

The Influence of Session Length On Student Success

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Abstract

Do compressed courses of six or eight weeks enable students to have high rates of success? This counter-intuitive idea was examined in a study conducted by Santa Monica College from a database from fall 1994 through summer 1999 consisting of 446,000 student enrollments. The enrollments consisted of more than three-quarters regular semester classes and the rest were eight 6-week or 8-week sessions. Students enrolled in the 6-week compressed sections had higher success rates than those enrolled in the same courses during a 16-week semester. The results for students enrolled in the 8-week courses were intermediate between the two delivery modes. The paper discusses factors affecting the finding including teaching performance, type of course, frequency of class meetings, length of class meetings, type of student, quality of student scholarship, student maturity, student background. Additional research needs to be done to evaluate the impact of compressed classes upon students, especially struggling and at-risk students.

Introduction

Santa Monica College offers a smorgasbord of teaching patterns for many of its courses. The course outlines for these courses, including total class meeting time, information content, and student outcome objectives are kept constant. This means that the material and assignments are presented to students in a compressed format for shorter-term sessions as compared to the traditional full semester format. The classes meet more times per week and the length of each meeting is longer in the short sessions, and students would typically take only one or two courses. Based on enrollment data and other types of feedback, it is apparent that compressed instructional patterns are popular with students. Naturally, the college would like to know whether the teaching patterns serve students equally in meeting their academic needs.

Recently, while monitoring student success measures, Santa Monica College discovered that students have higher success rates in compressed 6-week sessions than in full (16-week) semesters. Although representing a smaller sample size, success in 8-week classes appeared to be intermediate to the others. (Data are recapitulated with Figure 1, column 1).

This result was counter-intuitive for most faculty members. There is a widely and strongly held belief that students, especially struggling students, need considerable time to digest information and incorporate it into their knowledge base. There was a great deal of skepticism about what the observed relationship between student success and session length might mean. Why does this difference exist and is it associated with a positive learning experience? “Academic value” is a very hard concept to measure. However, studies were made testing a number of objectively measurable factors for a relationship with compressed session success. We hope that these might shed light on or help to rule out proposed causative factors.

Methods

The data used for these studies were obtained from searches of the Santa Monica College database from the fall of 1994 through the summer of 1999. The class-based and the student-based data banks were used separately and therefore give different perspectives to the studies.

The total number of student enrollments studied was approximately 446,000. Regular semester classes accounted for 77% of the sample with 15% in 6-week sessions (summer and winter) and 7% in 8-week half-semester and summer evening courses. Enrollments in class sessions of other lengths (of which there were many) were ignored because of small sample sizes. Because the studies compare subsets of the total sample and the college offers far more 16-week and 6-week classes than any other length, many of these studies were confined to a comparison of just the two patterns. However, data from the smaller number of 8-week classes are included where the sample sizes were adequate.

“Success” was defined as earning an A, B, C, or CR in a course. Where W's are reported, they are counted separately and overlap the “no success” group. Grade point averages (GPA) are reported on a 4-point scale in which only whole grades (no plusses or minuses) are recorded.

Statistical significance was calculated at the 95% confidence level. Since nearly all the studies were clearly within this limit, the statistical data are only reported where tests between the null and alternative hypotheses are especially critical.

