

Coupons for Success: A Marketing Incentive in Academic Support

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Abstract

How does a Coupon Incentive Program motivate students to seek academic support in high-risk courses? Results from this study demonstrated that the Coupon Incentive Program was effective in motivating voluntary student attendance and improving student outcomes. Recommendations related to implementation of the Coupon Incentive Program are discussed.

***Keywords:* reward, motivation, academic support, Study Group, academic performance**

Introduction

A primary dilemma in academic support is the ability to motivate students to seek academic intervention early in the semester before they are in academic jeopardy. This need is particularly important for students in "high-risk" courses who are not cognizant of and/or prepared for the demands of higher education.

Extrinsic motivation in the form of salaries, bonuses, commissions, promotions, and prestige is a form of encouragement used in society to improve behavior. It is also widespread in higher education in the form of scholarships, awards, and grades. However, there is controversy over the use of incentives to motivate learning in that some academicians believe that students should be intrinsically self-motivated to learn, rather than extrinsically motivated.

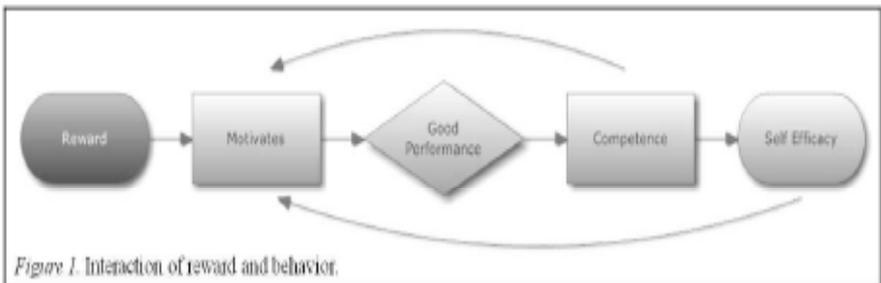
This paper reports the efficacy of using an extrinsic incentive program in academic support to increase the academic performance

of students. Within this discussion, student performance outcomes will be reported and recommendations will be made relative to the program factors used to influence this effectiveness.

Theoretical framework of the Reward Mechanism

The relationship of influences capable of affecting motivation and self-regulation in learning has been debated extensively. Eisenberger and Cameron (1996) suggested that “a tangible reward that one perceives as being deserved for successful performance of an activity is likely to maintain or enhance the perception of self-competence” (p. 1164). Alternatively, Stage (1996) addressed the reciprocal relationship of success, self-efficacy, and motivation reporting that as “students’ beliefs about themselves become increasingly positive, their motivation to perform and, ultimately, [their] performance are enhanced” (p. 230). He proposed that the development of self-efficacy for college students is related to their previous conceptions of ability, social environment, progress feedback, and perceived controllability. Driscoll (2005) further suggested that a “strong source of motivation comes from learners’ beliefs about themselves in relation to task difficulty and task outcome” (p. 316), implying students’ beliefs that they are capable of satisfactorily achieving task expectations is important in motivating them to pursue a task.

Based on the literature (Driscoll, 2005; Eisenberger & Cameron, 1996; Stage, 1996), reward, motivation, performance, and self-efficacy can, therefore, be perceived as a cycle of interacting mechanisms that are capable of sustaining a behavior when supplemented with the correct learner, social, and instructional variables (Figure 1). That is, when properly selected, rewards or incentives have the capability of motivating a behavior. As a result of performing that behavior, a student will experience either a good or bad outcome (performance). If the outcome is positive, student self-efficacy and competence will be positively affected and the student will be motivated to attempt the behavior again. The focus of this paper will be directed to research which elucidates how rewards can be used to maximize the utility of the proposed model for academic support.



