

# Bring it On! Taking Learning Skills to Specific Campus Populations

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## Abstract

First year students in programs with considerable time demands such as athletics, ROTC or work-study often struggle academically. The Corps of Cadets at Texas A&M University utilized *Success4Students*, a time management and study strategies workshop, prior to the semester and then incorporated weekly reinforcement through a one-credit military science course using on-line self-assessments. The effectiveness of the program was demonstrated by improvements in GPA as compared to a prior year control group. A relative ranking of key principles taught in the workshop was developed based on correlation of student assessment scores for each principle with GPA. These relative rankings were found to be population specific based on a group's particular needs.

## Introduction

Many studies have determined that the most common reason that outstanding high school students see their GPA drop by ~1.0 GPA<sup>1</sup> in college is a lack of time management and study skills. As the table illustrates, learning in high school is primarily in class while a significant part of learning in college is outside of class, requiring up to 500% more outside study time than was required in high school.<sup>2</sup> Furthermore, the pace of material covered in college is so much greater than it is in high school that procrastinating and then cramming is simply not an option. Unfortunately, the slower pace and shorter assessment periods students have in high school allow them to develop the habit of procrastinating and cramming, with considerable academic success.

	H.S.	College
Time spent in class/wk	30	15
Study outside class	5	25-30
Learning	Directed	Self-directed
Environment	Dependent	Independent
Assessment Periods	Short	Long

**Table 1. High School vs. College**

The transition problem is particularly acute in subpopulations like ROTC, athletics or the working student where the step-up in time demand from high school are even greater and procrastination in the mastery of basic materials quickly leads to ineffective in-class learning. Helping a freshman to develop effective time management and study strategies will enable the student to have the best possible chance of succeeding in their freshmen year and throughout college. Most students who do not persist at the university level drop out because they think it is too difficult without recognizing that the real problem is not their intelligence or desire, but often their poor time management and ineffective study strategies.

We wish to present the results of a study performed at Texas A&M University, where time management and study strategies principles were integrated into a freshman military science course. We will describe the approach used to integrate these principles into the course and then present several quantitative measures of the efficacy of incorporating time management and study skills into freshmen academic classes, including GPA for freshmen Corps of Cadets students. Results will compare classes from the Fall 2002 to the Fall 2003, where the same teaching team taught the course to approximately 450 students with very diverse backgrounds, one class without time management and study strategies and the other with it incorporated.

## **Materials and Methodology**

### **Incorporating Time Management and Study Skills into a Freshman Academic Course**

One of the challenges to incorporating time management and study skills into a freshmen academic course is the need for it to take minimal time, but nevertheless, be effective in reshaping the habits of the freshmen students. The Corps of Cadets and ROTC program at Texas A&M University, adopted an inexpensive program entitled *Success4Students* that has been designed for the entering college student. The program is a video/workbook seminar that can be presented in three hours, with the professor or advisor serving as the facilitator for the program. The fifty-page workbook follows the video presentation with application activities to complete at the end of each segment. The seminar has six segments that address the following topics:

- Select your destination (where do you want to be in five years);
- Determine your path (focusing on goal setting for the semester);
- Planning to succeed (emphasizing the importance of planning your schedule for the week each Sunday and then following it like a compass through the week);
- Maximizing your in-class learning by
  - Staying caught up in your understanding
  - Reviewing your notes between classes to be sure you are current
  - Reading the material to be covered in class before it is covered
  - Learning material each week as if the exam were on Friday of that week
  - Overcoming academic procrastination
  - Working especially hard the first three weeks of the semester
  - Listening more carefully and taking notes more selectively
  - Getting 8 hours of sleep/night and exercising regularly
  - Treating school like an 8-5 job, working at least 40 hours/week
- Speed Reading and Learning to triple your reading speed with better comprehension by
  - Previewing
  - Pacing
- Creative note taking and memory skills

The video format is an interesting discussion between five students and a professor in a coffee shop setting. The program is effective as students are often very receptive to advice from older peers, especially when students are talking about the academic pitfalls they have encountered.