Results

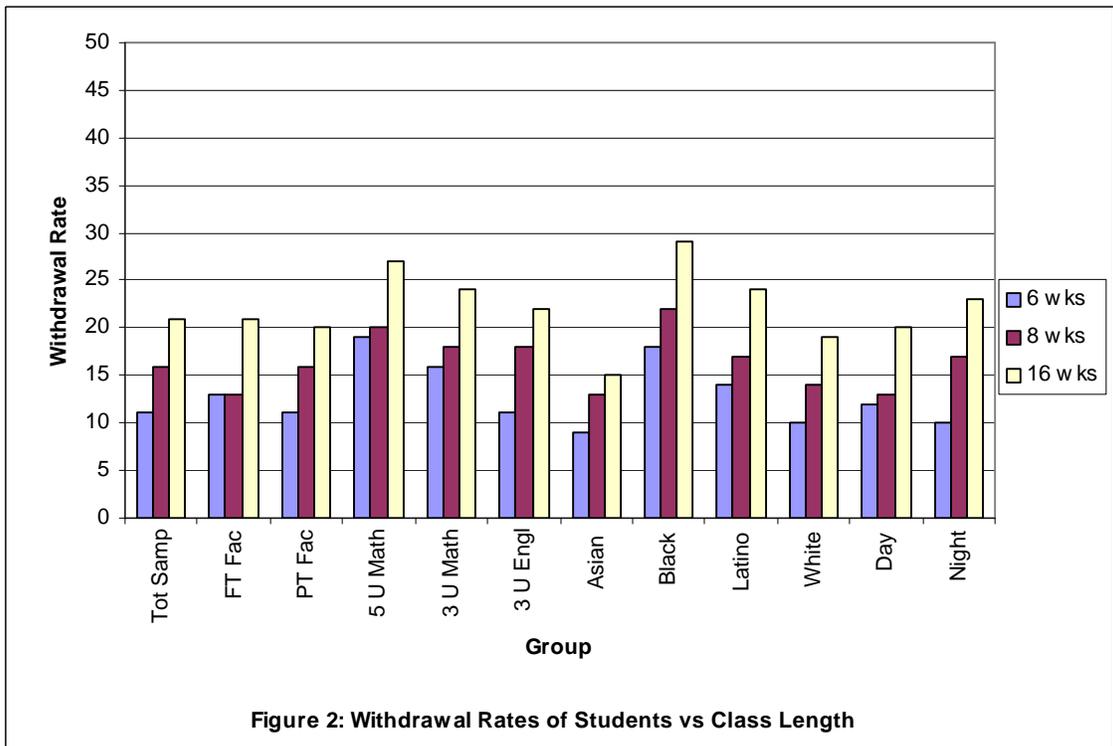
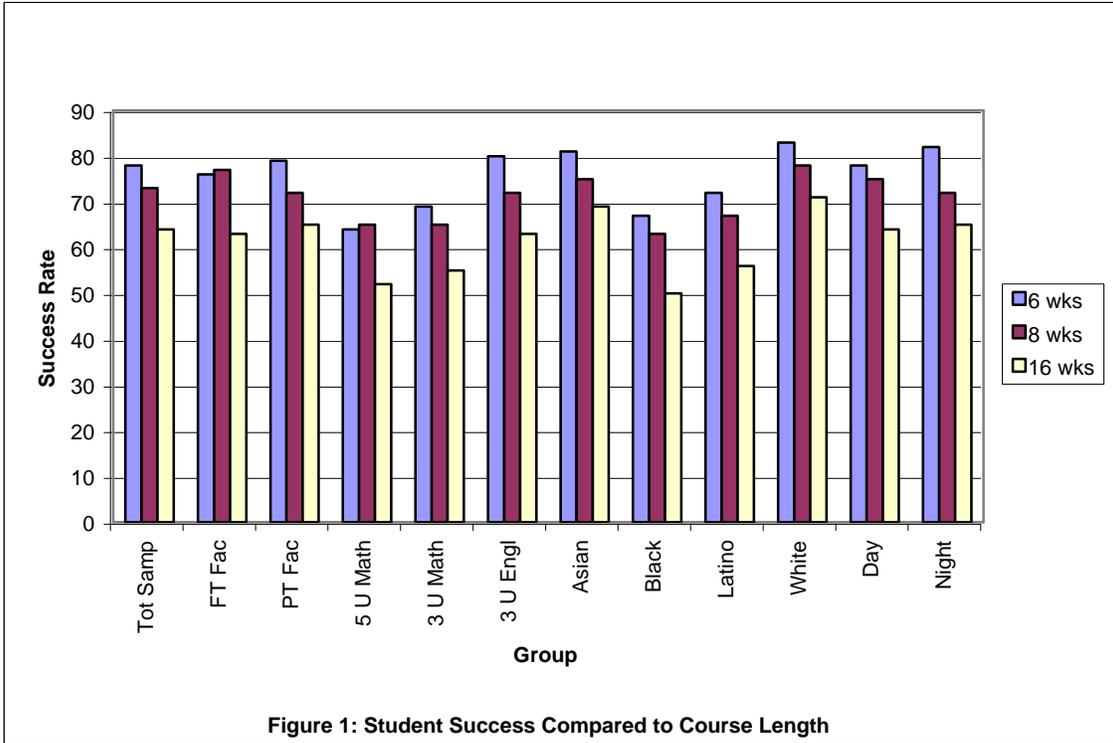
Student Success Rates