Rewards

A well-run rewards system has the ability to encourage both workers and students to accept tasks, set goals, and invest time that they might not accept or set on their own. Covington and Müller (2001) aptly stated that intrinsic motivation “does not operate in a reward vacuum. Human beings always anticipate some payoff for their actions, intrinsically driven or not” (p. 162). The practice of using incentives to increase academic performance and task interest has been well-documented both in the literature (Schunk, 1984; Eisenberger, Rhoades, & Cameron, 1999; Harackiewicz & Manderlink, 1984) and experientially in the classroom (Haywood, Kuespert, Madecky, & Nor, 2008; Ash, 2008; Reeves & Taylor-Cox, 2003; Spencer, Noll, & Cassidy, 2005).

Performance

When higher rewards were given for a greater skill (performance), Rosenfield, Folger, and Adelman (1980) observed that the intrinsic motivation of subjects was greater. In corroboration, Eisenberger, Rhoades, and Cameron (1999) reported that “Reward for high performance increased perceived autonomy and intrinsic motivation among college students who were given a novel task” (p. 1036). In explanation, Eisenberger, Pierce, and Cameron’s (1999) meta-analysis suggested that “reward procedures requiring specific high task performance convey[ed] a task’s personal or social significance, increasing intrinsic motivation” (p. 677).

Task Interest

It has been proposed that (a) reward can increase or maintain a participant’s interest in the activity and (b) reward can also influence the participant’s behavior after initial task interest has faded.

In support of proposition (a), above, meta-analyses have been conducted on the topic of reward and task interest (Cameron, Banko, & Pierce, 2001; Deci, Koestner, & Ryan, 1999; Tang & Hall, 1995). Furthermore, Harackiewicz and Manderlink (1984) found that “the promise of performance-contingent rewards significantly enhanced interest, relative to no-reward controls receiving identical performance feedback” (p. 531). In a later study, Hidi and Harackiewicz (2000) observed that

a combination of carefully administered external rewards and situationally interesting activities may be one of the most realistic approaches to educational intervention. If students become engaged in academic tasks, there is at least a chance that genuine interests and intrinsic motivation will emerge. (p. 159)

Regarding proposition (b), Covington and Müller (2001) suggested that if the activity is found engaging, extrinsic rewards can support intrinsically oriented activities and may reinforce intrinsically oriented behaviors.

Reward Value

Rosenfield et al. (1980) found that greater rewards (in terms of payment given) for greater skill "led to a greater willingness to work on the task in the future, greater liking for the task, and more free time spent playing with the task than did low pay" (p. 374). The authors suggested that greater reward indicated greater competence and, consequently, greater intrinsic motivation. In a later study, Akin-Little, Eckert, Lovett, and Little (2004) proposed that "Rewards that communicate task performance and satisfy needs, wants, and desires can increase intrinsic motivation, whereas rewards that convey a message that the task is extraneous to needs, wants, and desires may decrease intrinsic motivation" (p. 349).

Timing and Frequency

Research has provided evidence that the frequency of a behavior is more likely to result from repeated administration of the reward (Carton, 1996; Skinner, 1938) and reward-behavior proximity (Carton, 1996; Skinner, 1938; Thomas, 1981, 1983). In corroboration of the latter, when Hitt, Mariott, and Esser (1992) investigated the effect of reward timing relative to task interest, it was found that undergraduate students asked to perform tasks of low interest for a minimum of ten minutes spent additional, voluntary, time in immediate-reward conditions compared to students in the delayed-reward and students in the no reward conditions. Furthermore, students asked to perform tasks under delayed-reward conditions spent additional, voluntary, time on tasks of low interest, compared to students in the no-reward control.

Incentive Type

In a classic study, Lipe and Jung (1971) outlined a wide range of incentives, including material incentives, social incentives (praise, social pressure), knowledge of results (corrective feedback), secondary reinforcement (tokens, tickets, points), vicarious reinforcement (reward for a behavior), and aversive incentives (reprimands, disapproval), that are still used in education today, along with grades, scholarships, and financial assistance. Lipe and Jung (1971) further observed that the

Secondary incentives appear to be as effective as material or social incentives in influencing behavior, once a system for their delivery and exchange has been established. The additional value of secondary reinforcers is their flexibility. They can be adapted in countless ways to be both convenient and effective. (p. 260)

Coupon Incentive Study

The Coupon Point program was constructed based on the theoretical framework of the reward mechanism and modeled after the highly

successful \$6.6 billion coupon industry (Sloan, 2008). Similar to the marketing model, these Coupon Points (product discount) were exchanged for a cost (active participation in a Study Group). Since these points were a secondary incentive, professors were able to establish a rate of exchange for these points based on class and/or program needs.

