The 40% that are not Bloomberg certified are either upper level students who took the introductory Corporate Finance class before the curriculum change or graduate students, who are not required to become certified. Figure 6 illustrates the distribution by academic class designation of the 60% of respondents who are Bloomberg certified. We suspect that the percentage of students who are Bloomberg certified is significantly lower at universities which do not require completion of the certification program. In fact, only 37.2% of Bloomberg certified students report that the certification was *not* required for a course. Figure 6 shows that of the survey respondents who have completed the certification, 18.0% did so during their freshman year, 62.8% did so during their sophomore year, and 11.5% did so during their junior year.

Figure 5: First Exposure to Bloomberg (Graduate Student Subsample)

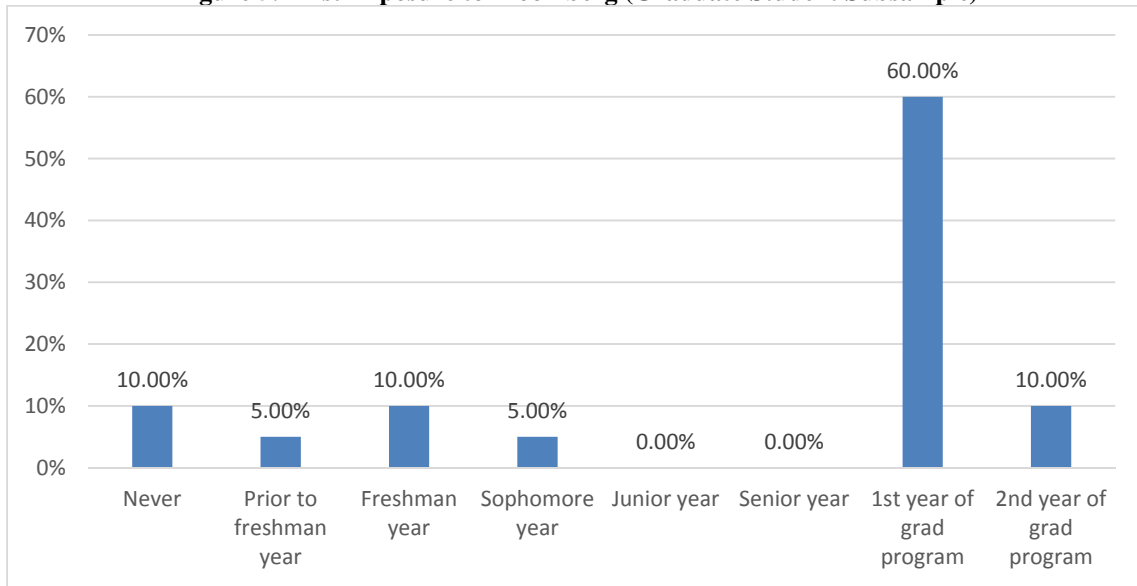
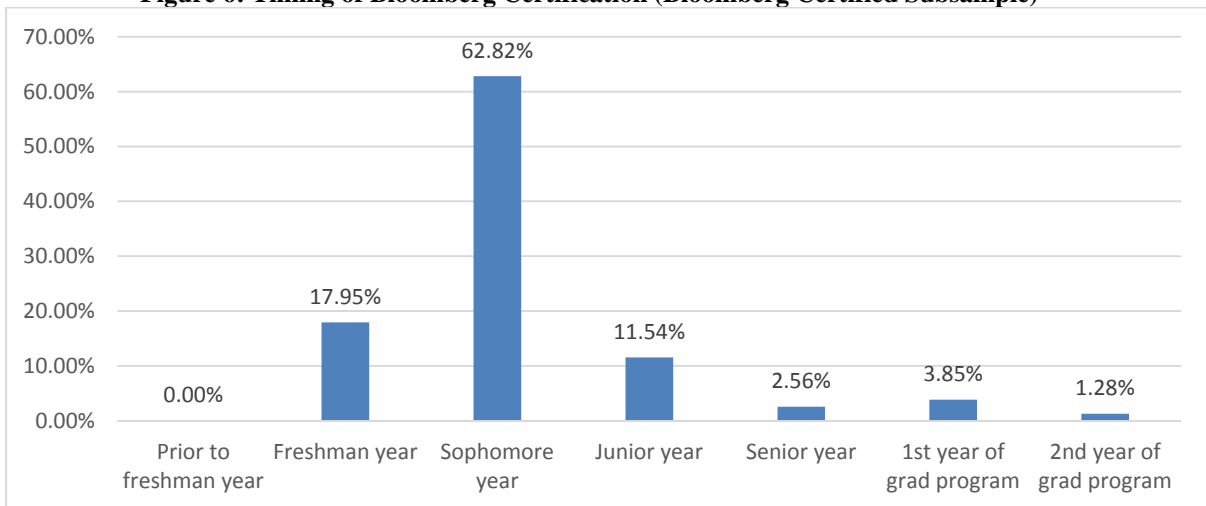


Figure 6: Timing of Bloomberg Certification (Bloomberg Certified Subsample)



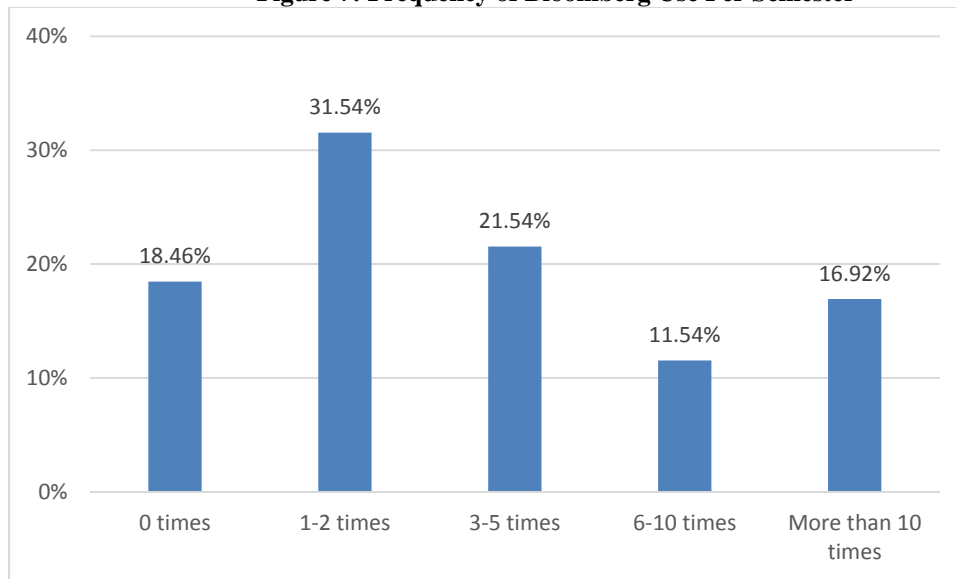
Comparatively, Noguera, Budden, and Silva (2011) document that only 17% of all respondents said they were encouraged to obtain Bloomberg certification. In their study, 40% of the students are indifferent about obtaining the Bloomberg certification and 43% doubt its value.

Student Utilization of Bloomberg

Even though most survey respondents have been taught to use Bloomberg at an early stage in their academic career, it is important to know how frequently they use it afterward. In Figure 7, we examine the frequency with which students use Bloomberg during an average academic semester. Nearly 32% of students only use Bloomberg once or twice during a typical semester, while close to 22% report that they use Bloomberg three to five times. Some students use Bloomberg much more frequently than this. For example, 11.5% of students use the terminals six to ten times per semester, and 16.9% use them more than ten times. It is likely that most of the students who use Bloomberg infrequently only do so to satisfy class requirements. In fact, within the subsample of 108 students who have used Bloomberg in the past, we find that the average student’s use of Bloomberg directly relates to coursework 79.6% of the time. This result indicates that students do not use the platform often to satisfy data needs that are unrelated to class, such as those involving preparation for internship and job interviews, research, student organizations (e.g., Finance clubs), and extracurricular activities (e.g., the student-managed investment fund). Students could therefore benefit from diversifying their use of Bloomberg in order to extract value that enhances more than just their course grades. For example, greater utilization could have a positive impact on the number of students who obtain investment research internships. Another solution to increase the number of corporations that interview at the university is to clearly communicate students’ technology-related skillset to the career center.

Despite students’ limited use of Bloomberg for purposes unrelated to coursework, it is at least reassuring to see that professors are successfully drawing students into the trading room and encouraging them to use Bloomberg by implementing assignments that require Bloomberg data. In fact, it appears that the majority of the coursework motivating students’ use of Bloomberg involves out-of-class assignments and projects, as the average Bloomberg user only uses Bloomberg during class meetings 14.8% of the time. Still, students tend to rely on alternative sources of financial data when provided the opportunity.

Figure 7: Frequency of Bloomberg Use Per Semester



Student Knowledge of Bloomberg Functions

Having gained a better understanding of the extent to which students use Bloomberg, we now turn to the question of how Bloomberg is perceived by students. We focus on the following higher-level unique Bloomberg functions: 1) Graph Fundamentals <GF>, 2) Initial Public Offering <IPO>, 3) Mergers and Acquisitions <MA>, and 4) Social Velocity Monitor <BSVM>. Graph Fundamentals <GF> allows users to

search for more specific detailed company descriptions, financial analysis, and news information. It is a useful tool that allows the user to view firm fundamentals in a visual graph for comparison and analysis. <IPO> and <MA> provide detailed corporate event information that can be used to analyze corporate strategy. <BSVM> also allows users to view how corporate strategy evolves from a qualitative standpoint using social media sentiments and news readership levels.

In Table 1, we ask students how familiar they are with the <GF>, <IPO>, <MA>, and <BSVM> functions as well as the job feature, which allows students to search and apply for positions. According to the results, the large majority of students have never used any of these five applications, and many have never even heard of them. Most notably, 65.38% of students have never heard of the <BSVM> function and 60.77% of students are completely unaware of Bloomberg’s job feature. Only 17-18% of students have used these applications in the past.

Table 1: Student Familiarity with Bloomberg Functions and Features

	<GF> Function	<IPO> Function	<MA> Function	<BSVM> Function	Job Feature
(1) I have never heard of it	46 (35.38%)	35 (26.92%)	51 (39.23%)	85 (65.38%)	79 (60.77%)
(2) I have heard of it, but have never used it	46 (35.38%)	45 (34.62%)	41 (31.54%)	22 (16.92%)	29 (22.31%)
(3) I rarely use it	21 (16.15%)	33 (25.38%)	26 (20.00%)	17 (13.08%)	15 (11.54%)
(4) I occasionally use it	14 (10.77%)	15 (11.54%)	11 (8.46%)	5 (3.85%)	5 (3.85%)
(5) I frequently use it	3 (2.31%)	2 (1.54%)	1 (0.77%)	1 (0.77%)	2 (1.54%)
Total	130	130	130	130	130
Mean	2.09	2.26	2	1.58	1.63
Median	2	2	2	1	1
Std. Dev.	1.07	1.03	1	0.91	0.94

Despite the limited number of students who take advantage of the more advanced features in Bloomberg in Table 1, students seem to be receptive to their use. In Table 2, the survey participants responded quite positively when asked to describe the extent to which they agree that each of the functions and features would be useful to a student who is preparing for a career in Finance. The results indicate that the mean score ranged from 4.67 to 5.25 using a 7-point Likert scale, where 1 indicates strong disagreement and 7 indicates strong agreement. Together, the findings from Tables 1 and 2 suggest that students could benefit from increased exposure to more advanced applications in Bloomberg.

