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Testing Parkinson's Law in Auto- and Manually Graded McGraw Assignments

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Constantine Mantis taught this course with Dr. Gregory Welk as part of his Ph.D. training and used the experience in the course to address a novel instructional research question, which is described in this paper. There are no conflicts of interest.

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Abstract

According to Parkinson's law, individuals tend to spend all the time they have available to complete a task without producing better results. The purpose of this study was to test Parkinson's law in McGraw assignments in a university course. One group of students had one week to complete their assignments, while another group of students had two weeks to do so. Students took four types of assignments (quizzes, videos, applications, labs) on a weekly basis for 15 weeks. The results supported Parkinson's law when assignments were auto-graded (quizzes), or manually graded (videos, applications) by different instructors in the two groups. When assignments (labs) were graded by the same instructor in both groups and students had two weeks to complete them, grades tended to be lower, $t(104) = 1.929$, $p = .057$, with $M (SD) = 91.26 (10.01)$ for one week, and $M (SD) = 87.17 (11.24)$ for two weeks. These results indicate that providing additional time to students to complete their assignments does not bring better results.

Keywords: Parkinson's law, deadlines, time limits, time pressure, job performance

In higher academic education, new teaching methods (e.g., flipped classroom, Top Hat, team-based learning, etc.) appear to meet the goal of improving students' performance. No matter how effective such methods can be, it is also important to provide reasonable deadlines so as students can meet instructors' expectations, and be successful. Then, the question that arises is if students have more time, will they perform better? This study tried to answer this question.

According to Parkinson's law (1955) "Any project will expand with the time available to complete it... without producing better results." Several studies have

validated this law. For instance, Peters, O'Connor, Pooyan, and Quick (1984) tested 164 individuals who worked on managerial and non-managerial jobs, and found a small but positive relationship between time pressure and performance, but the time constraint was mild. Under severe time constraints, however, their performance could have decreased. Kamma, Geetha, and Neela (2013) tested the productivity of participants who worked on software projects for six months. They allowed them 33% less time than expected to complete the assigned task. The results showed a 15% increase in productivity without decreasing the quality of their work. Jochimsen (2007) tested Parkinson's law in 400 vehicle registration offices in Germany, and found that offices with more staff did not produce higher quality services; and when they subdivided their service into smaller pieces, the quality deteriorated. Parkinson's law has not yet been tested in academia, and therefore this study tested the application of this law in a new area.

Purpose and Hypothesis

The purpose of this study was to test Parkinson's law in McGraw assignments in a university course. It was hypothesized that students would not perform significantly differently when they had one or two weeks available to submit their assignments.

Method

Participants

The sample included 123 undergraduate students enrolled in an undergraduate Kinesiology course at Iowa State University in the fall ($n = 53$) and spring semester ($n = 70$) of the academic year 2016-17. The fall group had one week, and the spring group had two weeks to complete their assignments.

Procedure

Participants took four assignments (quiz, video, application, lab) on a weekly basis for 15 weeks. Each assignment weighted 100 points. Students were excluded from analysis if they had a total score less than 900 out of 1,500 points (grade D) in each type of assignments at the end of the semester. The final sample included 44 students in the fall, and 62 students in the spring semester. Weeks 2, 3, 4, 5, 12, 14, and 15 covered two chapters, while the rest of the weeks covered one chapter. In the fall semester, the course was taught by a teaching assistant (henceforth "Instructor F"), while in the spring semester, it was taught by the regular instructor (henceforth "Instructor S"). Instructor F allowed students only one week to complete the assignments, while Instructor S allowed students two weeks to complete them. Quiz assignments were auto-graded, while the other assignments included both auto- and manually graded questions. Instructor F graded the fall semester assignments and the spring semester lab assignments. Instructor S graded the spring semester video and application assignments.

Measures

Quiz Activities. Quizzes included 10 multiple choice questions, they were auto-graded, and students had three chances to take them.

Video Activities. Video assignments involved watching short two- or three-minute videos and answering matching questions as well as 2-3 essay questions where students provided their own perceptions and comments to indicate their understanding of the key points.

Application Activities. Application assignments asked students to apply principles or ideas covered in the chapters.

Lab Activities. Some lab assignments asked students to completed simple surveys while others asked them to evaluate their fitness levels or monitoring their diet or activity levels. The focus of these assignments was on how students interpreted their scores.

Results

This study found that students who had two weeks available to complete lab assignments tended to perform statistically significantly lower ($M = 87.17$, $SD = 11.24$) at the end of the semester compared to students who had one week available to complete the assignments ($M = 91.26$, $SD = 10.01$), $t(104) = 1.929$, $p = 0.057$. For the rest of assignments (quizzes, videos, applications), no statistically significant differences were found (see Table 1) although the patterns were not consistent across the 15 weeks (see Figures 1-4).

Table 1

Means and Standard Deviations of Students' Performance When They Had One or Two Weeks to Complete Their Assignments.

Type of Assignment	Fall (1 week)		Spring (2 weeks)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Quizzes	86.46	10.45	86.26	10.64
Videos	91.75	8.70	91.95	7.08
Applications	90.28	9.83	90.86	8.06
Labs	91.26	10.01	87.17	11.24

Note. In the fall, students had one week to complete the assignments, while in the spring they had two weeks to complete them.