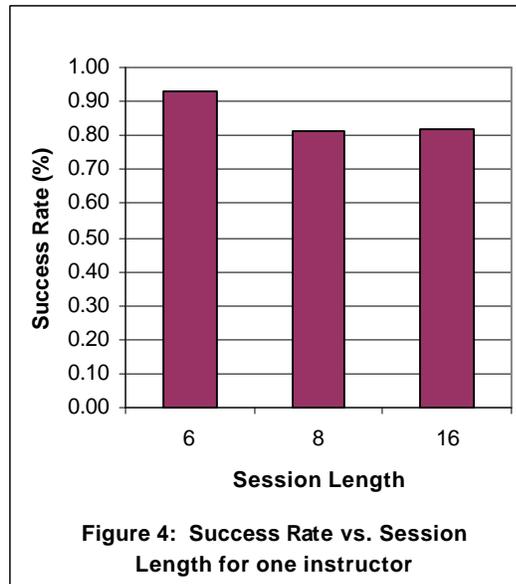
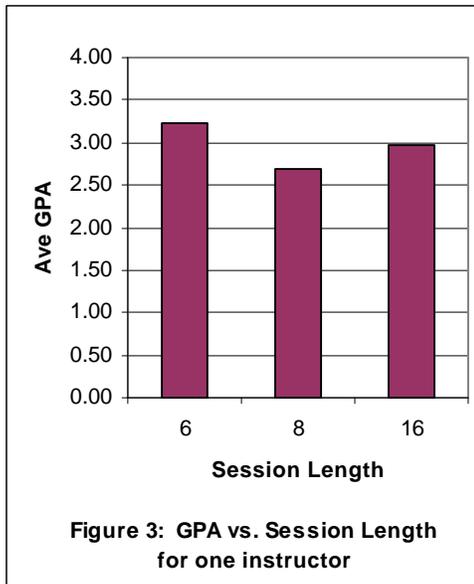
As reported previously, students enrolled in 6-week compressed sections of courses regularly had higher success rates than those enrolled in the same courses during a 16-week semester. The results for 8-weeks were intermediate to these (Figure 1, column 1). Students enrolled in 16-week sessions dropped more courses than those in 6- or 8-week sessions, roughly in inverse relationship to the success rates seen in the same sessions (Figure 2, column 1).

Teaching performance

Did the faculty have different expectations for students in shorter sessions? Perhaps they consciously or unconsciously diluted the course material. Some faculty members reported to us that they changed their presentation and assignment patterns somewhat to accommodate the short time span but did not change course objectives and expectations. Since full-time faculty members frequently teach the same courses in the different sessions, we thought they would be relatively likely to maintain course standards. When we looked at their classes separately (Figure 1, column 2), we saw a success pattern similar to that of the whole sample. Part-time faculty (column 3) separately gave the same pattern.

Another way to ask whether teachers teach differently was to ask whether there is a difference between success rate (A, B, C, or Cr grades) and grade point (GPA) for the course. That is, when more students succeed, do they also receive grades that are higher compared to longer session courses? We looked at the GPA's given by a single instructor who taught large sections of a general education course over several sessions of all three lengths in order to get a reasonable sample size (Figures 3 and 4). Success rates for the 8-week and 16-week sessions were statistically indistinguishable.





However, the 6-week rate exceeded the 16-week rate by a significant margin. However, the grades given by the instructor did not follow the same pattern. Grades in the 8-week session were lower than in the others. That is, a higher success rate could mean that more students complete the course with a low grade in the 8-week sessions. We cannot distinguish between lower passing grades and the possibility that some students did not drop the course as they might have done in a 16-week semester. If these students earned D's or F's, their grades would contribute to the GPA calculation but not the "success" calculation.

We know that our short sessions students are self-selected and suspect that they are better-than-average students, but we believe that our 16- and 8-week samples come from the same population. Therefore, the higher 6-week grades could be explained by a higher scholastic ability. The 8-week class GPA's, though, imply that the grades are not inflated merely because the course meets in a different scheduling pattern, that probably this teacher, at least, is grading according to the same performance standards. Although clearly not definitive, these results imply that similar students receive similar grades in the longer and shorter sessions. The differences in success rates are not readily explained by differences in teaching that result in inflated grades.

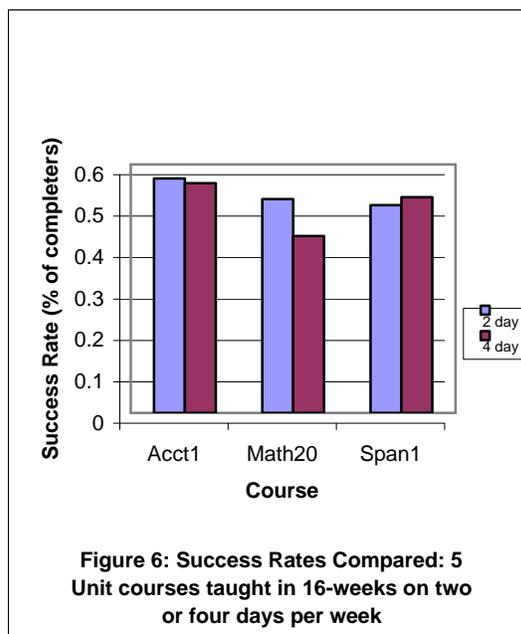
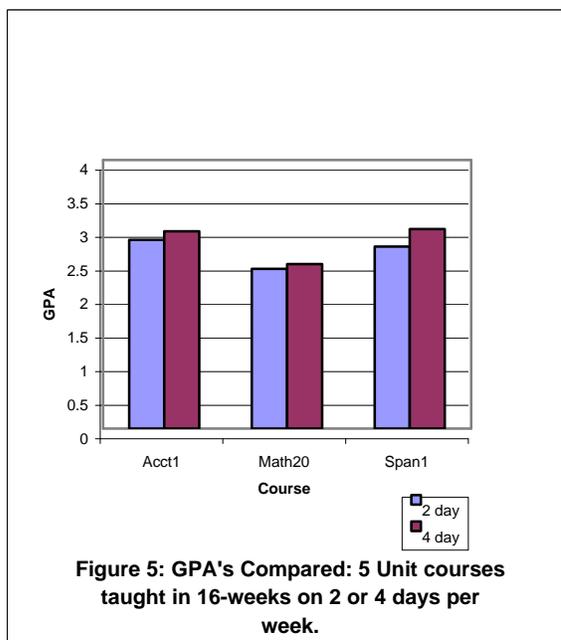
Type of course