Study Group

The success of Study Groups in promoting student achievement has been well documented (Potacco & DeYoung, 2007; Light, 1990, 1992; Martin & Arendale, 1990, 1992, 1994; Matyas & Malcom, 1991). Effectual groups can help learners satisfy social needs, such as camaraderie (Bowman, 2007), connectedness (Ryan & Deci, 2000), and increased engagement (Johnson, Johnson, & Stanne, 1985; Akey, 2006), thereby helping students continue participation or task persistence within the group (Eisenberger, Kuhlman, & Cotterell, 1992). Within our Study Groups, study skills were developed; content discussed; and feedback were provided by positive role models. As facilitators, Group Leaders empowered students by showing them how to learn through peer teaching and teamwork. In agreement with previous findings (Benware & Deci, 1984; Dansereau, 1988; Devin-Sheehan, Feldman, & Allen, 1976; Newbern, Dansereau, Patterson, & Wallace, 1994; Slavin, 1996; Webb, 1989, 1992), we found that group learning has many benefits, including the understanding and reinforcement of concepts, the development of self-esteem and increased confidence.

Purpose

The purpose of the current study was to determine the effects of the Coupon Incentive Program and Study Group attendance on student grade performance and to identify factors influencing the Coupon Incentive Program's effectiveness. Four research questions were evaluated:

1. To what extent does the Coupon Incentive Program Motivate Study Group attendance?
2. What is the effect of this Study Group attendance on the first exam performance?
3. Is Study Group attendance still effective after the first exam if students have not previously chosen to attend a Study Group?
4. To what extent does exam failure motivate a student to choose the Study Group/Coupon Incentive Program option?

Methods Subjects

A total of 311 students at a metropolitan, state university participated in this study. The students were enrolled in nine sections of a Basic Anatomy and Physiology I course populated by Kinesiology majors and seven sections of a General Anatomy and Physiology II course consisting of Nursing majors. Both of these courses are considered high-risk based on the proportion of students who historically receive a failing grade. These courses were taught by two different professors. Data was collected for three semesters.

Procedures

Information about the Coupon Incentive Program was provided to students in each course section by both a Coupon Program representative and the course instructors. Additional program information was provided through flyers, brochures, and the university's website. Study Groups were used to provide academic support. Study Group facilitators were undergraduate upper level Biology or Nursing students who had taken at least one year of Anatomy and Physiology.

Program administration

Students were required to sign a "Study Group Sign-in" Sheet and a "Lecture Tutoring Coupon". Student names on the "Sign-in" sheet were entered into a dynamic database to provide professors and staff with real-time information of student attendance. The "Lecture Tutoring Coupon" was submitted by students to their professors in exchange for exam points.

Since this program impacted students' grades, it was critical to implement appropriate security measures. Red ink was used for signatures and the "Lecture Study Group Sign-In Sheet" and "Lecture Tutoring Coupon" were color-coded to prevent Coupon photocopying. Each Study Group session was documented with two signatures, the tutor's and the director's; student attendance was entered into the database by office staff.

Measures

The extent of student participation in the Coupon Incentive Program was determined quantitatively through several measures: the number of Study Groups attended by students per exam cycle or semester; the number of Coupon Points earned; and/or at what time during the semester Coupon Points were earned. Study Group sessions were recorded by day, week, and exam to establish the frequency of Study Group attendance and distribution over time.

The redemption value of each Coupon Point was one extra exam point for the purposes of this study. No more than six extra points could be added to an exam for a total possible exam score of 106%. Each Study Group session

consisted of 1.25 hours of student participation. Students redeemed their Coupon Points with their professors at the end of each exam cycle.