Table 2: Student Perceptions of Bloomberg Functions and Features

Function or Feature	N=130		
	Mean	Median	Std. Dev.
<GF> Function	5.22	5	1.23
<IPO> Function	5.16	5	1.27
<MA> Function	5.22	5	1.19
<BSVM> Function	4.67	4	1.44
Job Feature	5.25	5.5	1.46

Note: Scale: 1-7 (strongly disagree to strongly agree). 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neither agree nor disagree; 5=somewhat agree; 6=agree; 7=strongly agree.

Most students remain unaware of Bloomberg’s capabilities and rarely use the platform for applications unrelated to coursework, suggesting that universities are failing to maximize the value of their investment in this resource. This may be partially due to the fact that many professors feel uncertain about how to incorporate assignments that involve the terminals in the courses they teach. For a first-time user without any previous training, both the Bloomberg platform and the accompanying keyboard can feel overwhelming. Students and professors alike might encounter feelings of intimidation that hamper their desire to use the terminals. Similarly, they may fear that the up-front costs involved in learning the functionality of the

terminals outweigh the related benefits. This concern is amplified by the fact that most students and professors can only access Bloomberg by visiting the university’s trading room during its hours of operation. Thus, familiarizing oneself with Bloomberg may be perceived as an inconvenience.

Student Perceptions

Using a 7-point Likert scale, we ask students to describe the extent to which they agree with various statements involving their opinions of Bloomberg’s role in a Finance curriculum. A score of 1 indicates that the student strongly disagrees with the statement, while a score of 7 indicates that the student strongly agrees. The results of this analysis are displayed in Table 3.

Table 3: Student Perceptions of Bloomberg

Question	N = 130		
	Mean	Median	Std. Dev.
A Finance curriculum would not be complete without providing exposure to Bloomberg.	5.59	6	1.46
Students pursuing a degree in Finance should be required to complete the Bloomberg Essentials Certification.	5.62	6	1.45
I wish that I had been exposed to Bloomberg earlier in my academic program.	5.12	6	1.72
The use of Bloomberg should be required by more of my assignments and projects in Finance courses.	5.38	6	1.52
A strong understanding of Bloomberg will help me to obtain an internship or job related to Finance.	5.44	6	1.57
I expect to use Bloomberg in my future career.	5.48	6	1.45

Note: Scale: 1-7 (strongly disagree to strongly agree). 1=strongly disagree; 2=disagree; 3=somewhat disagree; 4=neither agree nor disagree; 5=somewhat agree; 6=agree; 7=strongly agree.

The participants agree not only that a Finance curriculum would be incomplete without providing exposure to Bloomberg (mean=5.62; median=6), but also that students pursuing a degree in Finance should be required to complete the Bloomberg Essentials certification (mean=5.59; median=6). Students also seem to be in favor of earlier exposure to Bloomberg within the Finance curriculum (mean=5.12; median=6), and they tend to be receptive to the idea of greater reliance on Bloomberg technologies in their course assignments and projects (mean=5.38; median=6). Finally, students appear to see the value that Bloomberg can provide outside of their academic courses. For example, they agree that a strong understanding of Bloomberg will help as they compete for internships and jobs in the field of Finance (mean=5.44; median=6), and they expect to use Bloomberg at their future place of employment (mean=5.48; median=6). Collectively, this new insight suggests that students generally appreciate the benefits they derive from Bloomberg and they value opportunities to enhance those benefits through increased exposure to the platform beginning at an earlier stage in the curriculum. Students also anticipate continued use of Bloomberg as they begin their careers, which likely explains why they are so receptive to curriculum changes that enhance the value they derive from the tool.

Enhancing the Value of Bloomberg Through Assessments

Given the implication of the survey results that students will benefit from increased exposure to Bloomberg, we next describe a series of versatile sample assignments designed to mitigate the underutilization of the technological platform within Finance curricula. These assignments highlight a selection of Bloomberg’s unique features and powerful capabilities. We argue that the assignments will spark students’ interest and promote a better understanding of Bloomberg’s powerful capabilities. We also discuss the benefits of exposing students to Bloomberg earlier in the curriculum and requiring students to complete the Bloomberg Essentials certification program.

Though prior studies attempt to address the underutilization of Bloomberg by suggesting techniques to integrate the database into a Finance curriculum, they tend to focus on relatively elementary applications of

Bloomberg that could be easily replicated using only web-based sources. In fact, some seem to imply that the ability of students to execute the proposed assignments in the absence of Bloomberg is an advantage. In order to demonstrate the usefulness of Bloomberg and foster continued use of the financial platform, educators must challenge their students to use Bloomberg for applications that cannot be easily executed using alternative sources. This will encourage students to view Bloomberg as an essential resource that not only facilitates learning within the Finance discipline, but also enhances their ability to achieve complex tasks that would be difficult to execute otherwise.

Our recommendation is that educators adopt more comprehensive assignments that require students to understand both quantitative and qualitative aspects of the firm. The selection of sample assignments that we present in this section are highly versatile in that they can be introduced at various stages of both the undergraduate and graduate curricula. Each assignment focuses on a particular Bloomberg function and can be implemented as an in-class activity or an out-of-class project. The goal of the assignments is to spark students' interest and motivate students to continue using Bloomberg throughout their studies. In addition to their applicability in a traditional classroom setting, the assignments can also be adopted in online and/or hybrid classes provided that students have access to Bloomberg. Furthermore, they can be modified by the professor such that students are asked to gather different types of data that are relevant to a particular course. We use these exercises to reinforce a selection of Lei and Li's (2012) learning goals and additional learnings goals valued by the AACSB:

Learning Goal 1: Demonstrate technical competency

Learning Goal 2: Choose among asset allocation and portfolio diversification strategies

Learning Goal 3: Conduct common stock selection, valuation, and analysis

Learning Goal 4: Evaluate portfolio performance

Learning Goal 5: Communicate portfolio performance and analysis outcomes

Once students have developed a basic knowledge of the fundamentals in Bloomberg, they should be ready to begin exploring more advanced applications involving unique features of the platform. The three sample assignments that we offer incorporate tools to analyze historical firm fundamentals, initial public offerings, mergers and acquisitions, social media, and market sentiment. These assignments can be combined to create a comprehensive stock analysis report. Below, we describe each assignment and provide detailed instructions.

Graph fundamentals

The first assignment uses the Graph Fundamentals function. This tool can easily be incorporated into an equity selection and portfolio construction project, which is a common component of a traditional Securities Analysis and Portfolio Management course. Graph Fundamentals <GF> allows users to search for more specific detailed company descriptions, financial analysis, and news information. It is a useful tool that allows the user to view firm fundamentals in a visual graph for comparison and analysis. The following sample assignment incorporates this function.

This assignment addresses learning goals 1, 2, 3, and 5. Each group must select four publicly traded stocks for analysis. Using quarterly data over the past five years, compare the ROE and ROA of each firm by plotting the two profitability measures as a function of time on two separate graphs. Thus, you should construct one graph for ROA and another graph for ROE. The results for all four firms should appear on each graph.

Next, prepare a written report in which you discuss your findings and display the graphs you constructed, being sure to clearly label each one. Explain any striking similarities or differences among the profitability measures of the four firms over the past five years. Please provide reasons for the observed similarities or differences (e.g., similar business risk or financial risk). Are there any time periods during which there were significant increases or decreases in ROA and ROE? Were these swings due to firm-specific or macroeconomic events? Suppose you held an equally-weighted portfolio consisting of the four stocks over the past five years. Based on the results of this analysis, do you consider this to be a well-diversified portfolio? If not, how would you change the composition of the portfolio to improve its level of diversification? Finally, please prepare a brief oral presentation in which you communicate your results to the class.

Using the Bloomberg terminals, please complete the assignment by following the steps listed below:

1. In the menu bar, press <ENTER> to begin.
2. Type <GF> in the menu bar.

3. You will see the graphs populate as you enter information. Be sure that you have entered all the necessary information first.
4. On the right-hand side of the screen, for “select securities,” click the drop down menu and type in the ticker of each firm in your portfolio.
5. On the right-hand side of the screen, for “select fields,” click the drop down menu and type in “ROE” and select “Return on Common Equity.”
6. Uncheck the other fields, which were selected by default when you opened <GF> but are unnecessary for this assignment.
7. On the right-hand side at the bottom of the screen, click on “Single Panel.”
8. Screenshot the graph by right clicking a blank area and selecting “Screen Options.” Here, you have the option to export the file and save.
9. Repeat steps 5-8 using ROA instead of ROE. Note that in step 5, after clicking the drop down menu for “select fields,” you must type in “ROA” and select “Return on Assets.”

Functional Knowledge Outcomes suggests that students will:

1. Familiarize themselves with the Graph Fundamentals feature.
2. Analyze time-series data.
3. Compare firm fundamentals for stocks in their portfolio.
4. Determine whether firm fundamentals move in similar or different directions.
5. Make portfolio management suggestions.

Assessment Question 1: Do a majority of the students identify whether the companies’ fundamentals move in similar directions?

Assessment Question 2: Do a majority of the students identify whether there are any time periods during which there were significant increases or decreases in ROA and ROE?

Assessment Question 3: Do a majority of the students determine if these significant swings are due to firm-specific or macroeconomic events?

Assessment Question 4: Do a majority of the students appropriately evaluate the extent to which their portfolio is diversified?

Assessment Question 5: Do the students’ written financial analyses coherently answer all of the questions from the assignment? Also, are the reports grammatically accurate?

Assessment Question 6: Do the students’ presentations clearly explain the results of the assignment and convincingly communicate an investment opinion?

IPO and M&A

Next, we extend the analysis by examining firm-specific events, such as equity issuances and mergers, because IPO and M&A events impact the firm’s ROE and ROA. For example, in an IPO, the firm may experience an immediate increase in net income without any change to assets. It is essential to understand these corporate events when analyzing the firm’s performance. Otherwise, the analysis may be misleading. The same logic applies for M&As. This is important because we want to analyze whether the firms grow through external acquisitions or organically. Importantly, analyzing major corporate decisions can suggest changes to firm strategy. The <IPO> and <MA> functions provide information regarding, but not limited to, deal characteristics, gross spread fees, premiums paid, and underwriters. Further, the functions offer aggregate comparisons among international and regional IPO and M&A markets. They also provide cross-industry comparisons that reveal which industries feature the greatest number of IPOs and M&As over time. This is particularly useful for analyzing trends in firm strategy within industries and countries.

This assignment addresses learning goals 1 and 5 and involves two related tasks. The first task is to determine whether the firms in your portfolio conducted either an IPO or M&A within the past five years. The second task is to research the number of IPOs and M&As that occurred in the past year both in aggregate as well as by country and region, and present the results in a graph. Before beginning the assignment, make a note of the aggregate number of IPOs and M&As that you expect to observe over the past 12 months. Also, record your prediction for the number of M&As in North America during this time period.

Using the <IPO> function in Bloomberg, you are to provide a line graph illustrating the aggregate number of IPOs announced in each month during the past 12 months. In addition, prepare a line graph demonstrating IPO activity during this period in the United States and China. Then, use the <MA> function to construct a

line graph illustrating the aggregate number of M&As announced in each month during the past 12 months. Additionally, construct a line graph demonstrating M&A activity during this period in North America. Then, provide a line graph illustrating M&A activity within the five industries that experienced the highest volume of M&As during the past 12 months.