By faculty recommendation, some especially challenging courses are not offered in short sessions because of a belief that students cannot learn the material or complete all the assignments effectively. Perhaps our comparison involved a larger number of less demanding courses in the compressed sessions so that these were over-represented in the data. We chose 3 unit English and 5 and 3 unit math courses as examples of challenging courses that are offered in all session lengths and also have large sample sizes (Figure 1, columns 4-6). The inverted relationship between success and session length appeared again. Other course studies, including 5-unit chemistry lab courses, gave similar results, but are not shown because their smaller sample sizes did not allow for statistically reliable interpretation. Since all types of courses examined

exhibit the same characteristics, it seems that success rates are not simply explained by students taking easier courses.

Frequency of class meetings vs. length of each meeting

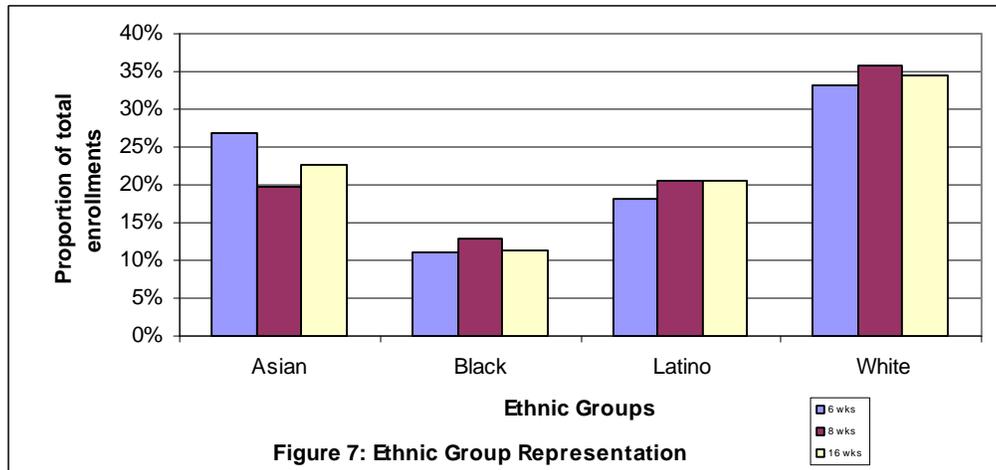
Compression patterns usually increase both the length of each class meeting and the number of meetings per week. Is one of these more significant in helping students than the other? In an attempt to compare just these two variables, we looked at three 5-unit courses taught in the regular 16-week semesters that had some sections meeting 4 days per week and others meeting 2 days for twice as long per meeting. The success rates show that students who meet for two days per week successfully complete the course more often for Accounting and Math, but not for Spanish (Figure 5). On the other hand, the GPA's are significantly higher in these three courses if the classes meet more times per week instead of for longer class meetings (Figure 6). This result suggests that both types of compression contribute to student success but that meeting for more days per week might be better for student learning.



Type of Student

Perhaps short sessions benefit some groups of students more than others. We looked at the success rates for the four major ethnic groups, and for day and evening students. The correlations observed were similar to all the other groups (Figure 1, columns 7-12).

Perhaps different session lengths select for certain ethnic groups. Perhaps the comparisons we have been observing represent different student compositions. We tested enrollment patterns for the four major ethnic groups and were able to verify that each was represented in roughly the same proportions in all sessions (Figure 7). The data do not represent significantly different ethnic mixes.