Coupon cycles were given a value of "1" if the student attended more than three Study Group sessions over three or more weeks during a five-week exam cycle or if the student attended more than three Study Group sessions over two or more weeks during a four week exam cycle. Student attendance in any Coupon cycle that did not satisfy these criteria was assigned a Coupon value of "0". Coupon cycles were labeled based upon the point in time at which the Coupon Points were issued. For example, Coupon Cycle 1 refers to Coupon Points issued for Study Group attendance prior to the first exam, Coupon Cycle 2 refers to Coupon Points issued for Study Group attendance between exams 1 and 2, and Coupon Cycle 3 refers to Coupon Points issued for Study Group attendance between exams 2 and 3.

"Student outcome" was measured using students' exam scores, exam averages, or final grades. Exam scores and averages did not include extra points exchanged for Coupon Points. "Final Grade" was the letter grade earned by the student at the end of the semester. Extra points the students may have received in exchange for Coupon Points were included in the final grade. Each exam cycle ranged from the beginning of the course, or from the day after the previous exam, until the day of the next exam. All exam scores are collapsed into Pass/Fail categories (Pass = "C" or above; Fail = "D" or "F").

Analysis

There are two ways that we could have shown that Study Group participation had a positive effect on test scores: independent samples t test or logistic regression. Although t test would have shown whether average scores increased in the tutored group, the more important question for us was whether there was an increased proportion of students successfully finishing their course with a grade of C or better. For this reason we used logistic analysis which provided us with odds ratio and proportion.

The Odds Ratio is defined as the odds of a students receiving valid Coupon Points and failing versus the odds of students earning no Coupon Points and passing. For example, if the Odds Ratio for exam 1 is 0.345 (Table 1), the odds of receiving a failing grade for the group receiving Coupon Points before exam 1 (Coupon Cycle 1) is 34.5% of their odds of receiving a failing grade without getting the Coupon Points. This means that individuals receiving Coupon Points during this interval had reduced odds of receiving a failing grade by 65%. A 95% confidence interval was used for all true odds reduction ranges.

Table 1

Effect of Study Group Attendance Before Exam 1 on Student Academic Outcomes

Student Outcomes	Odds Ratio	Odds Reduction	95% Confidence Interval
Exam 1 Score without Coupon Points	.345*	65%	[.206, .578]
Exam Average without Coupon Points[†]	.362**	64%	[.215, .611]
D_F final with Coupon Points	.153*	85%	[.07, .331]

[†] Exams 1, 2, and 3. *p<.0001 **p=.0001

Results

To what Extent did the Coupon Incentive Program Motivate Study Group Attendance?

Since the incorporation of the Coupon Incentive Program in 2003, student attendance increased 139%. This growth was gradual in the beginning but increased substantially as professors and students increased use of the program.

What is the Effect of this Study Group Attendance on the First Exam Performance?

The outcome of students receiving Coupon Points was studied at three times during the semester cycle to determine whether the time at which students received help had an impact. Three measures were used for each evaluation: the exam score without Coupon Points; the exam average without Coupon Points; and the final course grade with Coupon Points. As shown in Table 1, all three of these measures demonstrated that the odds of receiving a failing, “D” or “F”, grade were significantly lower for students attending Study Group sessions before the first exam (Coupon Cycle 1), compared to students who did not attend Study Group sessions during this cycle. Students attending Study Group sessions before exam 1 also had a 65% reduction in the odds of receiving a failing grade on exam 1 and a 64% odds reduction of receiving a failing exam average for the first three exams compared to students not attending Study Groups during this cycle. When the final letter grade was used as the measure, this effect was more dramatic. Students attending Study Groups before exam 1 had an 85% lower chance of receiving a failing final grade than those who did not.

Is Study Group Attendance still Effective After the First Exam, if Students have not Previously Chosen to Attend a Study Group?