Finally, prepare a written report in which you summarize your results and display the graphs you constructed. Please be sure to clearly label each graph. Also, answer the following questions:

For IPOs: Were there more or less IPOs during the past 12 months than you expected? If you observe any notable peaks in the frequency of IPOs during the past 12 months, then describe how you think the market conditions affected the frequency of IPOs during those peak months. Also, discuss any differences you observe between the number of IPOs in the United States and China during the past 12 months.

For M&As: Is the total number of M&As over the past 12 months greater or smaller than your prediction? Does your answer change when considering M&As in North America only? If you find any peaks in M&A activity, then describe how you think the market conditions affected the frequency of M&As during those peak months. Additionally, discuss the five industries that have experienced the highest volume of M&As during the past 12 months. Do you observe any similarities between these industries?

Using the Bloomberg terminals, please complete the assignment by following the steps listed below:

<IPO> function:

1. In the menu bar, press <ENTER> to begin.
2. Type <IPO> in the menu bar.
3. Select the gray tab “Time Series.”
4. Click on the “Aggregate By” drop down menu and select “Announced Date.”
5. Click on the “Period” drop down menu and select “Monthly.”
6. Only check “Deal Count.”
7. On the right-hand side, select the “Region View” drop down menu and check: All, US, and China.
8. Screenshot the graph by right clicking a blank area and selecting “Screen Options.” Here, you have the option to export the file and save.

<MA> function:

1. In the menu bar, press <ENTER> to begin.
2. Type <MA> in the menu bar.
3. Click on the “Time Series” tab and only select “Deal Count.”
4. Select “1YR” on the drop down menu and click “Monthly.”
5. Screenshot the graph by right clicking a blank area and selecting “Screen Options.” Here, you have the option to export the file and save.
6. Click on “12) Region View” and unselect “All.” Only click on “North America.”
7. Screenshot the graph.
8. Click on “11) Industry View.” Unselect “All” and select the first five industries listed. These are the five industries with the greatest number of M&As.
9. Screenshot the graph.

Function Knowledge Outcomes suggest that students will:

1. Familiarize themselves with the IPO & M&A features.
2. Graph the number of IPOs and M&As.
3. Analyze time-series data relative to overall market conditions.
4. Compare corporate activities by region and industry.

Assessment Question 1: Do a majority of the students identify notable peaks in the frequency of IPOs during the past 12 months?

Assessment Question 2: Do a majority of the students correctly compare the number of IPOs in the United States and China?

Assessment Question 3: Do a majority of the students identify peaks in M&A activity both in the aggregate and in North America during the past 12 months?

Assessment Question 4: Do a majority of the students discuss the five industries that have experienced the highest volume of M&As during the past 12 months?

Assessment Question 5: Do the students' written reports coherently answer all of the questions from the assignment? Also, are the reports grammatically accurate?

Social media and market sentiment

Lastly, we introduce a relevant qualitative measure that potentially captures changes in firm strategy from a firm-specific market sentiment perspective. In response to the SEC's 2013 announcement that companies can now disclose material information via social media, Bloomberg introduced a Social Media Velocity Monitor that demonstrates how up-to-the-minute information, including social media posts, are also relevant to financial valuation. Specifically, through the use of social media and online news, Bloomberg tracks the sentiment of firms' up-to-the-minute Tweets and sorts by highest and lowest sentiment and trending news topics. Thus, one can observe how publicly available information is quickly compiled and analyzed.

This assignment addresses learning goals 1, 3, 4, and 5. Using data on Twitter feeds from the Bloomberg Social Velocity Monitor through the <BSVM> function, identify the ten companies that have the highest current market sentiment and the ten companies that have the lowest current market sentiment. Also, record the percentage change in stock price for the high and low sentiment firms on those particular trading days. Next, use the News Readership Ratings through the <NRR> function to determine the five companies that have experienced the highest total readership and the five companies that have experienced the highest increase in readership within the past week. Additionally, record the percentage change in stock price for each of these firms.

Finally, prepare a written report in which you discuss your findings and display the charts you constructed. Please be sure to label each chart and note the date *and* time when the data was collected. Do any of the firms in your portfolio belong to the same industry as one or more of the firms with the highest or lowest current market sentiment? What is the average percentage change in stock price for the firms belonging to each group? Do you observe a relationship between market sentiment and stock returns? Also, what is the average percentage change in stock price for the firms with the highest total readership as well as the firms that have experienced the highest increase in total readership? Is there a relationship between readership level and stock returns? Lastly, for the firms with the highest readership, do you find that this variable is related to IPO or M&A events?

Using the Bloomberg terminals, please complete the assignment by following the steps listed below:

<BSVM> function:

1. In the menu bar, press <ENTER> to begin.
2. Type <BSVM > in the menu bar.
3. Click on "SNMT" in order to sort the firms from highest to lowest according to their current levels of market sentiment.
4. Screenshot the chart by right clicking a blank area and selecting "Screen Options." Here, you have the option to export the file and save.
5. Click on "SNMT" once again in order to sort the firms from lowest to highest according to their current levels of market sentiment.
6. Screenshot the chart.

<NRR> function:

1. In the menu bar, press <ENTER> to begin.
2. Type <NRR > in the menu bar.
3. Screenshot the chart.

Function Knowledge Outcomes suggest that students will:

1. Familiarize themselves with the BSVM and NRR features.
2. Gain a realistic perspective of real-time public information.
3. Aggregate trending information on market sentiment.
4. Compare market sentiment information to stock returns.

Assessment Question 1: Do a majority of the students provide the average percentage change in stock price for the high and low sentiment firms on those particular trading days?

Assessment Question 2: Do a majority of the students determine whether any of the high or low sentiment firms belong to the same industry as one or more of the firms in their portfolio?

Assessment Question 3: Do a majority of the students discuss whether there is a relationship between market sentiment and stock returns?

Assessment Question 4: Do a majority of the students provide the average percentage change in stock price for the firms with the highest total readership as well as those with the highest increase in total readership?

Assessment Question 5: Do a majority of the students discuss whether there is a relationship between readership level and stock returns? Also, do they find that high news readership is related to IPO and M&A activity?

Assessment Question 6: Do the students' written reports coherently answer all of the questions from the assignment? Also, are the reports grammatically accurate?

Conclusion

In this study, we provide evidence on student perceptions and knowledge of the Bloomberg Professional service and offer guidance regarding how university educators can enhance the value of Bloomberg within university Finance curricula. By having students complete a stock analysis report that combines the quantitative and qualitative aspects of financial analysis, we are able to assess learning goals focused on student knowledge, technical competence, and effective communication skills. Moreover, the assignments will provide students with experiential learning while offering professors some exciting topics that limit the use of non-Bloomberg financial data.

We believe the recommendations in this study provide a promising starting point from which university educators can begin to improve the value that students derive from their access to Bloomberg. In addition to the obvious advantages of this approach for students, universities can also benefit from increased exposure and an enhanced reputation. This may ultimately improve the institution's placement rates and increase its ability to attract high quality students in the future.

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Teaching the Economics of Ecotourism, Trade, Healthcare, Education, Poverty, and Immigration as a Study Abroad experience in Costa Rica

Claudia Strow¹

Abstract

While most universities prioritize global learning as a strategic goal, study abroad programs in business have been slow to develop. One reason for this lag is likely the large up-front cost of developing the course curriculum, making contacts for site visits, gaining approval, recruiting students, and making reservations. The mission of this paper is to aid faculty development of study abroad courses by sharing itinerary suggestions and ideas for field trips, destinations, readings, and course content for a study abroad course to Costa Rica examining topics such as foreign direct investment, ecotourism, trade, healthcare, education, poverty, and immigration.

Introduction

As the economy has become increasingly global, the value added from study abroad experience has increased. Accordingly, the most recent update to the AACSB accreditation standards states that schools should demonstrate that they foster “sensitivity toward and greater understanding of cultural differences and global perspectives. Graduates should be prepared to pursue business or management careers in a global context. Students should be exposed to cultural practices different than their own”. (AACSB, 2015). The American Council on Education makes a similar statement (ACE 2012). What better way to accomplish this than through a study abroad experience? A substantial body of research has evolved pointing out the numerous benefits to students from studying abroad (see for example Ozturgut 2007 or ACE 2012).

Not only is a study abroad experience beneficial to students and future employers, faculty members benefit from leading such courses (Ozturgut 2007). And yet, the development of faculty-led study abroad courses has lagged behind the identification of the importance of international study (Praetzel, Curcio, and Dilorenzo 1996.) Despite increased focus from business schools on global studies, only about 13% of college students study abroad (Hackney, Boggs, and Borozan 2012). A recent issue of *Change* notes that although internationalization’s importance has been expressed as one of the major strategic goals of many college campuses, there has been little progress to this effect (Eddy et al. 2013).

ACE mapped the trends and attitudes towards internationalization on college campuses in the United States and found that of colleges that responded to their survey, 51% responded that their mission statement contained references to internationalization goals, while a similar number indicated that it was in the top five of their strategic plan priorities (American Council on Education 2012). Yet, Peterson and Helms (2013) note that fewer American students participate in study abroad experiences than their international peers and comment that the lack of encouragement for faculty to study or research abroad makes it increasingly difficult to have global components in our curriculum.

One reason for this lag is likely the large amount of up-front cost faculty members must expend in order to develop the course curriculum, make contacts for site visits, gain approval for such programs, and recruit students and make reservations. In preparing to lead my own study abroad course on the Economics of Costa Rica, I discovered that few economics departments in the United States lead similar experiences and very few publications outline how to offer such a course.

¹ Associate Professor of Economics, Western Kentucky University. 1906 College Heights Blvd. Bowling Green, KY 42103. 270-745-3627, Claudia.Strow@wku.edu.

A search for publications outlining course requirements and itineraries for study abroad courses in economics (to any destination) yields few results. A ProQuest search for “study abroad” and “economics” yielded only 37 hits, mostly popular press pieces on particular students studying abroad or pieces on how economics is taught in other countries. Of the academic publications exploring study abroad courses, very few set out as the present paper does to aid faculty seeking to develop a study abroad course of their own. For example, Festervand and Tillery outline a study abroad program in Japan used for professional development of faculty and for graduate students that were K-12 educators (2001). Olson and Lalley describe a study abroad experience to the Czech Republic and Germany for freshman (2012). Both of these papers focus more on documenting value added and give little in the way of details to aid in course development. Similarly, Le et al. (2013) outline the use of service learning in a business study abroad program in Cambodia, but their description revolves mostly around the service learning assessment and impact. Why does the literature offer numerous examples of in class learning exercises, but give little guidance for offering a class off campus?

The purpose of this paper is to aid in the development of other study abroad programs to Costa Rica and similar destinations and to lower the upfront costs required of faculty through the sharing of information. Most existing study abroad courses to Costa Rica focus on topics related to the sciences or health care, and yet Costa Rica is an ideal country to explore and learn about the role of governments and markets in poverty reduction, foreign direct investment, immigration, sustainability, trade, health care, education, and ecotourism. While this course was taught as an economics course, the information contained in this paper should help those developing any study abroad course in business to Costa Rica. In fact, our course had a dozen students but only one of those students was an economics major. The other students were majoring in accounting, finance, business education, marketing, entrepreneurship, math, and management.