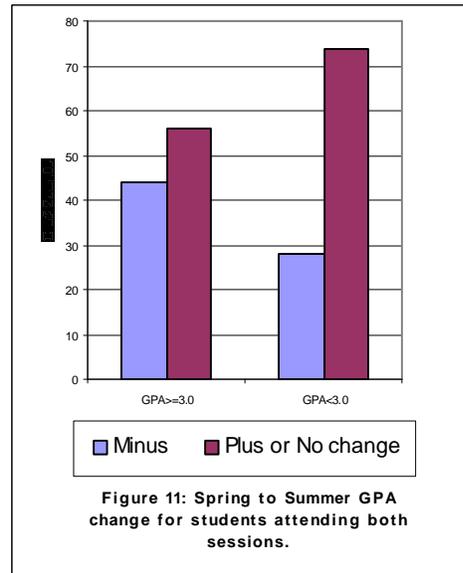
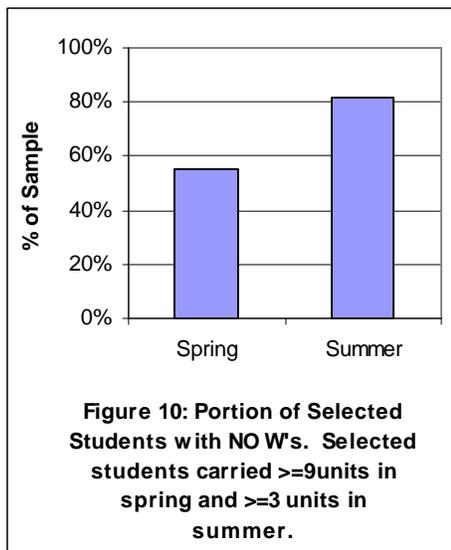
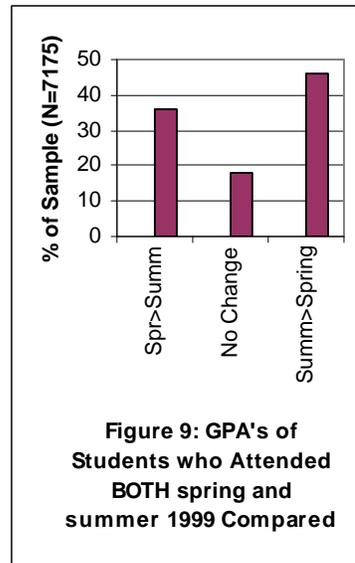
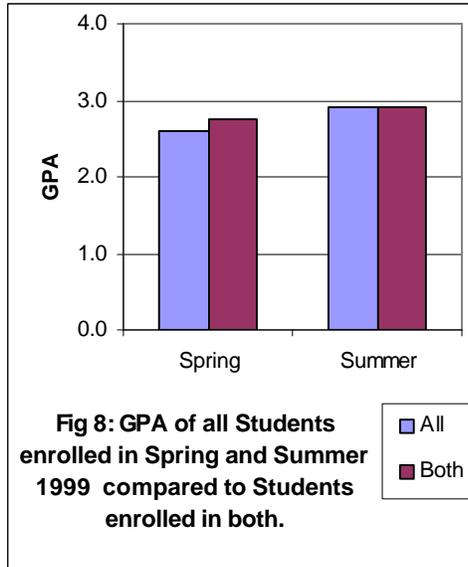


Quality of student scholarship

Many faculty members have the impression that short session students are better scholars than the average in the longer semesters. Perhaps good students are over-represented in the short session data. For this study, we turned to student enrollment and grade records and specifically to the spring semester and summer session of 1999. We identified 7,175 students who enrolled in both sessions. They composed about one-third of the spring semester student body and definitely had a higher average GPA than the average for all students enrolled (Figure 8). There is no question that students who enroll in both spring semester and summer session earn considerably better grades than the average of all students in a spring semester.

The GPA of our study group was approximately equal to that of all students enrolled in summer school (of which they comprised about half). Evidently only better students from all sources choose to enroll in compressed sessions. This could also explain the success differences between 16- and 6-week formats noted above.

However, the majority of students who enrolled in both spring and summer sessions had a higher GPA and a lower drop rate for their summer work than for their spring work (Figures 9 and 10). That is, the average GPA went UP and the W rate went down with the shift in scheduling patterns. This result does not rule out the possibility that students take easier courses during the short sessions. Nonetheless, it surely implies that the higher success rates and GPA's observed for short sessions must be composed of a combination of enrichment for better students AND having most students do better work than they would otherwise.



Relationship between GPA and success in compressed sessions

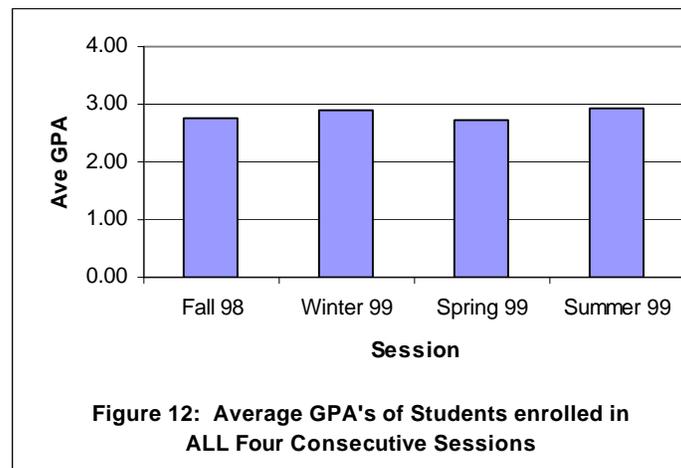
We noticed that students with low GPA's (below 2.0) generally choose not to enroll in the 6-week sessions. Do these students recognize something about what would be required of them that causes them to opt out? Some instructors and counselors reported that they advise poor students to stay away from the compressed sessions because they believe the students cannot learn as well in that format.