This question was addressed by comparing the academic outcomes of students who chose to attend Study Groups after, but not before, the first exam. Since it is possible that student success was influenced by confounding variables, we addressed this question by first comparing the academic outcomes of students who failed the first exam and then comparing the academic outcomes of students who passed the first exam.

The academic outcomes of students who failed exam 1, but attended Study Groups between exams 1 and 2 (Coupon Cycle 2), were compared with students who failed the first exam and did not participate in Study Groups between exams 1 and 2 (Table 2). Students who failed exam 1 did not attend a Study Group before the first exam (Coupon Cycle 1), and attended a Study Group between exam 1 and 2 (Coupon Cycle 2), reduced their odds of failing exam 2 by 70%. The impact of this effect on students' academic outcome was more pronounced when the average scores of exams 2 and 3 and the final grades were used as measures. Students not attending a Study Group before the first exam, failing exam 1, and attending a Study Group between exams 1 and 2 had an 88% reduction in odds of receiving a "D" or "F" on the average of exams 2 and 3. Furthermore, the odds of these students receiving a failing final grade were reduced 78%.

Table 2

Effect of Study Group Attendance Between Exams 1 and 2 on the Academic Outcomes of Students who Failed the First Exam

Student ^a Outcomes	Odds Ratio	Odds Reduction	95% Confidence Interval
Exam 2 Score without Coupon Points	.301*	70%	[.115, .791]
Exam Average without Coupon Points ^b	.125**	88%	[.028, .554]
D_F final with Coupon Points	.222***	78%	[.085, .582]

^aStudents did not attend Study Groups during Coupon cycle 1. ^bExams 2 and 3.

* $p=.0148$. ** $p=.0062$. *** $p=.0022$.

Table 3***Effect of Study Group Attendance Between Exams 1 and 2 on the Academic Outcomes of Students who Passed the First Exam***

Student Outcomes^a	Odds Ratio	Odds Reduction	95% Confidence Interval
Exam 2 Score without Coupon Points	.069*	93%	[.009, .542]
Exam Average without Coupon Points^b	.177**	82%	[.048, .657]
D_F final with Coupon Points	N/A	N/A^c	N/A

^aStudents did not attend Study Groups during Coupon Cycle 1. ^b Exams 2 and 3. ^c All Students Passed Course. *p=.0111. **p=.0096.

The academic outcome of students who did not attend Study Groups before exam 1, passed exam 1, and attended Study Groups between exams 1 and 2 was even better. As shown in Table 3, students who did not attend Study Groups before exam 1, passed their first exam, and attended Study Groups between exams 1 and 2, reduced their odds of getting a "D" or "F" on exam 2 by 93%. When the measure of student outcome was changed to the average of exams 2 and 3, the odds reduction remained high at 82%. A similar analysis could not be done for these students using the final letter grade as a measure because the sample size of students not seeking Coupon Points was too small. It is noteworthy, however, that 100% of the students who passed the first exam and attended Study Groups between exams 1 and 2 passed the course, compared to the 82% pass rate of the student cohort who passed the exam 1, but did not attend Study Groups before exams 1 or 2 (Coupon Cycles 1 and 2).

Although students who passed the first exam had a more favorable outcome than students who failed the first exam, it is apparent that both cohorts reduced the odds of receiving a "D" or "F" by attending Study Groups between exams 1 and 2. This provides evidence that students attending Study Groups prior to exam 2 were still able to positively influence the academic outcome.

To what Extent does Exam Failure Motivate a Student to Choose the Study Group/Coupon Incentive Program Option?

The greatest demand for a Study Group was observed when a student failed the first exam and remained in the course. At this point, the student was aware of academic jeopardy, yet had time to improve the grade. In support, using the proportion of students who sought academic support before the first exam as a reference value and a large sample Z test for proportion, it was found that significantly more students attended Study Groups after failing the first exam ($z=12.76, p < 0.001$). Conversely, if students passed the first exam, there was no significant difference in the proportion of students who attended Study Groups before and after the first exam, ($z=.68, p=.500$). We propose that the positive incentive of the Coupon Incentive Program in combination with negative incentive of a poor exam grade was responsible for the increase in Study Group demand.