Each 20-minute video segment is followed by a 10-15 minute application activity completed in the student workbook.

Possibly the most innovative feature of the *Success4Students* seminar is the 12 weeks of Internet follow-up that includes a weekly self-assessment. The student receives an e-mail automatically each Friday reminding the student to follow the link to the *Success4Students* website where they can score themselves on their application of the key principles taught in the seminar. After completing the assessment, which takes 2-3 minutes, they get a numerical score on a scale of 0 - 100, their scores from previous weeks, and an indication of the average score for all students who have done the assessment for that week. This allows them to measure their academic effort (above or below average) and to see their improvement (hopefully) as they convert concepts taught in the seminar into habits.


For the Corps of Cadets program at Texas A&M University, we had all the students come to an afternoon presentation of the seminar just prior to the start of the semester. Several of the instructors gave up to 10% of their overall grade for the one-credit military science course for completing all 12 weeks of on-line assessment. The weekly assessment scores were monitored by the instructor at a group administrator area at the *Success4Students* website where the students' scores for all weeks are recorded in a table. This allowed the instructor early in the semester to conveniently identify students who were not applying themselves effectively and provide some additional encouragement. The students who made lower GPAs were generally the same ones who either did not complete the assessment or had low assessment scores. The effort in presenting the seminar using the facilitator's manual was minimal and the 12 weeks of Internet follow-up was completely automated.

At other universities, the video seminar has been presented in several class periods early in the semester to help the students get a picture of what it will take to succeed in college before they get too far behind.

### **Correlating Academic Performance with Overall Assessment Scores and Individual Items**

The weekly assessments (Figure 1) provided very detailed data regarding what students did each week throughout the semester to apply themselves academically. A statistical analysis may be used to determine the relative importance of the various items measured in the assessment on their resultant GPA. However, the scatter in such an exercise will be large because the students vary widely in their natural ability and preparation as incoming freshmen, and it is difficult to control for these hidden variables. Because we are interested in examining only the contribution of their time management and study habits to their success, we attempted to hold their natural ability and prior academic preparation constant. We provided a correction factor for aptitude using incoming SAT/ACT scores and known GPA-aptitude test correlation based on prior studies done at other universities.<sup>3</sup> In addition, we also recognized that high school preparation plays a significant role in the first year academic experience. Our high school correction factor was created based on the student percentage from that high school who go on to a 4-year university with the assumption that high percentages correlate with better overall preparation.

The relationship between this factor and freshman GPA was quite strong (much greater than high school rank in class) and improved our overall correlation coefficient.


Close

## Evaluation #1

**REMEMBER:** Each question is scored 1-5. The **red items** are the most important and worth double points. The **blue item** (in the first 3 weeks) is worth quadruple. Your total score will range from 0-100.

**PLAN**

*I planned to succeed this past week by*

**Preparing my weekly schedule on:**       Tu-PM    Tu-AM    Mo-PM    Mo-AM    Sun-PM

Doing daily updates of my weekly schedule this many days       1    2    3    4    5

**Following my weekly schedule (% of time)**       20%    40%    60%    80%    100%

**LEARN**

*I maximized my in-class learning this past week by*

Attending my classes - missing only this many classes       4    3    2    1    0

Sitting at the front of the classroom in this many of my courses       1    2    3    4    all

Listening intently and taking notes selectively in this many of my courses       1    2    3    4    all

Reviewing notes from the previous class before the next class in this many of my courses       1    2    3    4    all

**Reading book before material was covered in class in this many of my courses**       1    2    3    4    all

**Staying completely current in my understanding in this many of my courses**       1    2    3    4    all

Treating school like an 8-5 job by arriving on average at       12PM    11AM    10AM    9AM    8AM

Sleeping on average this many hours each weeknight       < 5    < 6    < 7    < 7.5    < 8