This paper illustrates how professors can lead a study abroad class to Costa Rica such that students can examine the aforementioned issues while exploring the successes, trials, and experiences of some of the largest industries in Costa Rica. The advantages of studying in Costa Rica are discussed and readings, course layout, itineraries, and course costs are outlined.

Why Costa Rica?

The first choice for a faculty member offering a study abroad course is the destination. Costa Rica possesses a number of attributes that makes it an excellent choice including: economic development, political stability, a mild climate, and the ease and affordability of travel to and within Costa Rica. Airfare to Costa Rica is cheaper than airfare to many other international destinations, with round trip airfare ranging from approximately \$400-\$850, depending on the season of travel and the departure city (Costa Rica Guide 2015). Likewise, private drivers and buses within the country are relatively affordable. Many Costa Ricans speak English, so a second language is not required for leaders or students. Approximately 1 million US citizens travel to the country each year, while approximately 100,000 American citizens have set up residence there (US Department of State 2015). There are not any special visas required to visit, no extra immunizations necessary, and the water throughout the country is safe to drink.

The people of Costa Rica are rumored to be among the happiest people on earth, with an average lifespan of 78.2 years (CIA 2015a; Kristoff 2010). The abolishment of the military in 1949 helped Costa Rica develop its reputation as a peaceful nation. A recent report ranked Costa Rica 3rd (just behind Canada and Uruguay) as the most peaceful nation in the Americas and the most peaceful nation in Central America and the Caribbean (Global Peace Index 2015).

Costa Rica lives up to its reputation as the “Switzerland of the Americas” both with its diverse geographical landscape and its lack of a military. Costa Rica’s varied landscape includes access to the Pacific Ocean and Caribbean Sea, rainforests, cloud forests, and mountain ranges. Approximately 25% of the nation’s land is in a protected area such as a national park (World Population Review 2015). This diverse terrain and biodiversity has helped Costa Rica to become a leader in ecotourism, as the country offers numerous activities to appeal to tourists. Even on a short-term study abroad experience, students are able to participate in numerous activities as they visit mountains, volcanoes, beaches, and international businesses.

Economically speaking, Costa Rica offers many examples of economic successes as well as some examples of failures. Having easy access to the Pacific and Caribbean coasts and a culture that encourages free trade, Costa Rica’s economy has had one of the fastest growth rates in Latin America. Costa Rica’s GDP for 2014 was just under \$71 billion, with a per capita GDP of approximately \$14,900 (CIA 2015b). Costa

Rica's growth rate has consistently been among the highest in the region, with a 5 year compounded annual growth rate of approximately 3.4% (Heritage 2015).

Costa Rica has not always been so successful, and so it offers an interesting case study of the effect of economic policies on economic growth. Costa Rica faced numerous economic challenges in the 1980s with over half of its GDP consisting of government spending, inflation rates up to 90%, and contractions in the earlier part of the decade. High levels of government debt and a fixed exchange rate regime further contributed to the country's economic crisis.

In the early 1990s, foreign investment into Costa Rica was low. As US Aid programs were ending, Costa Rica's Investment Promotion Agency (CINDE) had shrunk from 300 employees to 80. The agency focused its energy on attracting an unlikely investor with Intel. With an initial \$115 million investment, Costa Rica's economic transformation was begun. This economic transformation was furthered by the introduction of a crawling peg exchange rate and the formation of free trade zones. In addition, Costa Rica privatized many formerly state-owned operations and substantially lowered tariffs on a numerous goods so that between 1985 and 2000, the mean tariff rate of 55% fell to 5.4% (Hidalgo 2014).

By 2012, Intel had grown to the largest exporter in Costa Rica (over \$2 billion in products annually) and had invested over \$900 million. Their entry into Costa Rica prompted many other similar firms such as IBM and Boston Scientific to locate there. This foreign investment helped contribute greatly to Costa Rica's rapid economic growth. However, as Costa Rica's standard of living improved and their education rates improved, Intel chose to move this portion of its operations to Vietnam where wages were cheaper. Thus, in 2014, the low wage jobs in Costa Rica's Intel assembly plant were replaced by higher wage jobs in engineering and design at their new "excellence centers" (Levin 2012). Intel's involvement with Costa Rica provides a real world example of convergence theory. Likewise, examining Costa Rica's story leads to a better understanding of the role of education in improving wages, the difficulties attracting investment without proper infrastructure, and the unintended consequences that can result from environmental policies or government regulated industries such as electricity.

And yet, Costa Rica's success story isn't one without failures. Despite strong growth, Costa Rica's poverty rate has hovered around 20% since the early 1990s (Hidalgo 2014). The nation experienced inflation from monetary policy and has been slow to phase out agricultural protectionism. Costa Rica has also experienced a recent flight of foreign capital, and while some lower wage jobs have been replaced with higher skill jobs, there is concern that the population's skill level is too low to attract enough high skill jobs. In examining the past several decades of Costa Rica's economic history, students are able to explore issues related to immigration, nationalized healthcare, education, poverty, sustainability, free trade, fair trade, discrimination, foreign direct investment, and social welfare programs. Thus, not only is Costa Rica an appealing, relatively safe and affordable destination for students wishing to engage in ecotourism activities, it also is a destination that offers numerous opportunities for the application of economic concepts to real world experiences. This makes Costa Rica an excellent choice for a study abroad course.

Course Layout

The course offered at the author's university is a short-term course (11 days and 10 nights abroad). Although one could certainly spend a semester or longer studying in Costa Rica, traveling abroad for a short term class appeals to many students that cannot afford a longer stay and also appeals to faculty who cannot or would prefer not to leave the United States for a longer period of time. While the present trip was led in the January term at our university, the course would also be suitable to conclude a bi-term with travel commencing over the university's spring break. The course would likewise be suitable for offering during a summer term or winter break, although this may require travel in the rainy season of Costa Rica.

In the fall semester prior to the January term, I give the students a reading list and assign presentations over specific topics. Each student is responsible for a paper and longer presentation on a broader topic of economic interest and a shorter presentation related to one of the field trips in Costa Rica. The class then meets for the first two days of winter term on campus to hear the longer presentations, to discuss reactions to the readings they have completed, and to take a midterm prior to departure. The readings and presentation topics are further described in the sections that follow.

Meeting on campus at the start of the course facilitates several outcomes. The main purpose of meeting on campus is to get much of the discussion and presentations on the background topics completed prior to departure. The classroom environment is arguably more conducive to lectures and presentations and even discussions than a hotel lobby would be. Further, completing much of the background study prior to departure

allows greater depth of discussion while in Costa Rica and frees up more time to experience the country while abroad. Students are able to relate their experiences from the start of the trip to the variety of topics we have discussed beforehand. If instead we had discussed each topic over the course of the trip, certain observations might have been missed on topics relegated to the end of the course. Finally, meeting before departure allows the cost of travel to be reduced, as hotels are not required for the on campus portion of the trip.

While in Costa Rica, students travel to numerous field trips in four geographical locations and give their presentations on the field trip destinations. At the end of the trip, students take a final exam over the field trips and lectures and turn in journals relating the lectures and field trips to course content. Their grade consists of the paper and presentation score from pre-departure (20%), their on-site presentation (20%), the midterm (20%), the final exam (20%), and the journal (20%). Extra credit is offered to students based on their class participation and asking of questions during lectures. I find that taking note of who is asking questions (in full view of the students) seems to lead to a better quantity and quality of questions on field trips.

While administering exams during a study abroad course may seem difficult, I believe exams serve to incentivize the students to pay extra attention to their readings and to speakers and field trips and can offer a unique opportunity for reflection. The midterm exam offered before departure is administered at the conclusion of our reading discussions on day two of the on campus meetings. Students are required to submit 6 questions (3 multiple choice and 3 short answer) related to their presentation topic for consideration for the midterm. One question from each presentation is included on the midterm in addition to questions I create covering the readings. Note that by having the students all present and submit their questions on day one, I am able to prepare the midterm prior to day two's meeting. The final exam is administered on our last day in Costa Rica. As we typically have an afternoon flight out of the country, students are able to take the final exam poolside at the hotel the morning of departure. I print out exams from the business center at the hotel and allow students to use their journals to aid in the completion of the final. The final also offers the opportunity for me to elicit helpful feedback with a question asking which field trips and cities the students would keep/drop if they were required to do so in developing their own study abroad course. Further, the final exam is designed in such a way that it offered students a chance to reflect upon and synthesize their experiences and observations at the culmination of the trip.

Reading Topics

This section outlines the types of readings I require for the course.² To my knowledge there is not an up to date book examining topics of economic interest in Costa Rica, and academic pieces concerning Costa Rica are limited. So, the reading list consists of a mix of popular press pieces on Costa Rica's economy, academic pieces on economic topics such as fair trade, CAFTA, or child labor that strongly relate to understanding Costa Rica, and broader historical and travel related readings. The readings are also selected to incorporate real world applications of broader economic topics that the students are exposed to in Costa Rica. The readings are made available on Blackboard three months prior to departure and cover a variety of topics so as to best educate the students on Costa Rica. Introductory background readings educate the students about Costa Rica's history, economic trends, culture, geographical landscape, and general travel tips for Costa Rica. These readings are selected to give students an overview and deeper understanding of the country.

A second set of readings gives examples of Costa Rica's successes and failures described earlier in this paper. These readings are chosen not only to give the students a deeper background into how Costa Rica became the country it is today but also to prepare students specifically for visits at CINDE (Costa Rica Investment Promotion Agency), Economic Science Research Institute, and lectures at the Monteverde Institute.

For successes, the selected readings outline the trends in foreign direct investment, political stability, trade, per capita income, medical tourism, and even happiness. For failures, readings cover the lack of decline in poverty, high tariffs on consumer goods consumed primarily by the poor, inflation from monetary policy, the high prevalence of informal sector work and cronyism, the gap in technical training, and the recent flight of foreign capital. As noted earlier, one of the largest transformations in Costa Rica's economy has to do with the development of free trade zones and the subsequent investment of Intel in the country in 1995, so several of the readings tell the story of Intel.

² Appendix A lists the readings used for this course.

A third set of readings focus on education, healthcare, and child labor. These readings include pieces arguing for and against child labor prohibitions, trends in the gender gap in education, and differences in educational quality among private and public universities in Costa Rica. These readings compliment numerous real world applications from the abroad portion of the course, including the visit to Universidad de Costa Rica and Guiermo Vargas's lecture on education. There is also a set of articles looking at the strengths and weaknesses of Costa Rica's healthcare system. These strengths and weaknesses are made even more apparent abroad as students walk by crowded and overflowing hospitals in San Jose, meet tour guides lamenting how long they had waited for needed medical care (such as a hip replacement), and learn more about why some Costa Ricans have both private insurance and CAJA (the public insurance).

Several of the readings cover fair trade and immigration. The articles examining immigration trends give special focus to Nicaraguan immigration to Costa Rica. Although Costa Rica ranks poorer than Mexico or Venezuela in per capita income, its Northern border country of Nicaragua has a per capita GDP less than half of that in Costa Rica. This had led many Nicaraguans to immigrate legally or illegally to Costa Rica (Hawley; Heritage 2015). In fact, approximately 15% of Costa Rica's population is from Nicaragua (World Population Review 2015). Costa Rica has the highest immigration rate in Latin America along with a mile long eight-foot wall to limit illegal immigration, so this is a topic essential for understanding the dynamics of the country. It is also a topic for which many parallels can be drawn when discussing immigration into the United States and is a topic that students hear more about traveling within the country, especially on visits to coffee, banana, and pineapple plantations. Discussions of discrimination and wage gaps also emerge from this examination of immigration.