We did not have enough data to separately test the GPA's of students enrolled in the 8-week sessions. However, the single instructor data in Figure 3 imply that poorer students do enroll and that they succeed more often while still earning low grades.

We can ask whether compression helps students with high GPA's MORE than those with lower ones if we stick to the upper ranges of GPA. We separated our spring/summer study sample into roughly two halves, those who earned above and below a 3.0 GPA in their spring semester classes, and asked whether their summer grades were higher or lower than in spring (Figure 11). For a large majority, the summer GPA was the same or higher than in the spring, AND students with a lower than 3.0 improved their GPA much more frequently! Of course, students who already earn high grades have little room for improvement, so we have not identified a significant change in their performance. But the fact that most B and lower students improve GPA's is surely encouraging to those looking for ways to improve student performance. These grades also represent a higher proportion of courses completed (Figure 10). We don't know all the reasons that students drop classes, but if it is because of scholastic difficulties, they are less affected by these difficulties when taking fewer courses in the compressed format.

Student maturity

Faculty members agree that maturity helps students become better scholars. Perhaps our samples received higher GPA's in short sessions just because they happened to take those sessions later in their college careers? To test this idea, we followed a group of 3,722 students who enrolled in four sessions: fall 16-week, winter 6-week, spring 16-week and summer 6-week. Their GPA's went up and down by a statistically significant amount with the session lengths (Figure 12). Therefore changing maturity does not account for the better performance in short sessions.



Retention of knowledge

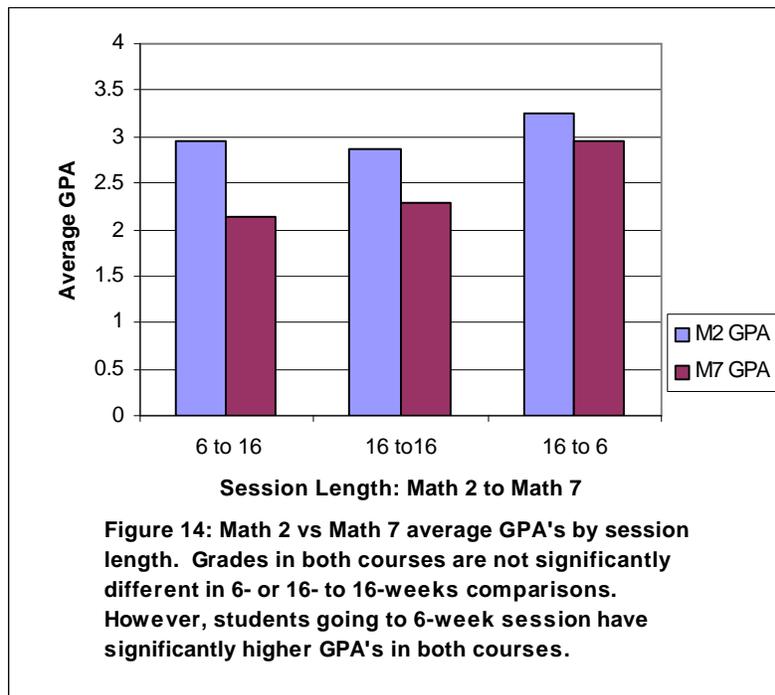
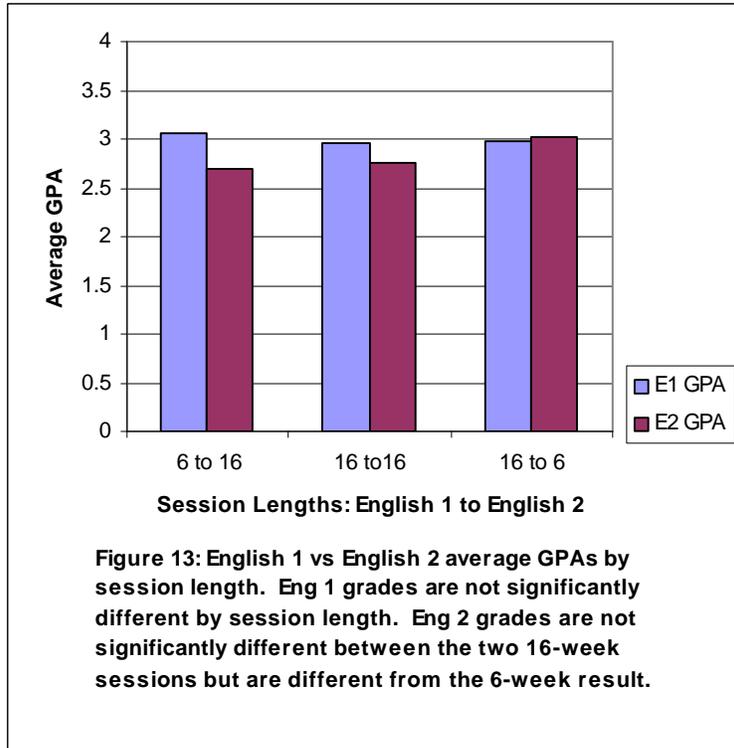
Perhaps most important in asking about the academic quality of courses offered in compressed sessions is to ask whether students perform very well in courses over the short term because there is less time between learning and testing to forget material. Do students learn and retain the knowledge for use in future classes equally in the different length sessions? For this question, we looked at students who enrolled in sequential English (English 1 and English 2) or Mathematics (Math 2 and Math 7) courses in adjacent sessions. Did the term length of the first course have an effect on their grades in the second course?