**Working for this many hours attending class and studying**       <20    <25    <30    <35    <40

**STUDY SKILLS**

*I improved my study skills this past week by*

Using previewing and pacing for my academic reading (% of time)       20%    40%    60%    80%    100%

Taking notes in radiant format or converting to radiant format during my after class review in this many of my courses       1    2    3    4    all

Using memory techniques in this many of my courses       1    2    3    4    all

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Figure 1: Weekly evaluation example

We would like to determine the relative importance of the factors in the assessment and to assign a weighting factor to each item. The weighting factors should improve the linear regression between GPA and weekly assessment score. Therefore, we plotted the GPA versus weekly average for each individual item in the assessment (rather than the total score), with the slopes summarized in Table 2. The weighting factors were then determined as a ratio of the various slopes. The GPA versus overall weekly assessment score calculated using the new weighting factors provided a better correlation coefficient.

Activity	Slope	Ratio	Weighting Factor
Sitting in front of class	0.74	1.00	8.40%
Stayed current in my understanding	0.72	0.97	8.10%
Listened actively in class	0.69	0.93	7.80%
Reviewed notes before class	0.65	0.88	7.40%
Class attendance	0.65	0.87	7.30%
Followed weekly schedule	0.62	0.83	7.00%
Update daily schedule	0.59	0.80	6.70%
Used reading techniques	0.58	0.78	6.60%
Prepared schedule prior/early in week	0.57	0.77	6.50%
Total hours spent in class and studying	0.57	0.77	6.50%
Used memory techniques	0.55	0.74	6.20%
Treated school like an 8-5 job	0.55	0.74	6.20%
Read book before material is covered in class	0.52	0.70	5.90%
Average hours of sleep	0.47	0.63	5.30%
Used note taking techniques	0.33	0.45	3.80%

**Table 2: GPA versus key concept slopes and weighting factors for Corps of Cadets, Texas A&M University**

## Results

### GPA Improvements

The overall regression line, which we call the “Academic Effort Parameter,” is shown in Figure 2. This figure includes the corrections for high school background and aptitude mentioned previously. Note that the GPA point spread from those who scored low (2.0) on the assessment to those who scored high (3.0) on the assessment based on the regression trend line.

Figures 3 and 4 illustrate the importance and value of weekly reinforcement in outcomes. The Air Force branch of the Corps of Cadets made the strongest effort to complete the weekly assessments and also scored higher on their applications of key principles from the course. As a result, their grades were higher than the other two military branches for the semester and they made the greatest improvements in GPA over the prior year.