In addition to an assortment of articles discussing free trade and CAFTA, the readings include a short book comparing fair trade with free trade as a solution for poverty reduction. Together, these readings provide excellent background for visits to CINDE and the agricultural field trips.

The final set of readings focuses on sustainability, ecotourism, and fair trade. These include articles examining the processes and costs involved in growing organic bananas and pineapples in Costa Rica and TED case studies on ecotourism in Costa Rica. As ecotourism is a greater income source than revenues from bananas and coffee combined, it is a key component of Costa Rica's economy overshadowed only by computer components. These readings explore how ecotourism has become so successful in Costa Rica, discuss potential environmental benefits and costs of ecotourism, and compare economic benefits with economic costs of ecotourism. A final article examines FDI in Costa Rica as compared with FDI in Cuba, drawing interesting contrasts and parallels.

Presentations

Since the readings are mostly shorter pieces on numerous topics, each student gives a more detailed presentation on different topics of interest in our on campus meetings. This not only better exposes students to a wealth of information, it allows students to take an active role in the learning process for the course as they are required to become specialists in a specific aspect of Costa Rica's economy. While this design was in part self-serving because I did not have time to become an expert in each aspect while also making arrangements for the course, this turned into a strength of the course. By specializing and becoming experts in specific subjects, students are able to contribute further to discussion once the class is abroad on field trips that related to their topic. Further, students tend to be better prepared to ask well-thought-out questions of the lecturers and guides as they related to their topics. While abroad, students give shorter presentations on topics related to the specific field trips. Typically these presentations are given on the bus as we were traveling between destinations. These topics are listed in Figure 2.

Itinerary

Two days are spent on campus in a classroom to become better acquainted with Costa Rica's Economy. These meetings include reading discussions, lecture, classmate presentations, and the midterm. Figure 3 has the pre-departure itinerary while Figure 4 has the itinerary abroad. The locations visited abroad include San Jose, Santa Elena (Monteverde), La Fortuna (and Arenal Volcano), and Puerto Viejo de Talamanca. Puerto Viejo de Talamanca is on the Caribbean side of Costa Rica.

When the program leaders visited Costa Rica prior to taking the students abroad, both coasts were visited in order to decide which coast to take students to. The next time this trip is conducted, Manuel Antonio will

be substituted in place of the Caribbean coast. It offers many similar field trips as those experienced on the Caribbean side, is closer to San Jose, and perhaps offer a safer, less drug ridden environment for students³.

Figure 1: Presentation/Paper Topics for Pre-departure Class Sessions

- Costa Rica's economic history
- Costa Rica's economy: A comparison with other Latin American Countries
- Costa Rica's educational system (a comparison with the US)
- Costa Rica's health care system and medical tourism
- Poverty and inequality in Costa Rica
- Discrimination in Costa Rica
- Family structures in Costa Rica and demographic trends
- Immigration into Costa Rica
- Sustainability in Costa Rica and its economic implications
- Foreign direct investment in Costa Rica
- The impact of trade and CAFTA on the Costa Rican economy
- Ecotourism and the Costa Rican economy
- Effects of expatriates from the United States on the Costa Rican economy

Figure 2: Presentation Topics for Field Trips

- Costa Rica's government and military (or lack thereof)
- Customs, traditions, and culture in Costa Rica
- CINDE and Economic Science Research Institute at Universidad de Costa Rica
- Monteverde's history
- Costa Rica's coffee industry
- Costa Rica's park system
- The history and economic impact of Costa Rica's volcanos
- Agritourism and the Costa Rican economy
- The pineapple industry in Costa Rica
- The banana industry in Costa Rica
- History and development of the Caribbean coast
- The Bribri indigenous tribe

In planning a travel abroad program to Costa Rica, leaders should consider that Costa Rica has a rainy season and a dry season. The rainy season runs primarily from May-November. Depending on the locations visited, December through April may offer a better climate for visiting. However, prices also adjust with the seasons, and so for some the tradeoff of cheaper prices may be worth the rain, as long as roads are travelable.

The Caribbean tends to operate its own microclimate, with higher temperatures and humidity and more frequent rain throughout the year. Even within the dry season in the remainder of the country, the climate can vary greatly. When trip leaders visited Monteverde in March, winds were not a problem; however, upon returning in January, extremely strong winds and mist were a constant part of the climate and threatened to spoil several activities. Likewise, trip leaders will likely want to avoid traveling during national holidays due to increased crowds and costs. For example, during the first week of January, prices are higher and

³ For classes that visit the Caribbean side, there is an opportunity to examine the discrimination against Afro-Costa Ricans. Most Afro-Costa Ricans descended from immigrants coming to Costa Rica to build the Atlantic railroad or to work the banana plantations along the Caribbean Coast and so many remain in this part of the country. Prior to a new constitution in 1949, Afro-Costa Ricans were restricted from owning land and were banned from working or traveling outside of Limon. Although the situation has improved somewhat since 1949, the underlying racism that led to segregation and racist laws still exists. The Caribbean side of Costa Rica is also home to many of the indigenous groups that have faced their own forms of discrimination.

accommodations are harder to book, as many Ticos travel while their schools are not in session. We began our travel on January 7, and had no problem securing reservations for our large party two months prior to departure.

Figure 3: Pre-departure Itinerary

On Campus Class: Day 1	On Campus Class: Day 2
9-10 3 Presentations	9-10:30 Readings Discussion
10-10:15 Break	10:30-10:45 Break
10:15-11:15 3 Presentations	10:45-11:45 Book Discussion
11:15-12:15 Lunch	11:45-12:30 Lunch
12:15-1:15 Presentations	12:30-2 Exam on Readings/Presentations
1:15-2:15 Presentations	

One suggestion relating to the syllabus and course description is to include a statement of activity level. In this statement, leaders may wish to offer alternative activities for students feeling uncomfortable with any of the more strenuous activities, so long as the leaders are notified prior to departure. The leaders may also wish to suggest that students talk with their physicians prior to departure to be certain that the activities are safe for their physical abilities. My syllabus states that students unless alternative arrangements are discussed, students are expected to participate in all activities barring any unexpected circumstances.

Cost per Student

I aim to keep the cost under \$3000 so as to attract a wide range of business students. The class costs the students \$2960, and I travel with 12 students and another faculty member. Although taking more students would lower the cost, logistics for traveling within Costa Rica with a larger group are more difficult. This total cost includes airfare and baggage, faculty travel and salaries and benefits, hotel accommodations, tips to drivers and guides, most breakfasts, several dinners, departure taxes, transportation within Costa Rica with a private bus, and all field trips. In other words, everything but souvenirs and some meals are covered for the students. At our university, students must pay faculty salaries and benefits along with faculty travel costs and per diem. However, students traveling on a faculty led study abroad course do not have to pay tuition. Faculty planning similar trips should check with their own universities to identify the university’s tuition policy, as these can vary.

Our flight from Nashville to San Jose Costa Rica costs just under \$800. Our hotel costs average \$150 per night per room. We sleep four students to a room (3 student rooms with 4 star accommodations) and have one faculty room for the two faculty leaders. We intentionally keep the enrollment in groups of four by gender so that sleeping arrangements would be gender specific and could have four per room. We also found we were able to save money by booking a five-bedroom house for our final destination before returning to San Jose. This provided a great opportunity for wrapping up the trip with group meals cooked in the kitchen and seemed to add to the trip dynamic, while at the same time freeing up funds that we used to visit a famous hot springs.

Our tour/field trip expenses average \$400 per person while transportation in Costa Rica totals just under \$1900 for 14 persons. One thing to note is that the private coasters easily accommodated our group of 14, but would have been tight for more than 16 passengers with luggage. So for larger enrollments a second coaster or larger bus might be required. The faculty costs including travel, per diems, and salaries and benefits

totals \$13,375 for two faculty members, or \$1114 per student for 12 students. This faculty cost is included in the overall \$2960 cost billed to the student.

Figure 4: Itinerary Abroad

Day 1 San Jose

- Flight to San Jose, Costa Rica
- Visit the Pre-Columbian Gold Museum and Mercado Central
- Walk by Teatro Nacional (the nation's finest architectural example)
- Return to the hotel and gather for presentations and dinner

Day 2 San Jose to Santa Elena

- CINDE visit and lecture
- Visit Universidad de Costa Rica
- Lecture at the IICE-UCR Economic Science Research Institute
- Drive to Monteverde (3-4 hours). En route, site presentations

Day 3 Santa Elena

- Cerro Amigos hike to the tallest point in Monteverde
- Lecture at Monteverde Institute on "Education and Wages in Costa"
- Tour of Monteverde Cheese Factory
- Lecture at Monteverde Institute on "Health Care System of Costa Rica"

Day 4 Santa Elena

- Guided tour of local coffee, chocolate and sugar cane plantation at El Trapiche
- Meet with Janet of Desafio Monteverde in downtown
- Talk at Sky Adventures with Karen Morales about ecotourism followed by ziplining

Day 5 Santa Elena to La Fortuna

- Morning hike in to Monteverde Cloud Forest with views of the continental divide
- Afternoon taxi-boat-taxi ride to Arenal Volcano, La Fortuna
- Check into hotel, eat dinner at the hotel, and enjoy the onsite hot springs.

Day 6 La Fortuna

- Morning horseback ride with Alberto's Horses, includes hike at La Fortuna Waterfall
- Talk with Alberto Sr. about Costa Rica's agritourism industry
- Afternoon at Baldi Hot Springs

Day 7 La Fortuna to Puerto Viejo de Talamanca (or alternatively Manuel Antonio)

- Morning at Golden Fruit Pineapple tour
- Drive to afternoon Dole Banana Tour in Zurqui in Puerto Viejo de Sarapiquí

Day 8 Puerto Viejo (or Manuel Antonio)

- Morning at Kekoldi Indigenous Tour, waterfall hike, and catato (or substitute with Manuel Antonio Mangrove kayak tour)
- Free time at the beach

Day 9 Puerto Viejo (or Manuel Antonio)

- Morning stand up paddle boarding tour at Punta Uva River (or in Manuel Antonio)
- Meet with tour owners to learn about ecotourism business
- Afternoon tour of Jaguar Refuge Center

Day 10 Puerto Viejo (or Manuel Antonio) to San Jose

- Morning at the beach
- Depart for San Jose (approx. 5 hours)
- Group wrap up dinner

Day 11 San Jose

- Meet by the pool for the final exam.
- Afternoon flight out of San Jose

Conclusion

Developing a faculty led study abroad trip requires a substantial amount of faculty dedication and time. In addition to the challenges faced when offering any new course for the first time, faculty must locate contacts in the country they are visiting, develop appropriate educational field trips, secure lodging, transportation and airfare for a large group, and be responsible for their safety and welfare while abroad. The lack of resources adds to the amount of preparation time required, and it is this cost that the present paper seeks to lower. While leading a faculty led study abroad program isn't for the faint of heart, I can without a doubt say that in my fifteen years as a college professor, this experience has added the most depth to my own lectures and has generated the most feedback as a life-changing event for my students. To quote one of my students from their unsolicited letter "... I truly think about my experiences every day. If it were not for your countless hours planning and organizing, I would not have had the best experience of my life...Not only did I gain an unfathomable understanding and love for the Costa Rican way-of-life, I also gained a changed perspective on my own life and future goals. Because of the trip, I was able to engage myself in economics in a way that has enlightened me to a new learning obsession. In the words of Guillermo Vargas⁴, 'Be more than a tourist, be a traveler.' Thank you for letting us be travelers." It is my hope that this paper will inspire and aid other professors to become travelers as they take along students for the lessons and journey of a lifetime.

