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The effect of effort grading on learning☆

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ABSTRACT

In the fall of 2004, Benedict College – a Historically Black College in Columbia, SC – began enforcing a new grading policy called Success Equals Effort (SE^2). Under this policy, students taking freshman and sophomore level courses were assigned grades that explicitly rewarded not only content learning ("knowledge" grade) but also measures of effort ("effort" grade). This paper examines the effects of effort grading using two stage least squares and fixed effect estimates. I find evidence of a strong positive correlation between "effort" grades and "knowledge" grades. Under some restrictions this relationship can be interpreted as "effort" producing "knowledge".

1. Introduction

According to "High School Academic Curriculum and the Persistence Path Through College" August 2001, only 61.2% of students with an SAT score from 400 to 790, 62.1% of black students, 56.9% of students with a parental education level of high school or less, and 56.1% of students attending a less selective private school will stay enrolled continuously in their first college or university.[2] Benedict College, an open admissions Historically Black College and University (HBCU), has a student population that fits squarely within the above cited statistics.

In the fall of 2004, Benedict College implemented the Success Equals Effort (SE^2) policy because of a 6-year graduation rate that was less than 30%. The SE^2 policy emerged from a dissatisfaction with learning outcomes due, in part, to a lack of preparedness by students for the rigors of college. The college employed this policy to increase learning, retention and graduation rates, and the value of a degree from Benedict College.

The unique aspect of this policy is that, for freshman and sophomore level courses, effort is a separate component part of a student's grade.[3] The SE^2 policy requires a professor to report two grades to the registrar for students taking freshman and sophomore level courses: effort and content learning (knowledge). The administration weights the two grades differently for freshman and sophomore courses. Tables 1 and 2 present the final grade outcomes for freshman and sophomore courses, respectively. Roughly speaking, knowledge and effort grades are weighted 40% and 60%, respectively, for freshman courses and 60% and 40% in sophomore courses.[4]

For the SE^2 policy to increase learning, retention and graduation rates, as well as the value of the degree the students receive, the following assumptions must hold.

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[2] See Carroll and Horn (2001).

[3] Benedict College has indicated that no other college or university in the United States has such a policy.

[4] There is some concern that this policy lowers the grading standard. I tested whether this policy affected the grading standard using a procedure similar to Betts and Grogger (2003) and found that it did not.

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Table 1
Freshman level grade matrix.

		Knowledge grade				
		A	B	C	D	F
Effort grade	A	A	A	B	C	C
	B	B	B	B	C	D
	C	B	C	C	C	D
	D	C	C	D	D	F
	F	C	D	D	F	F

Table 2
Sophomore level grade matrix.

		Knowledge grade				
		A	B	C	D	F
Effort grade	A	A	B	B	C	D
	B	A	B	C	C	D
	C	B	B	C	D	D
	D	B	C	C	D	F
	F	C	C	D	D	F

Assumption 1. There is a positive externality between the effort grade and the knowledge grade (i.e., effort affects knowledge positively).

Assumption 2. Effort today has permanent effects on a student's ability to earn higher grades tomorrow.

Assumption 3. There is no principal-agent problem between administrators and professors.

Assumption 4. All students have complete information (i.e., the professor defines effort and this definition is known to the student).

Conventional wisdom suggests that the more effort a student puts forth, the better grade the student will earn. However, researchers find mixed results when examining this relationship. This finding may be due to the less than ideal manner in which effort has been measured in the literature. Moreover, existing estimates regarding the link between effort and grades are biased because the estimates ignore the stochastic nature of effort. Using data from the Success Equals Effort (SE^2) policy at Benedict College, this paper extends the literature in two ways: first, by offering an alternative and arguably superior way of measuring effort – using the professor's perception over the course of the term as opposed to a snapshot survey. Second, the empirical methodology accounts for the endogeneity of effort. The findings show that more effort leads to more student learning.

2. Literature review

Many investigators have studied how effort affects grades in college. The convention in the literature is to utilize student surveys determine a student's study habits. An early example is a paper by Schuman, Walsh, Olson, and Etheridge (1985) that studies the relationship between college grades and self-reported amounts of effort. In this study, effort was defined as the quantity of time spent studying or in other course preparatory work, as distinct from the quality of the work (as measured by aptitude measures). The authors found no significant increase in the relationship between time studied and GPA. An organic chemistry lab was also studied. For this specific class, there was even less evidence that the amount of time spent studying affected achievement as measured by grades. The paper concluded that study time and grades may have a substantial relationship, but the measures of effort in an individual study day may not capture the variation that occurs from day to day.

Hill (1991) found in a study at a small state school with open admissions similar results as Schuman et al. In a study of a sociology class, Hill found that study time during the week was not related to any measure of college grades, while study time on the weekend was significantly and positively correlated with all measures of college grades. Hill then conducted a random sample where he again found that the average number of hours studied during the week was not significantly related to GPA.

These surprising findings that study time was not strongly related to grades could be the result of a number of factors omitted in their analysis. Their effort measures ignored the stochastic nature of student studying by relying on either estimates of study habits in the previous semester or surveys about how much studying was done the previous day. Additionally, the student effort was not course specific and it was not known how much effort a student put into a particular course. Lastly, their estimations did not control for endogeneity of effort with the learning outcome, which biased the results.

Following Schuman et al.'s (1985) surprising result of a marginally significant relationship between the amount of time spent studying and GPA, Michaels and Miethe (1989) attempted to correct Schuman et al.'s model. Michaels and Miethe found that study time did have an impact on grades, whereas class attendance did not. Running a regression on separate categories of students, they found that students who study throughout the week derived more benefits than crammers. In contrast to Schuman et al., they found that an increase in academic effort was rewarded with higher grades. Rau and Durand (2000) also tested the effects of effort on college grades. They found that students who studied daily and have better study habits performed better on tests, even if they had lower standardized test scores. They concluded that effort made a difference at Illinois State University. Schuman (2001) replied to Rau and Durand (2000) that the difference in results were due mainly to the fact that Rau and Durand used somewhat different measures of effort.

Although Michaels and Miethe and Rau and Durand found that student effort was important to student performance, they failed to address the same factors that were ignored by Schuman et al. and Hill. Therefore, their results are questionable.

This paper addresses the important factors omitted in the previous research: stochastic nature of effort, class specific effort, and endogeneity. The measure of effort provided from the SE^2 policy is superior because it measures how well a student put forth the effort that a teacher defined as necessary for each course. This paper looks at effort in each class and the learning outcome in that particular class. Therefore, it is the perceived effort of the student