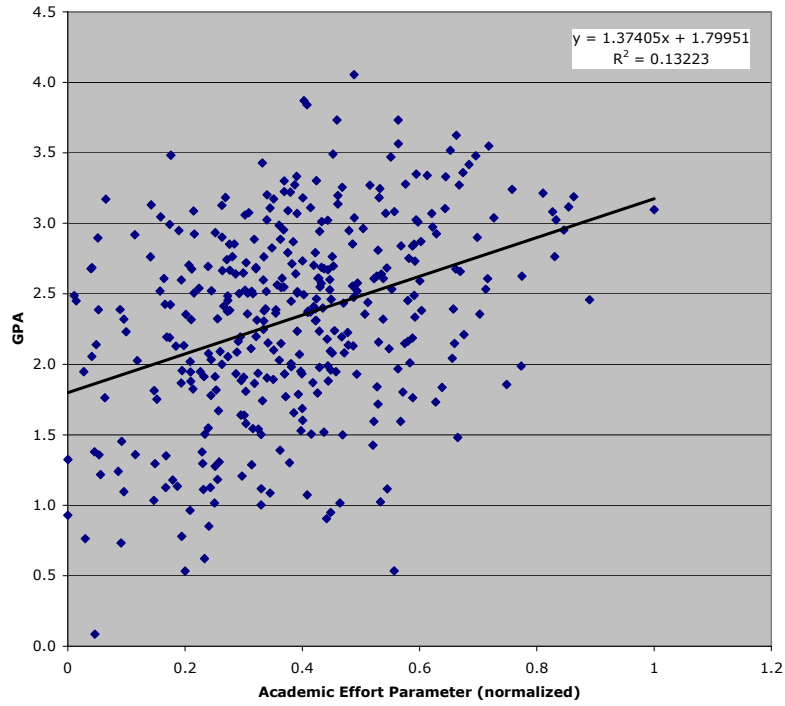
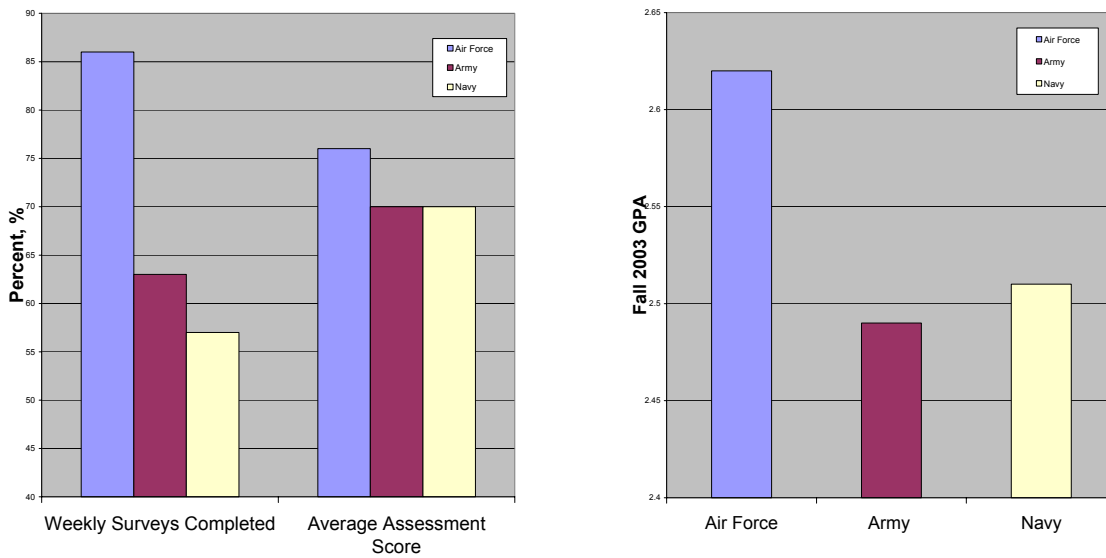


Figure 2: GPA vs. normalized weekly assessment scores



Figures 3 & 4: Comparison of Corps of Cadets efforts by branch in completing surveys, their average survey scores and resulting average GPAs.

Table 3 provides additional information on other campus studies and illustrates that even a short workshop program on key survival skills can provide benefit if it is accompanied by reinforcement to help students develop new habits.

		Fall 2002 GPA	Fall 2003 GPA	% GPA increase	% Retention increase
	2003 Population, n	(control group)	(with Success4Students workshop)		
Texas A&M Corps of Cadets	343	2.45	2.54	3.5	
TAMU Air Force	118	2.45	2.62	6.5	
Baylor Fr. Engineering	65	2.59	3.13	17.3	16
Mary Hardin-Baylor FYE	189	2.86	2.94	3	
Concordia College, MN	102	2.95	3.23	9.1	

**Table 3: Fall 2003 GPAs on several campuses compared to prior year grades for those without the “early engagement” workshop and weekly reinforcement.**

### Comparing Weighting Factors for different campus populations

Similar weighting factors were created for other campus studies to compare to the Corps of Cadets data and provided a rank based on the weighting factor. Initially, we were surprised to find large disparities in the order of importance of key factors by campus and student population as shown in Table 4.

