

## Preparing the Underprepared Students for Success

Jordan Crabbe  
University of Cincinnati Blue Ash

*More people than ever before have college degrees today. Institutions are reporting record breaking enrollments and as enrollment numbers increase, so do the number of underprepared students. Students are underprepared due to diverse reasons including inadequate educational experiences, lack of educational planning, lack of financial resources and dependent care issues, which can all contribute to academic failure. Many institutions have adapted ways and provided resources to help underprepared students in their various disciplines. The objective of this paper is to share strategies that will better prepare the underprepared students for success to increase retention and graduation rates.*

Underprepared students are students that lack basic skills in at least one of the three areas of reading, writing, or mathematics (Tritelli, 2003). The American Association of Colleges and Universities (AAC&U) reports that 53% of students entering our colleges and universities are underprepared (Tritelli, 2003). Many higher education institutions report record breaking enrollments as “75% of high school graduates get some postsecondary education within two years of receiving their diploma (Ramaley et al., 2002). Today, older adults enroll in record numbers as learning has become a life-long endeavor to pursuit. As enrollment numbers increase, so do the number of underprepared students.

Many institutions have adapted ways and provided resources to help underprepared students in their various disciplines. Some institutions have the following measures in place to help increase the success and retention

---

rates of these underprepared students (Tinto, 2004; Boylan, 2001; & McGillin, 2003):

- Developmental and college preparatory courses that will help lay the foundation for college level work;
- Academic advising; and
- Tutoring services.

This article introduces several strategies that will increase the level of engagements with the underprepared students and subsequently prepare them for success. These include:

- Increase relevance,
- Group work,
- Real-world project based learning, and
- Flipped classroom.

The aforementioned strategies are from my experience with class illustrations in teaching statistics, and business analytics courses over the years. After realizing how students were struggling to understand the concepts in most of the topics I teach in statistics, mathematics, and business analytics, I sat back and asked myself what I could do to help the situation as well as prepare these students for their various careers. Upon some thoughts and reflections on the methodologies I already have in place, I started trying some strategies and new methodologies that I believed will bring the concepts being taught to the understanding of these students and by so doing, better prepare these underprepared students for success. It was successful when these four strategies were used together. I now

---

elaborate on the afore-mentioned strategies that were used together to increase the level of engagement and spike interest in underprepared students and subsequently prepare them for success.

### **Increase Relevance**

If you will agree with me, some of the most common questions that students asked after a new concept is introduced are “What am I *gonna* use this for?” and “What does this have to do with my career?” When you begin to hear these kind of questions from your students, it is an indication that students cannot make a direct connection between the concept taught and their area of discipline or future career. So, what I have been doing in my classes is to make sure to increase the relevance of all the concepts that I teach in my classrooms by illustrating with applied examples where the concept taught is being used to solve typical or real-world problems in the areas of study of the students. Based on my experiences, I define relevance as connecting with the matter in hand. So, student at the end of the day need to experience the direct connection or relation between the concept taught and their fields of study. Relevance is important to teaching and learning because it is directly related to students’ engagement and motivation (Frymier & Schulman, 1995; Martin & Dowson, 2009) and whatever is relevant is important and worth knowing.

The following are some of the illustrations I use in my various classes to increase relevance of the concepts that I teach. In my nursing major class, after introducing the concept of median, I often ask the question such as: *Find the median of the data: 20, 15, 12, 27, 13, 19, 13, 21.*

---

To relate the concept taught to the field of study of my students, I now give a real-world applied example such as the one below:

*One of the goals of medical research is to develop treatments that reduce the time spent in recovery. Eight patients undergo a new surgical procedure, and the number of days spent in recovery for each is as follows: 20, 15, 12, 27, 13, 19, 13, 21. Find the median time spent in recovery.*

Similarly, in my business analytics classes where the backgrounds of all the students I have in my classroom are in business, after introducing the concept of the mean and its computation, instead of posing a question such as: *Compute the mean of the data below: 17, 16, 21, 18, 13, 16, 12, 11*, I will pose the question: *You're a financial analyst for JORABAM Securities. You have collected the following closing stock prices of new stock issues: 17, 16, 21, 18, 13, 16, 12, 11. Compute the mean stock price for these new stocks.* Feedbacks that I have been receiving from my students and from my own observations all point to the following benefits:

- It emphasizes the importance that content has for the students' future.
- It explains to students how the content fits into their plans for the future.
- It helps students realize that the content is not just interesting but also worth knowing.

### **Group Work**

I apply the concept of group work in my classrooms. In a group work, two or more students come together to analyze a problem by

---

applying concepts and sharing ideas and opinions. It is normally more productive, creative, and motivating than working individually. After a concept is introduced, I lead my students to apply the concept to solve at least two problems in the classroom. After that I typically assign a problem or two to my students to solve in groups while I circulate around the classroom providing help, hints and encouragement when necessary. I normally divide the class into groups of 3 or 4 students so that contributions of each member of the group could be recognized. This group work experience contributes a lot to students learning and retention as it allows for collaboration among students. It also refines students understanding through discussion and peer explanation as it pools knowledge and skills together to analyze the problem. Positive group work experience has been shown to contribute to student learning, retention and overall college success (Austin, 1997; Tinto, 1998; National Survey of Student Engagements, 2006).

Feedback that I have been receiving from my students and from my own observations all point to the following benefits:

- It refines understanding through discussion and explanation.
- It develops stronger communications skills.
- It pools knowledge and skills.
- It gives and receive feedback on performance.
- It develops new approaches to resolving differences.

### **Real-World Project Based Learning**

I enforce the concept of statistics and business analytics through well-defined real-world project-based learning. Project based learning or

---

real-world project-based learning is an innovative approach to learning that teaches a multitude of strategies critical to success (Bell, 2010). It makes students drive their own learning through inquiry, as well as work collaboratively to research and create projects that reflects their knowledge (Bell, 2010).