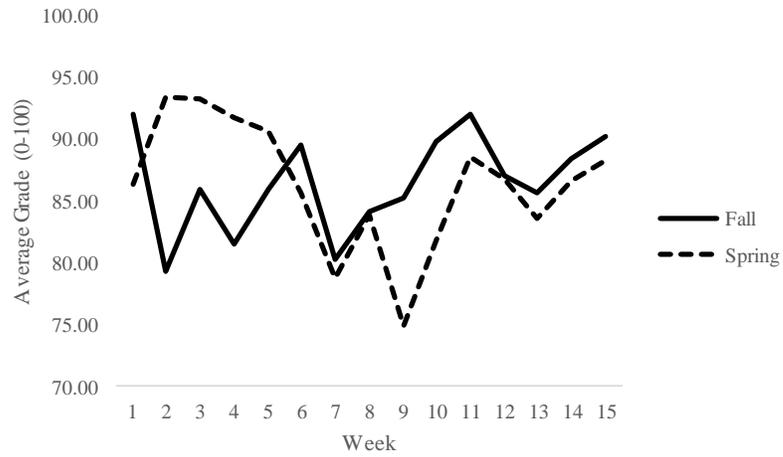


Figure 1. Average grades on students' quiz assignments in the fall and spring semesters.

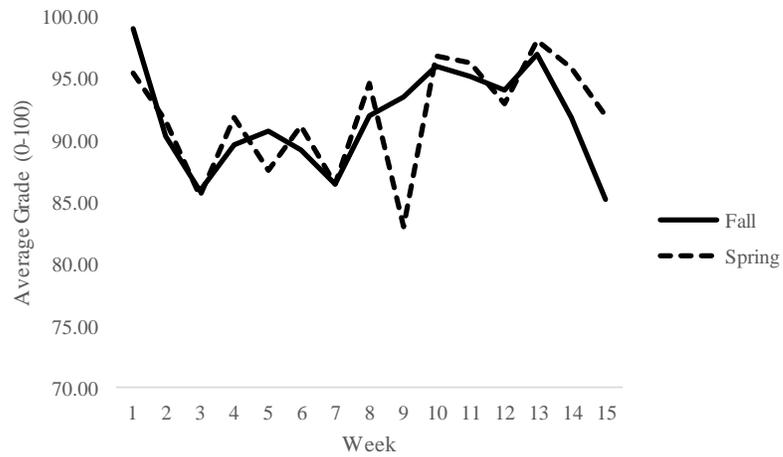


Figure 2. Average grades on students' video assignments in the fall and spring semesters.

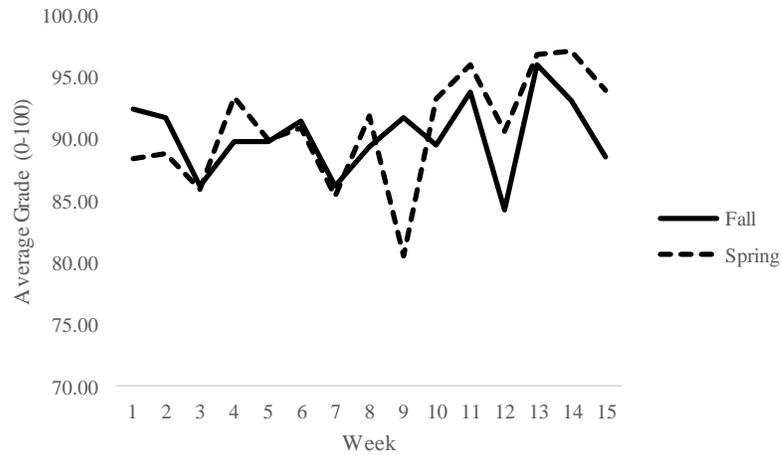


Figure 3. Average grades on students' application assignments in the fall and spring semesters.

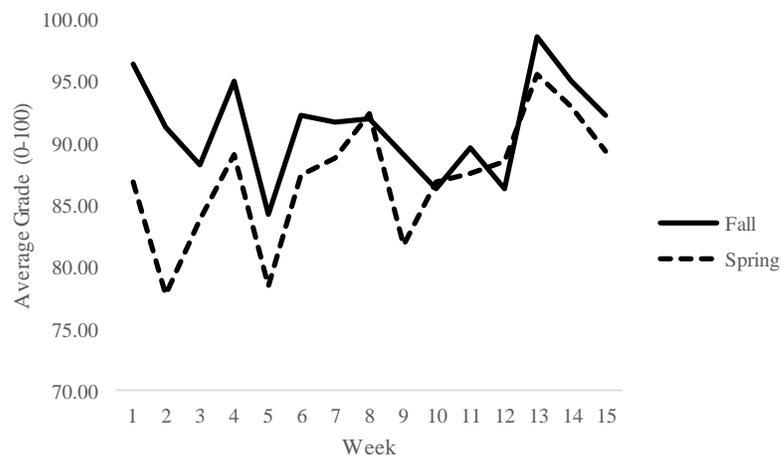


Figure 4. Average grades on students' lab assignments in the fall and spring semesters.

Discussion

The results supported Parkinson's law according to which additional time for completion does not lead to better results, but it just expands the assigned task to fit within the available timeframe allowed for its completion. Either students had one or two weeks for the completion of their weekly assignments did not improve their grades. To the contrary, in the lab assignments, students performed worse when they had two weeks

available. For the rest of the assignments, no significant differences were found. Regarding the lab assignments, a potential explanation is that they were the only assignments that were graded by the same instructor in both semesters. Future research could test Parkinson's law in different disciplines and schools to further validate it across a great variety of university courses and regions. Overall, these results show that Parkinson's law works in McGraw assignments when they get prepared and graded by the same instructor in a Kinesiology course at Iowa State University.

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