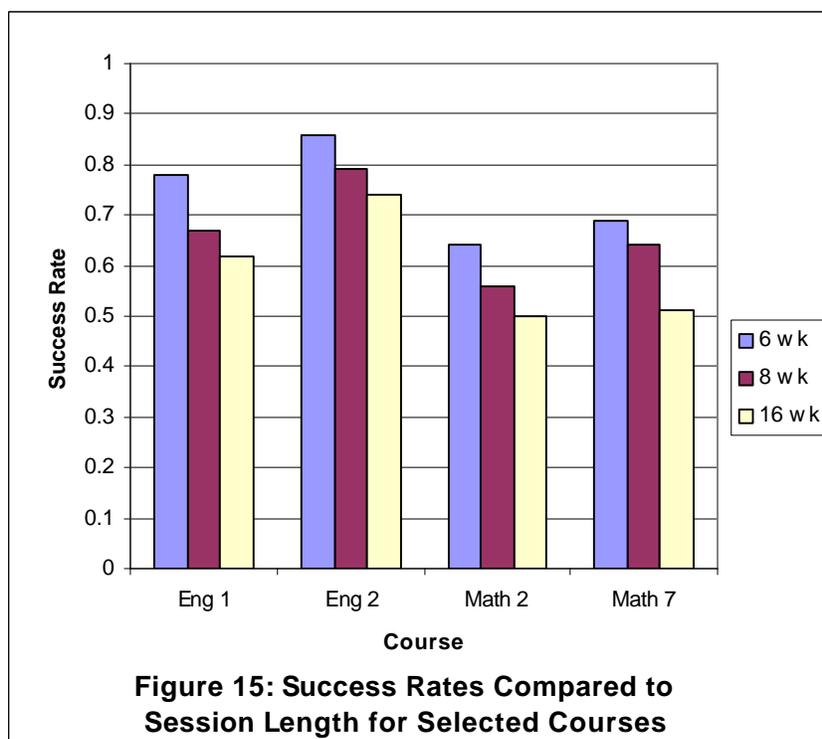
The group of students we studied in English courses (Figure 13) had statistically indistinguishable GPA's for English 1 (the first course) no matter what type of session they completed it in. That is, we apparently compared students of more-or-less equivalent scholastic success. If students took English 2 in a 16-week semester, their second course GPA's were indistinguishable whether they took English 1 in 6- or 16-weeks. The students in this study again had equivalent scholastic success. However, students who took English 2 in 6 weeks (and this sample all took English 1 in 16 weeks) had second course GPA's that were significantly higher than those of students who took the second course in 16 weeks.

The mathematics comparison (Figure 14) gives similar results with one exception: only better-than-average Math 2 students chose to take Math 7 (the second course) in a six-week session. Other sequential course pairs were studied and gave results similar to those seen in Math and English. They are not reported here because of their small sample sizes.

This result seems to indicate that compressed sessions do not hurt the future performance of students. The GPA's earned in the second course apparently show that students can learn and use the material equally well in a sequential course taken immediately whether the first course was taken in 6- or 16-weeks. Performance in the second course supports the previous results that show that students earn better grades in the 6-week sessions.

For all four of the courses studied, the overall success rates in the courses obtained from class schedule data shows the same relationship between success and session length that appeared in all the other comparisons (Figure 15 compared to Figure 1). However, the continuing students in our study had 6-week and 16-week GPA's in their first courses that were indistinguishable. This may be further evidence that, while success rates increase with course compression, the grades earned are not inflated relative to student future performance.





Discussion

Why is student success enhanced by the compression format of offering courses? The studies here all examine factors that might explain this difference and the only variable that might distinguish the results on anything other than session length was the data on class meeting frequency. This leaves us with the counter-intuitive conclusion that compressed sessions might just be better learning formats than long semesters, at least for good students. Are they actually of higher "academic quality"? The question deserves a great deal of attention. In order to help direct future inquiries, we informally polled our faculty and have combined our own speculations with theirs.