Activity	Rank			Average
	A&M Corps	Baylor	Mary Hardin Baylor	
Prepared schedule prior/early in week	9	13	5	9.0
Update daily schedule	7	8	1	5.3
Followed weekly schedule	6	7	6	6.3
Class attendance	5	1	2	2.7
Sitting in front of class	1	11	4	5.3
Listened actively in class	3	5	7	5.0
Reviewed notes before class	4	12	14	10.0
Read book before material is covered in class	13	9	15	12.3
Stayed current in my understanding	2	4	9	5.0
Treated school like an 8-5 job	12	2	12	8.7
Average hours of sleep	14	6	10	10.0
Total hours spent in class and studying	10	3	3	5.3
Used reading techniques	8	10	11	9.7
Used note taking techniques	15	14	13	14.0
Used memory techniques	11	15	8	11.3

**Table 4: Relative rankings of key weekly assessment items based on their correlation with GPA. Highlighted items have the highest average ranking.**

However, it is clear that each group applies these principles both based on their need as well as the special emphasis of the instructor. For example, the Corps of Cadets students are notorious for being drowsy in class due to their early morning exercises. Therefore, sitting at the front of

the class ranks first in its impact on GPA for these students because it keeps them awake and engaged. It might also be noted that Texas A&M is a state school with large freshmen classes and sitting at the front is of greater importance than at Baylor, with smaller class sizes, where the factor ranked eleventh. Using time effectively during the day (like 8-5 job) and total hours of effort required were of greater importance for the engineering students at Baylor than the more diverse population of Corps students at Texas A&M. When the different campuses were averaged, class attendance was by far the most important factor for academic success. Sitting at the front and listening actively were followed closely by weekly planning and total time spent in class and studying. Interestingly, the study skills taught in the program: reading effectiveness, note taking and memory skills were all ranked low in importance. Possibly, these items require practice to make them effective and were not applied by the students. In some cases, engineering for example, techniques like Mind Mapping and mnemonics will not be easy to apply.

## **Future Work**

We plan to examine the Corps of Cadets data by college major and hours completed during semester to further improve correlation coefficients. The Baylor engineering student data had greater correlation coefficients due to similarities of students in the class making it easier to compare effort as measured by the *Success4Students* assessment. We may also try to use NSSE or CSI survey data, if available, to hold constant factors beyond the scope of the weekly assessment and improve data correlation coefficients. Obviously, based on the scatter in the data in Figure 2 even after accounting for SAT/ACT, high school and high school rank, there are a multitude of factors influencing student success!

## **Summary**

Introducing basic time management and study skills into the freshmen engineering classes can help students to quickly adjust academically to college and avoid changing majors by changing their time management and study habits. One simple approach to teaching time management and study skills to freshmen and helping them develop new habits is to use an “early engagement” approach with regular reinforcement throughout the semester similar to the *Success4Students* program.

There was a 3.5% improvement in GPA for the freshmen Corps of Cadets from F2002 to F2003. The outfits with the highest weekly assessment participation and scores had a 6.5% improvement in GPA indicating the importance of reinforcement. All campus studies had from 3-17% improvement in GPA over the prior year. Class attendance, active participation in class, weekly planning and staying current in understanding of course material had the strongest correlation to GPA. Surprisingly, key study skills had the lowest correlation with performance. Certain factors had high correlations due to the specific needs of that student population. Special emphasis of key concepts rather than a “one size fits all” approach may provide even greater gains in academic performance. Grade incentives/penalties were necessary to keep students on task and provided greater gains in student GPA. Instructor performance and motivation for the subject also appear to play a role in student outcomes.



## References

- 1) University of California System study 1996-1999.
- 2) See National Survey of Student Engagement
- 3) Task Force on Standardized College Admissions Testing, "A Review of the Use of Standardized Test Scores in the Undergraduate Admissions Process at the University of Texas at Austin," Austin, TX: University of Texas at Austin, 2002.