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Appendix A: Economics of Costa Rica Reading List

Introductory Background

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Teaching Unemployment with the Jobs Train

Tyler Watts¹

ABSTRACT

The jobs train is an interactive classroom exercise that demonstrates why unemployment occurs naturally in a market economy. In a classroom economy simulation, students experience a contrived labor market regime featuring 0% unemployment. By contrasting the obviously unsatisfactory outcomes of the jobs train with real world labor markets, students observe the market-based underpinnings of both frictional and structural unemployment. With this experience in mind, students are prepared to discuss the natural rate of unemployment and develop an appreciation for labor market institutions that promote optimal job search and skill matching.

Introduction

The task of an economics educator is not to merely dictate a body of facts and figures, but to train students in an economic way of thinking that imbues in them a sense of the pervasive tradeoffs inherent in all decisions (Ellis 1950; Heyne, Boettke, and Prychitko 2013). The more students can experience tradeoffs—for instance by participating in classroom experiments—it stands to reason that they will develop a deeper understanding and appreciation of the economist's worldview.

One application of tradeoff thinking is the natural rate of unemployment. Novice students might have trouble seeing anything natural about unemployment, especially given the political and media focus on jobs and economic stimulus. To help students develop an intuitive understanding of the basic causes of unemployment, and appreciate why there will always be *some* unemployment—even in a prosperous society—the following classroom exercise is offered. The jobs train allows students to observe unsatisfactory labor market outcomes that would arise under a labor regime that imposes 0% unemployment. Contrasting these outcomes with reality—particularly by thinking through why and how self-interested individual actions would generate a certain level of unemployment—leads to a concrete understanding of the whys and wherefores of unemployment.

The broad application of such “experiential learning” methods has a substantial foundation in educational psychology literature, as exemplified by Kolb (1984), who emphasizes that a learning process involving reflection on concrete experiences is more effective for certain learning styles than the didactic method of traditional lectures. Many economics instructors report favorably on their own use of experiential techniques in the classroom. Spencer and Van Eynde (1986, pp. 292) indicate that “The most consistent finding of those who have become involved with experiential learning as a form of instruction is that it is intrinsically motivating, more involving, and almost always more enjoyable for participants than are most other forms of instruction.” Hawtrey (2007, pp. 144) claims that experiential learning results in “improved student motivation and better retention of knowledge” when used to supplement traditional methods. Salemi (2002, pp. 721) makes the case that active learning is “effective but seldom used.” Other economists who report favorably on implementation of experiential or active learning techniques in their classes include Dolan and Stevens (2006), Grawe (2007), and Park (2010).

Yet despite the favorable reports in the economic education literature, Watts and Becker, in a comprehensive, decade-spanning survey of economics teaching methods, find that instructors of undergraduate economics courses use active learning methods in their classes “relatively infrequently”

¹ Institute for Economic Education, East Texas Baptist University. Email: twatts@etbu.edu

(2008, pp. 203), and that “the teaching method of choice in undergraduate economics courses—at least among instructors—has remained chalk and talk.” (2008, pp. 285)

The jobs train is offered in the spirit of further supplanting chalk and talk with hands-on methods. Previously offered classroom labor market experiments, including Hauptert (1996), Hazlett (2004), and Garces-Ozanne and Esplin (2010) have explored the impact of factors such as search costs, unemployment benefits, and imposition of a minimum wage on labor market equilibria and unemployment rates. The jobs train builds on this literature and extends it by offering a classroom labor market experiment that focuses on the *emergence* of unemployment as a natural outcome of everyday market processes. Students who participate in the jobs train develop an intuitive understanding of the origins of the natural rate of unemployment and the categories of structural and frictional unemployment based on the clear undesirability of 0% unemployment achieved in a contrived, non-market job placement process. Optional advanced applications model more realistic job search processes that allow students to choose their own jobs and involve a skill-weighted probability of success. These refinements of the basic experiment feature residual unemployment that arises from a combination of chance, job skill requirements, and imperfect information, thus allowing students to see first-hand that some level of unemployment is inevitable and indeed optimal in real-world labor markets.

The basic jobs train activity requires 5 minutes of pre-class setup and can be completed in as little as 15 minutes of class time for a small class of 20 to 30 students. For larger classes, the “train” itself can be extended to allow more students to participate. Advanced applications require 10 to 15 minutes of explanation and instruction before the experiments are conducted, 20 to 30 minutes of experiment time, and 5 to 10 minutes of follow-up and discussion. Any and all of the exercises presented here are recommended for the beginning of an unemployment unit in a principles or upper-level course, as the

Setup

Materials Required:

- pack of 3” x 5” notecards
- permanent marker
- clear tape
- chalkboard/ whiteboard

Titles of occupations or professions are written in bold marker on a number of the cards; the exact number used is not of great importance and may be varied based on class size, time allotted, etc. The exercise works better with a wide variety of professions listed on the cards, although this too can be altered to suit individual circumstances. Prior to the start of class, the notecards are taped in a neat row near the top of the whiteboard or chalkboard, with the job titles upside down, facing the board. These cards are the “cars” of the jobs train. It is important to tape at the bottom and top, so the card can be flipped down, by removing the top tape, to reveal the job listed. Appendix Figure 1 shows the initial setup on the chalkboard for a small class of 15 students; more cars (cards) can be added to allow for more student participation in larger classes.

Procedure

I like to present the jobs train exercise at the very beginning of the unemployment unit in my principles macro classes. After providing a simple, quick definition of both the concept of unemployment and the unemployment rate, I query the class as to what they think the optimal or ideal unemployment rate would be. In larger classes there typically will be several who answer “zero” or “zero percent.”² It is not surprising that some students will select as optimal a level of unemployment that—as they will soon see—would represent economic repression and inefficiency in labor utilization. At this point in the course, students have little if any familiarity with unemployment data, and of course are unaware of the concepts of frictional and structural unemployment and the natural rate of unemployment. Indeed, the exercise is

² Wiser students, e.g. those who have previously taken an intro or principles micro class, might hazard guesses in the 5% range. In the case that no or very few students answer “zero,” some prompting and leading questions will be required in order to firmly establish zero unemployment as the foil for the activity.

largely designed to provide the students with clear, striking reasoning as to why some unemployment is not only natural, but even desirable in a functioning market economy.

After soliciting an answer of zero for the optimal unemployment rate, I proceed with the following declaration:

“Let’s see what a zero unemployment economy would look like. In our economy, as soon as someone becomes unemployed, he or she is instantly teleported to the jobs station, where, as the jobs train slowly rolls by, the unemployed person is escorted into the next available car, which represents the next available job opening in the economy. Thus, each person is unemployed for a mere moment, making this, effectively, a zero unemployment economy. Note that, to ensure continuing zero unemployment, you may not pass up the next available job opening.”

I then ask for students to volunteer to be the next arrivals at the jobs station, which they may do simply calling out their desired job or profession. I briefly explain that each student “arrival” at the jobs station indicates either new entry or reentry into the labor market, or a person who presently lost a job. As each newly—and momentarily—unemployed person announces his or her desired job, I write that job title below the next car on the jobs train (the next card on the board), and then flip the card down to reveal the next job opening—and that student’s hypothetical new career in the classroom model economy.³ Appendix Figure 2 shows how the board looks with the exercise in progress.

Thus, a typical jobs train episode might go as follows:

Instructor: “Who’s next—name your desired job!”

Student 1: “Accountant”

Instructor (flipping card): “Well, you are now a lifeguard. Next!”

Student 2: “Financial analyst”

Instructor: “You are a taxidermist—it will be OK. Next!”

Student 3: “Chef”

Instructor: “You are commercial airline pilot—hey, you get to see the world and make some nice money doing so—congratulations! You’ll learn how to fly the planes on the job. Next!”

Student 4: “Lawyer”

Instructor: “You’re a sewer worker—ahem, sanitation engineer. Close enough, eh? At least you’re not unemployed! Next!”

Student 5: “Banker”

Instructor: “Baker—So close! I’m sorry. Next!”

...

Student 10: “Youth pastor”

Instructor: “Exotic dancer. Ooh, sorry about that, but hey, it will pay the bills, and most importantly, you are NOT UNEMPLOYED!”

Discussion

Although jobs listed on the cards can be selected for over-the-top ridiculous effect, students can plainly see that it would be in their best interest in almost all cases to turn down the next available job and remain unemployed whilst pursuing a search strategy aimed at finding a job opportunity that is both desirable and suitable to the student’s skill set. Once students can grasp that there are good reasons for *some* unemployment, it’s easy to move right into a discussion of frictional and structural unemployment and the natural rate of unemployment.

I like to prompt the discussion by asking students if they have any problems with the way things worked out in the jobs train. Answers will vary, but they can generally be grouped into two categories:

³ If student self-selection produces a tight grouping of job aspirations, you can simply ask students to be more fanciful in their responses, naming their ultimate “dream jobs,” or *any* jobs that occur to them during the exercise. To guarantee wide variety in student responses—and hence an extreme level of mismatch that helps the illustration to stick in students’ minds—students may be given notecards with pre-scripted jobs at the beginning of the exercise.

1. “I don’t want/ don’t like that job...”
2. “I would be over-/ under-qualified for that job...”

The first type of response can of course be linked to frictional unemployment—the fact that people engage in a time-intensive job search, and usually will pass over many job postings for which they might otherwise be qualified and able to perform due to a belief that more suitable jobs are likely available. At this point, discussion can digress into the many margins of suitability, including pay, working conditions, travel time, hours, etc., and advanced courses in labor or macro could readily move on to a discussion of matching models, optimal search, etc. Towards the end of the frictional unemployment discussion, I will characterize this underlying cause of unemployment under the heading of “worker choice.” Frictional unemployment can thus be summarized as unemployment that results from workers *searching* for job openings in their field of interest or expertise. The very idea of search, of course, entails passing over some opportunities in favor of other, prospective opportunities. Workers will naturally discriminate amongst potential job offers based on a number of factors relevant to each individual’s situation.

A concluding question takes the form, “would you rather have 0% unemployment but no say over your job, or total freedom over your labor with the risk of episodes of unemployment?” I have yet to encounter a student who is willing to give up freedom of job choice in return for permanent job security.

The second response category can then be connected to the concept of structural unemployment—the fact that people who lack skills relevant for the jobs actually available in their area might indeed remain unemployed for some time, as they seek to search for jobs in a different region, acquire additional training or education, adjust expectations regarding their job prospects, etc. While particular examples of job mismatch arising out of the jobs train experience will be extreme, the discussion can be made more relevant by asking students to imagine more realistic scenarios involving structural unemployment episodes with which they might be already familiar, such as mass layoffs of manufacturing workers due to outsourcing, the obsolescence of certain craft and trade workers due to development of new technologies, etc.