“Bonding” and other types of commitment to classes

When interviewed, nearly all faculty and students mention that some kind of cohesion develops in compressed classes that is accompanied by a kind of intense mental involvement. Students tend to become better acquainted, to work together more often, and to pursue understanding of course material more avidly. Faculty members often report these as personal experiences in their own educations. Nearly everyone describes these as very positive, sometimes unforgettable, experiences. It is mentioned so often, that surely it must be related to the observed improvement in student success.

The idea that study groups help students to learn, to stay on track, and to be committed to attending class is not new, but perhaps it happens more naturally under the “battle conditions” of compressed classes. Short-term sections of classes meet nearly every day and tend to be smaller than full semester sections. Perhaps students get acquainted quickly and can’t help talking about

classroom events. Probably class discussion topics are continued right after a break or the very next day so that students remember better or have less time to get distracted by other life interests. Probably students feel greater pressure to study every day since classroom discussions move on and they are aware of the shortage of time.

Conversely, perhaps it is difficult to maintain interest in classes toward the middle or end of a 16-week semester. If students have missed classes or gotten behind in the work, they might not understand class discussions and become bored. If there is a low level of commitment to the class material, other class members, or the teacher, students might have little incentive to work hard or to attend. If they get discouraged and see no obvious way they can improve, they might decide to drop. Again, in the informal surveys, both faculty and students describe evidence of such behavior. The intuitive observation is that students simply commit less of themselves to full semester courses.

Students who earn low GPA's and frequently drop classes might fall victim to the paths toward non-success more readily than the better scholars who typically enroll in compressed sessions. Perhaps faculty and students notice the short session pattern of intense behavior so frequently because a larger proportion of the class is involved. Or maybe these good students initiate the pattern when conditions are right, such as small groups thrown together frequently with a common task to perform.

What would happen to a struggling student who wound up in a compressed class? Would that person become caught up in whatever social pressures help to construct a cohesive class unit? Would such students surprise themselves with their level of work, commitment, and interest? Maybe we should try some experiments; we could design courses and scheduling patterns to deliberately attempt to get poorly performing students into compressed instructional formats.

Another possibility is that students just get tired of sustaining high levels of work for long periods of time. The rate at which students drop out seems to reflect the length of the session. Reportedly, drops are frequently caused by life events beyond the control of students such as changes in family, work or living situations. By probability, there is more time for such events to arise in 16 weeks than in six. Conversely, perhaps six-week students feel able to stave off such situations or to bear with them because the length of time they need to cope with both is clearly limited. If these are important factors, perhaps part of the success we see in short sessions is due to the ability of students to sustain the effort for at least that long. We should pay attention to students who take back-to-back compressed sessions. Does the pattern of success hold up in the second or third session?

Degree of compression

Our data show a declining trend in success rates when comparing 6-, 8-, and 16-week sessions. (We did not compare data from colleges using the quarter system since we believe our compressed formats probably do not correspond well with them. Most quarter systems seem to present courses at a frequency and length of meeting times more like our semesters. Only the length of the overall sessions corresponds to one of our variables.) Can we extrapolate this trend to even greater degrees of compression? What would the success curve look like below 6 weeks?

Surely there is some length of session that is just too short for students to learn much. Since these are compressed classes that meet for a standard amount of class time, the shortest period for which a three-unit course could meet would be 54 consecutive hours—about two and a half days. Intuitively we think this could not possibly be a good teaching format! When would students study or complete out-of-class assignments? We will assume that very short sessions would have a very low success rate. This suggests that a curve of success rates vs. session length should give an optimal probability curve. But where is the peak for optimal success?

For the courses we studied individually and collectively, the 6-week sessions had a higher success rate than 8- or 16-weeks. However, it is not clear that all courses would exhibit this pattern. When we attempted to separate out certain courses, we chose those with large enrollment, most of which were general education classes with no formal lab component. Would laboratory courses or those emphasizing skills development have a different pattern? Would a person learning keyboarding or a language, or concentrating on cognitive skills find different benefits from various scheduling patterns? We would need to know much more in order to use data alone in planning. We need to be very careful to temper applications of these results by using our professional judgment and experience.

Conclusion

The data reported here repeatedly support the idea that students perform better (in retention, success rate, and GPA) in 6-week compressed sections of classes than they do in 16-week, full semester sections, and they appear to use the material at least equally well in subsequent semesters. Although some of our data suggest that frequency of meeting time is related to the success patterns, we don't know how important that variable is alone. We also don't know if these results would hold for all degrees of compression, for all types of courses, for all types of students, or for compressed sessions taken back-to-back. We don't know if compression can be used as a technique to help improve the performance of struggling students. It seems prudent and timely to conduct more experiments to develop understanding of these issues. However, objective techniques are not readily available to help us evaluate all of them or all types of applications of them. Therefore we must continue to use professional judgment for each course, student, or faculty member, along with the data, in order to carry out intelligent and useful educational planning.