After a concept is taught, I require students to apply the concept to a real-world based project about a hypothetical scenario which normally starts with random data collection and then progresses to advance concepts like descriptive statistics and then to confidence interval and hypotheses testing using the same random data that was initially collected. This process ensures students drive their own learning through inquiry, as well as work collaboratively to research the topic of their respective projects (Jobe, 1988).

Feedbacks that I have been receiving from my students and from my own observations all point to the following benefits:

- These projects motivate students and encourage them to be more active in their learning.
- Inspire students to obtain a deeper knowledge of the subject matter.
- Students are also more likely to retain the knowledge gained through this method in contrast to what they would have retained through traditional text-book centered learning (Railsback, 2002).
- It makes students develop confidence and self-direction.

---

## Flipped classroom

I also use flipped classroom approach as one of my teaching techniques. A flipped classroom is a form of blended learning where the lecture is moved outside the classroom with the help of technology and learning activities are moved inside the classroom (Kiat & Kwong, 2014). Students work through problems and engage in active collaborative learning in the classroom (Kiat & Kwong, 2014). To get students started, I post a video or lecture online. I then divide the class into about 6 groups depending on the size of the class. Students watch videos or listen to the lecture individually and then meet as a group outside of class to discuss the content of the video or lecture before the day of class. On the day of class, each group is required to present to the class how well they understood the concepts laid out in the lecture or video or what they have learned from it. Each presenting group will answer a question or two from the other groups. By using this teaching strategy, the classroom becomes a place to work through applied problems, advance concepts and engaging students in active collaborative learning (Tucker, 2012). This flipped classroom approach of learning allows our class time to be better utilized to enhance interaction and collaboration and also more time is actually devoted to application of concepts (Fulton, 2012).

Feedback that I have been receiving from my students and from my own observations all point to the following benefits:

- Flipped classroom approach allows students to learn on their own time and at their own pace.
- Students can view video or listen to lectures multiple times.

- 
- It allows face-to-face class time to be better utilized to enhance interaction, and collaboration.
  - More class time is devoted to application of concept.

In addition to these strategies, appropriate technology is used to support all of the above methodologies. A Blackboard site is also created for each of my courses where class notes, assignments, homework problems, solution keys, data set, announcements, class grades, and projects are posted. I also use statistical software packages such as Excel and R for our big data analysis and graphical representations.

### **Conclusion**

Increasing relevance emphasize the importance that the content has for students' future. It relates the concept taught directly to the field of study of the students and increase student engagement level. Positive group work experience contributes to student learning, retention, and overall college success (Austin, 1997; Tinto, 1998; National Survey of Student Engagements, 2006). Students are also motivated to learn the concept when they realized that their colleagues within the group understand the concept taught and are able to apply it. With real-world based projects, students are more likely to retain the knowledge gained more than through the traditional textbook-centered learning (Railsback, 2002). The hands-on experience acquired by students through real-world project-based learning assures them of a successful future career. Flipped classroom allows face-to-face class time to be better utilized to enhance interaction, and collaboration. In addition, the idea that students have to



---

summarize and present to the class the concept they learned through the videos encourages them to pay special attention to the concept and try to think through its applications. These strategies when used together will promote long-term student learning and achievement, and also prepare them for success in their future careers.

## References

- Astin, A. W. (1993). *What matters in college?: Four critical years revisited* (Vol. 1). San Francisco: Jossey-Bass.
- Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House*, 83(2), 39-43.
- Boylan, H. R. (2001). *Making the Case for Developmental Education*. *Research in Developmental Education*, 12 (2), 1-4. Retrieved from <http://www.nade.net/documents/Articles/MakingtheCase.pdf>
- Frymier, A.B., & Schulman, G.M. (1995). "What's in it for me?" Increasing content relevance to enhance students' motivation. *Communication Education*, 44, 40-50.
- Fulton, K. (2012). Inside the flipped classroom. *The Journal*, 4(11).
- Jobe, J. M. (1988). "An Applied Problem in an Introductory Statistics Course", *Proceedings of the American Statistical Section on Statistical Education*.
- Kiat, P. N., & Kwong, Y. T. (2014, April). The flipped classroom experience. In *Software Martin, Engineering Education and Training (CSEE&T), 2014 IEEE 27th Conference on* (pp. 39-43). IEEE.
- Martin, A.J., & Dowson, M. (2009). Interpersonal relationships, motivation, engagement, and achievement: Yields for theory, current issues, and educational practice. *Review of Educational Research*, 79, 327-365.
- McGillin, V.A. (2003). Academic Risk and Resilience: Implications for Advising at Small Colleges and Universities. In Hemwall, M.K. & Trachte, K.C. (Eds.) *Advising and Learning: Academic Advising from the Perspective of Small Colleges & Universities*.
- Railsback, J. (2002). Project-Based Instruction: Creating Excitement for Learning. By Request Series.

- Ramaley, J. A., & Leskes, A. (2002). *Greater expectations: A new vision for learning as a nation goes to college*. Association of American Colleges and Universities. The National Survey of Student Engagement (NSSE), (2006). Annual Report: *Engaged Learning: Fostering Success for All Students*.
- Tinto, V. (2004). Student Retention and Graduation: Facing the Truth, Living with the Tritelli, Consequences. Occasional Paper 1. *Pell Institute for the Study of Opportunity in Higher Education*.
- Tritelli, D. (2003). From the Editor. Association of American Colleges and Universities. Retrieved from <http://www.aacu.org/peerreview/pr-wi03/pr-wi03editor.cfm>
- Tucker, B. (2012). The flipped classroom. *Education Next*, 12(1), 82-83.