To focus the discussion on particular types of structural unemployment, the basic jobs train could be modified to include a limited number of specific available job types. For instance we might imagine a Silicon Valley jobs train where half of the openings are tech-related—programmers, software developers, etc.—and half are low-level service sector jobs, and the “unemployed” students in the audience are assigned⁴ various skill sets, many or most of which don’t match the prescribed job openings.

Towards the end of the structural unemployment discussion, I will characterize this underlying cause of unemployment under the heading of “employer choice.” Structural unemployment can thus be summarized as unemployment that results from employers discriminating in favor of those available workers with the proper skill set for the job in question

A concluding question may be asked: “would you rather have 0% unemployment, but limited assurance that properly qualified personnel are selected for each job opening, or mechanisms to ensure tight matching of worker skills to actual job requirements, but with the prospect of spates of structural unemployment due to inevitable changes in global economic circumstances?” To drive this point further home, ask the students to consider the grossly inappropriate jobs train matches, such as the youth pastor—exotic dancer or chef—airline pilot match in the example above. In these cases the skills mismatch is so great as to indicate an obviously inefficient and potentially dangerous situation in the production of the goods and services in question. By this point most students will have intuitively caught on to the idea that some unemployment would indeed be desirable in this classroom economy, while more realistic labor market mechanisms sorted workers amongst desirable and skill-appropriate jobs.

Advanced Applications: Quantifying the Costs of Mismatch in a Job Search Process

Instructors who desire a more advanced, quantitative illustration of a job (mis)match exercise may complement the basic jobs train game with the following job search process classroom experiments. In these versions, students are given cards that represent their own general skill endowments at the beginning of the exercise. Initially, students are randomly matched to available jobs through the basic jobs train procedure outlined above. However, in the advanced experiments students will subsequently search for jobs

⁴ This could be accomplished by handing out cards in advance from which students to read off their desired jobs, e.g. most of the cards given to students in the Silicon Valley version might indicate “machinist” or “forklift operator” and only a few indicating “computer programmer” or “software developer,” thus forcing many students into structural unemployment.

through a probabilistic matching process. Students will be able to compare the outcomes of the random process (basic jobs train) and the search process by means of a simple “total job value score” which accounts for both the gains arising from workers being placed in jobs and the losses associated with workers not being appropriately skill-matched to their assigned jobs. Students will then clearly see that search processes—even those not done in the most efficient possible manner—typically if not always produce a significantly higher total job value score than the random jobs train process, even though such market-based mechanisms will inevitably feature considerable unemployment.

Setup

Face cards (jack, queen, king, and ace) from one or several decks of playing cards are shuffled and randomly handed out to student job-seekers. Twice as many cards are used as the number of participating students, with pairs of each card type representing each possible job—worker match. In the sample games below, with 10 participants, I assign to students 4 jacks, 3 queens, 2 kings, and 1 ace; these cards represent each student’s skill level. Meanwhile I reserve an identical set of 4 jacks, 3 queens, 2 kings, and 1 ace to post on the board to represent the available jobs in the economy. Each card represents the value of, and worker skill level required for, each job. For example the ace-level job opening/ skill level can be considered as “executive talent” and the jack-level as “unskilled labor,” and so on.

To quantify the costs of potential labor mismatch, a job value score is given to each card: 12 for ace, 6 for king, 3 for queen, 1.5 for jack.⁵ Because applicants can be either under-qualified, exactly qualified, or overqualified for the available jobs, job values are over- or under-weighted according to the skill of the worker obtaining each job. For instance, a king-level worker will be able to perform a jack-level job better than a jack-level worker, but not so much as to generate the same job value as 2 jack-level workers. Likewise a jack-level worker may be able to perform some aspect of a queen or king-level job, but of course not nearly as adequately as a properly skilled worker. Table 1 presents weights for each possible worker-job skill level pairing. With four skill/ job levels, workers can either be at the same level as the job requirement (e.g. Jack-level worker applies for Jack-level opening), or one, two or three degrees over- or under-matched. Weights are set so as to represent diminishing returns to the use of over-skilled workers; for instance a 2 times over-skilled worker is only 1.5 times more productive, not double. Weights for under-skilled worker-job matches are established such that more under-skilled workers are progressively less and less effective at a given job; for example a 3 degrees under-skilled worker—a Jack worker attempting an Ace job—will produce only 1/10th the output of the properly-qualified worker.

Table 1: Worker Skill Weightings for Advanced Application

Worker Skill Level Relative to Job Opening Level	Weight Factor (x times base job value)
3 degrees over-skilled	1.9
2 degrees over-skilled	1.5
1 degree over-skilled	1.3
Same skill level	1.0
1 degree under-skilled	.67
2 degrees under-skilled	.33
3 degrees under-skilled	.1

Procedure

Initially, the advanced version repeats the random process of the basic jobs train to establish a basis for comparison between the zero-unemployment jobs train world and the job search *cum* unemployment world. The procedure for this jobs train involves a random ordering and posting of the job opening cards (playing cards) on the board, and then the use of any process that *randomly* assigns participating students to the available jobs—for instance, the instructor could simply draw participating students’ names from a hat. A sample result of this quantifiable jobs train is reported in Table 2.

⁵ This particular ranking presents geometrically increasing returns to worker skill, representing a general pattern of income-to-skill level ratios that should be familiar to students.

Table 2: Basic Jobs Train for comparison with advanced experiments

Job Opening	Skill Level of Randomly Matched Worker	Job Base Value	Match Weight (from Table 1)	Net Value
Ace	Jack	12.0	.1	1.2
Jack	Queen	1.5	1.3	1.95
Queen	Ace	3	1.5	4.5
Queen	King	3	1.3	3.9
Jack	King	1.5	1.5	2.25
Jack	Jack	1.5	1.0	1.5
King	Queen	6	.67	4.0
Queen	Queen	3	1.0	3.0
Jack	Jack	1.5	1.0	1.5
King	Jack	6	.33	2.0
			Total job value	25.8

The advanced job search procedures outlined below will be compared against the initial random-match, zero unemployment process shown in Table 2. In the advanced search exercise, students “apply” for the available jobs on a first-come, first-served basis, the catch being that each student’s chance of landing an open job depends partly on chance and partly on skill matching. A student with “jack” skill level, for instance, will have little to no chance of landing an “ace” job, while a “queen” student will have a non-negligible chance of landing a “king” job, an even chance of landing a “queen” job, and a better-than-even chance of landing a “jack” job, and so on. Table 3 presents a simple probability table for the advanced job search simulation. Rolling a common six-sided die provides an easy mechanism to establish outcomes for each round of job search. Note that perfectly matched workers have only a 50% chance of employment in any round. This chance element in the simulation represents the competitive aspect of labor markets, as even well-qualified workers must apply for several jobs in order to be selected for any particular opening.

Table 3: Job search probabilities by applicant/ opening

	Job Opening				
	Ace	King	Queen	Jack	
Applicant	Ace	1/2 (roll 1,2,3)	2/3 (roll 1,2,3,4)	1 (roll any #)	1/6 (roll 1)
	King	1/3 (roll 1,2)	1/2 (roll 1,2,3)	2/3 (roll 1,2,3,4)	1 (roll any #)
	Queen	1/6 (roll 1)	1/3 (roll 1,2)	1/2 (roll 1,2,3)	2/3 (roll 1,2,3,4)
	Jack	Zero	1/6 (roll 1)	1/3 (roll 1,2)	1/2 (roll 1,2,3)

For the search version of the simulation, job openings are posted on the board as in the basic jobs train. Students are then allowed to queue, and as each student comes forward, he/she declares which job he/she is applying for, then rolls the die to determine success or failure in landing that job. As students land jobs through successful die rolls, their cards are taken and taped to the board under the job opening cards, to indicate that job is now filled. After each round of job search—i.e. every student has tried for a job opening—both the unemployment rate (# of students without jobs divided by total # playing—the classroom “labor force”) and running total job value score are calculated. Repeat the search process until the running total job value score exceeds that of the initial basic jobs train. In actual classroom experience this usually occurs within 3 rounds of search, and will almost always involve a substantial remaining unemployment rate, typically 10% or 20%.

Efficient Model

In the simplest version of the job search process, students apply for jobs based on maximizing expected value; probability values (Table 3) and job value weightings (Table 1) in the sample version shown are selected such that the expected job value for each skill level is indeed maximized when each student applies for the matching job opening—i.e. jack students apply for jack openings, queens for queens, and so on. It is important to explain to students that, by instituting a search mechanism involving choice and chance we greatly reduce the prospect of job-mismatch, but simultaneously introduce the phenomenon of unemployment, as not every student will succeed in the search process even after several rounds of play.

What will not be obvious to the students is that, even with seemingly low chances of landing skill-matched jobs, and thus high unemployment through the early rounds of the search process, the total job value score for the search process will quickly rise above that achieved in the basic jobs train process, despite the fact that some level of unemployment will persist. In other words, students will be able to observe that, in a free market for labor, the cost of unemployment is more than offset by improvements in job-worker skill matching. Table 4 presents results of an actual classroom trial of the search process. In this case, total job value reached 33—thus exceeding the sample basic jobs train result of 25.8 after just 3 rounds of search, albeit at a final unemployment rate of 10%.

Table 4: Typical results of “efficient” job search process

Round 1

Job Opening	Applicant	Die Roll	Realized Value
Jack ₁	Jack	6 (fail)	0
Queen ₁	Queen	4 (fail)	0
King ₁	King	5 (fail)	0
Jack ₁	Jack	2 (success)	1.5
Ace	Ace	2 (success)	12
Queen ₁	Queen	5 (fail)	0
King ₁	King	4 (fail)	0
Queen ₁	Queen	1 (success)	3
Jack ₂	Jack	5 (fail)	0
Jack ₂	Jack	3 (success)	1.5
Total Job Value			18
Unemployment			6/10 (60%)

Round 2

Job Opening	Applicant	Die Roll	Realized Value
Jack ₃	Jack	1 (success)	1.5
Queen ₂	Queen	5 (fail)	0
King ₁	King	4 (fail)	0
Queen ₂	Queen	1 (success)	3
King ₁	King	4 (fail)	0
Jack ₄	Jack	2 (success)	1.5
Job Value Increment			6
Total Job Value			24
Unemployment			3/10 (30%)

Round 3

Job Opening	Applicant	Die Roll	Realized Value
Queen ₃	Queen	1 (success)	3
King ₁	King	1 (success)	6
King ₂	King	5 (fail)	0
Job Value Increment			9
Total Job Value			33
Unemployment			1/10 (10%)

“Behavioral” Model

To portray the possibility of some level of job *mismatch*—in addition to unemployment—persisting even in a market-based search process, students can be given incentives to “overshoot” and apply for jobs above their assigned skill level. Indeed, real-world labor markets will likely feature some degree of unrealistic self-assessment of skill for unemployed workers, and thus unrealistic job expectations, and this may account for some real-world unemployment.⁶ In a model economy with a fixed number of jobs and students, the success of even a small number of under-qualified students achieving higher-skill jobs will

⁶ I sometimes refer to this as “cousin Eddie” unemployment, based on Randy Quaid’s famous ne’er-do-well character in *National Lampoon’s Christmas Vacation*, whose wife stated he had been chronically unemployed for years because he was “holding out for a management position.”

leave certain others over-qualified for some of the remaining jobs, thus introducing job mismatch and reducing the net benefits emerging from the labor market. Simulating this “behavioral” approach to labor markets—i.e. a situation in which true information regarding worker attributes is either unavailable to or misrepresented by workers—allows for a potentially more realistic comparison of real-world labor markets, with all their flaws and unemployment, against the simulated zero unemployment world of the basic jobs train.