Discussion and Recommendations

There were advantages in using Coupon Points as a secondary incentive to extrinsically motivate students. The immediacy of the reward (Coupon Points) accomplished the goal of helping students quickly see the connection between a behavior (academic support) and the reward (extra credit). Ideally, after students are engaged through these incentives, institutions then have the opportunity to provide students with learning skills that will empower them to be intrinsically motivated self-learners. Study Groups have the potential to facilitate this transition.

The Study Group Connection

Study Groups proved to be an ideal medium for providing students with training, experience, and role modeling that could influence academic competence, self-efficacy and goal persistence. As noted by Locke (1996),

People are most likely to believe they can attain a goal when they believe that it is within their capability. This implies three paths to commitment: *adjust the goal* to the person's present capacity; raise the person's capacity through providing *training and experience*; or change the person's perspective on their capacity through *expressions of confidence and role modeling* (Bandura, 1986). (p. 119)

Furthermore, Study Groups provided a means of achieving the long range goal of inducing student learning that would be intrinsically rewarding. As noted by Williams and Stockdale (2004), it may be in the best interest of college students for educators to maximize the utility of extrinsic motivators recognizing that "most behaviors are probably sustained through a combination of intrinsic and extrinsic consequences" (p. 216).

Program Influences

Competence versus complexity

Student perception of personal competence appeared to influence the reaction to the reward program. That is, students believing there was no need for academic support were less motivated to seek Coupon Points. The significantly higher proportion of students seeking academic support post-exam, compared to pre-exam, provided strong evidence of this observation. This phenomenon was frequently observed with freshmen and those students taking the first challenging course, quite possibly due to overestimation of personal capability and/or underestimation of the course's difficulty.

Grades

Covington and Wiedenhaupt (1997) found that

virtually all the students in our college samples rate achieving the highest grade possible as the main reason for learning, with such reasons as increasing one's knowledge or undertaking work as a matter of personal challenge rated far less important. (Covington and Mueller, 2001). (p. 159)

In corroboration, our study found that one of the most powerful incentives capable of motivating students to participate in the Coupon Incentive program was grades. A significantly greater number of students sought Coupon Points after failing the first exam versus students who passed it, providing evidence that students appear to be more inclined to participate in this type of incentive program if perceived academic outcome was in jeopardy.

Reward

Reward value

Williams and Stockdale (2004) related the importance of reward type and value to effectiveness, stating that if a reward is highly valued, the activity will be highly valued and may enhance the student's sense of perceived competence and self-determination. The authors further noted that "Highly valued rewards appear especially important for activities of minimal interest to students" (p. 226). In this study, both professors adopted the same Coupon Point exchange value. However, the symbolic value of Coupon Points can be adjusted to meet instructor, course, program, and/or student needs. Factors that appeared to influence the value of Coupon Points for students included goals, personality, self-efficacy, perceived competence, grades, and perceived professor opinion.

Reward timing

How frequently and when rewards are distributed within each semester appeared to be important factors in determining students' subsequent behavior and outcome. As an example, we know from our research that when professors award points to students at the end of the semester or before an exam, and do not require evenly spaced attendance, most students would seek Coupons close to the deadline. This behavior reduced Coupon Point effectiveness in that the ability to help students improve performance "last minute" is very limited. The sooner a student is helped, the more he or she will be able to use learned concepts to understand new content and the less chance negative assessments will adversely affect their academic outcome.

Conclusion

When carefully designed, a reward program in academic support can be highly successful in motivating students to enhance efforts, persistence, and academic outcomes in challenging courses. The Coupon Incentive Program also provided a mechanism for engaging students in Study Groups where multiple academic support strategies were used to influence their academic competence, self-efficacy, goal persistence, and intrinsic motivation. The use of extrinsic rewards for these purposes may be particularly effective for students in high-risk courses and/or for at-risk populations.

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