In the efficient version of job search portrayed above, students are instructed to only apply for jobs matching their own assigned skill level; jack workers may only apply for jack openings, kings for kings, etc. Instructors running the advanced version of the jobs train simulation should note to their classes that this represents the efficient strategy, i.e. that which maximizes the expected value of the job for each student. However, students should be made aware of the limitations of an expected value-maximizing approach, based both on the presence of behavioral anomalies and the plain difficulty of assigning probability distributions to singular, uncertain future events. Thus in the real world people will be apt to engage in some level of over- or under-shooting in a job search regime. To model this phenomenon and compare a possibly more realistic “behavioral” search process against the random process of the jobs train, some students need to be given incentives to overshoot. This is easily accomplished by offering students various extrinsic rewards for successfully landing jobs above their skill level: for example, offering each student one pack of candy for achieving a job one level above his or her skill, 2 packs for climbing 2 rungs up the skill ladder, etc. Table 5 presents results of an actual classroom trial of the “behavioral” version of the job search process.

Table 5: Typical results of “behavioral” job search process

Round 1

Job Opening	Applicant	Die Roll	Realized Value (skill-weighted)
Jack ₁	Jack	2 (success)	1.5
King ₁	Queen	1 (success)	4
Jack ₂	Jack	5 (fail)	0
Queen ₁	Jack	1 (success)	2
Queen ₂	Queen	6 (fail)	0
King ₂	King	1 (success)	6
Ace	Ace	2 (success)	12
Jack ₃	Jack	4 (fail)	0
Queen ₃	King	3 (success)	3.9
Jack ₄	Queen	5 (fail)	0
Total Job Value			29.4
Unemployment			4/10 (40%)

Round 2

Job Opening	Applicant	Die Roll	Realized Value (skill-weighted)
Jack ₂	Jack	1 (success)	1.5
Queen ₂	Queen	5 (fail)	0
Jack ₃	Jack	4 (fail)	0
Jack ₄	Queen	5 (fail)	0
Total Job Value			30.9
Unemployment			3/10 (30%)

Round 3

Job Opening	Applicant	Die Roll	Realized Value (skill-weighted)
Queen ₂	Queen	3 (success)	3
Jack ₃	Jack	6 (fail)	0
Jack ₄	Jack	5 (fail)	0
Total Job Value			33.9
Unemployment			2/10 (20%)

In repeated classroom trials, unemployment consistently fell to 10%-20% by the end of the 3rd round of search; the average total job value by the end of the 3rd round hovered around 32, consistently and significantly larger than the scores obtained in the 0% unemployment random match (jobs train) process detailed above.

Discussion

The advanced experiments can get a bit complicated as they involve several “moving parts” what with probabilities, skill weightings, and job value scores. Thus follow-up discussion is important to help students understand intuitively what they just experienced in the simulations.

The discussion should first address the *reason* behind the persistent unemployment encountered in the simulations. Start by reminding the students that, in the basic jobs train, they were each guaranteed a job—like it or not! Then ask them what limitations they faced getting jobs in the search-based experiment. Students should quickly recall that the main obstacle was *chance*—they had to roll the die and hope for the right number. Then ask what increased or reduced their chance of getting a job. “You had a better chance of getting a job that matched your own card.” Right—you have a *better* chance of getting a job you are well-qualified for, but you still aren’t guaranteed a job, even one for which you were “overqualified.” So how does the chance element make our model/ process more realistic? Students should be able to realize that there are usually many applicants for any given job opening, and employers may almost always choose among several well-qualified applicants. Thus there is less than a 100% chance of getting any particular job. Once this fact is well established, students will be able to realize why some unemployment will persist, as there are always some people looking for jobs, and the job search process can take some time based on this chance element alone.

In discussing the “behavioral” model, we want to focus on the possibility of and reasons for skill mismatch. Although market search processes will of course not exhibit nearly the kind or amount of ridiculous mismatching seen the basic jobs train, some degree of mismatching does persist in real world labor markets. Discussion here should focus on students’ own experiences with over- or under-qualified workers. Ask students if any of them have tried for jobs above their actual skill level. If so, were they conscious at the time of the skill mismatch—and therefore the reduced likelihood of finding employment—or were they perhaps myopic or over-optimistic about their own qualifications? How common is this kind of misperception? How does it distort the functioning of labor markets? Have you ever been in a job for which you were severely under-qualified? If so, why were you unable to engage in a more fruitful job search? How likely is a particular individual to persistently face over- or under-qualification? What processes exist to “weed out” under-qualified workers, or allow over-qualified ones to move up the job ladder?

Discussion on labor market experiences and expectations may range broadly, enhancing students’ participation in the experiment. Indeed, the jobs train and the advanced labor market exercises are designed to be a focal classroom activity to introduce a unit on labor markets and unemployment in a macro or labor economics course. It is hoped that the activities will lay a foundation upon which students can build when considering labor utilization concepts and indicators other than just the headline unemployment rate.

For example, in a “musical chairs” version of the simulation, provide students proportionally more lower-skill cards (jacks and queens) and make the job openings more weighted towards higher-skill (kings and aces). Inevitably, several jack students will find extreme difficulty landing a job, due to both the small number of jack openings and the low probability of achieving a higher skill job. While students may not give up the simulated search through many rounds of play, the instructor can easily introduce the concept of discouraged workers—and hence the broader unemployment rates, changes in labor force participation, and underlying causes of structural unemployment—by asking what people might do in real world labor markets when they find themselves persistently under-qualified for the bulk of job openings.⁷ Discussion along these lines could then easily incorporate concepts of the returns to education⁸ and labor market

⁷ Krueger et al. (2014) provide a recent, in-depth study on the unique problems of long-term unemployment. Summers (2008) provides a brief, accessible overview of unemployment, including problems of discouraged workers and long-term unemployment.

⁸Kolesnikova (2010) offers a concise summary of research on “returns to education”:
<https://www.stlouisfed.org/publications/regional-economist/january-2010/the-return-to-education-isnt-calculated-easily>

signaling⁹ by addressing the ways in which people, whether unemployed, underemployed, or simply ambitious for higher incomes, strive to improve their job prospects.

Another iteration might involve instituting an unemployment benefit regime for workers who, after search, fail to have landed a job; unemployment “benefits” might be provided in the form of candy or small amounts of actual money (e.g. 25¢ per round unemployed). Thus, facing little to no opportunity cost in terms of getting a “job” in the experiment that pays no tangible reward, vs. getting a coin or candy by remaining unemployed, we are likely to observe the expected perverse result of some students striving to remain unemployed, most likely by applying in increasing numbers for jobs for which they are under-qualified and therefore very unlikely to attain.¹⁰

In all the possible extensions of the activity, the main point remains that, while both unemployment and some mismatching may occur due to misinformation or self-delusion, the net result of the labor market is consistently superior to the 0% unemployment only achievable in the basic jobs train world. Labor markets, even when they involve myopic agents and search costs, still allocate resources in the most efficient manner possible given the system’s inherent limitations of knowledge and judgment. Perhaps this is the most important lesson of the jobs train: persistent costs or drawbacks of a market system, even though undesirable in a cosmic sense, are generally a more-or-less efficient result of natural market allocation and optimization processes.

Conclusion

Economists know there are good reasons for *some* unemployment—particularly the kinds which involve waiting and searching for a more suitable job and ensuring workers’ skills match those required for various production roles in the economy. I have found the jobs train exercise an effective and fun way to introduce the underlying rationale for much, if not most, of the unemployment actually experienced in the economy. The interactive aspect of the jobs train allows students to observe firsthand the problems that would arise with too low of an unemployment rate, and thus gives them a concrete basis for understanding the natural aspects of unemployment in a market economy. Student response to the exercise has been overwhelmingly favorable. In addition to amusement arising from the bizarre mismatches that routinely arise, on several occasions students have independently referred back to the lessons learned from the jobs train during discussions later in the semester. I am pleased to share this teaching exercise with the readership of this journal in the hopes that many of my colleagues in the economics teaching profession may also find it useful in training their students in the economic way of thinking as applied to unemployment. I welcome experimentation and adaptation of the exercise to improve it generally and/or to make it more suitable for a particular classroom setting, and would be happy to correspond with those interested in using it in their classes and receive feedback as to how it has worked in others’ classes.

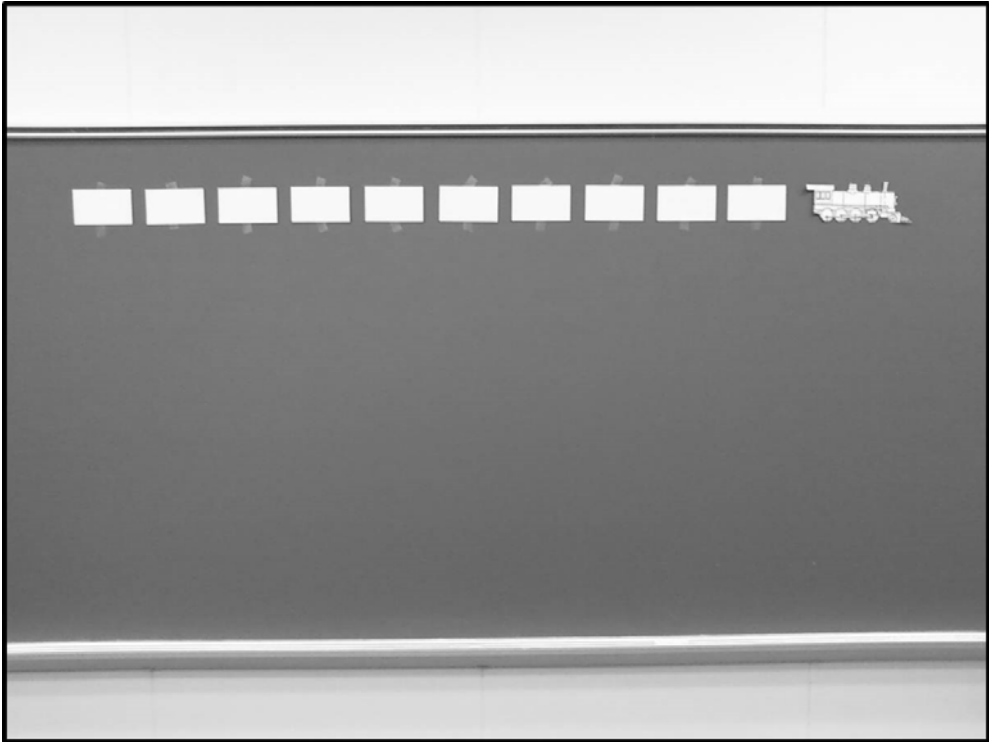
⁹ The seminal work on job market signaling is Spence (1973); Russ Roberts and Bryan Caplan provide an accessible discussion of the role of education as a signaling mechanism: http://www.econtalk.org/archives/2014/04/bryan_caplan_on.html

¹⁰ Mullins (2012), Dickens (2012) and Hagedorn et al. (2013) all find that the extension of unemployment benefits in 2008-2010 significantly increased the measured unemployment rate, possibly by one full percentage point or more.

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Appendix Figure 1: Initial Setup of Basic Jobs Train



Appendix Figure 2: Basic Jobs Train in Progress

