

ครูผลิต "นักเรียนรู้ตลอดชีวิต" จริงหรือไม่? การศึกษาอิทธิพลระยะยาวของครูต่อ
ทัศนคติการเรียนรู้ตลอดชีวิตของผู้เรียนในประเทศสหรัฐอเมริกา

Did Teachers Make Lifelong Learners? Examining the Long-Term Effects of
Teachers on their Students' Attitudes towards Lifelong Learning
in the United States

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บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อใช้โมเดลการถดถอยโลจิสติกส์ในการศึกษาอิทธิพลระยะยาวของครูต่อทัศนคติการเรียนรู้ตลอดชีวิตของผู้เรียนจำนวน 11,168 คน ข้อมูลที่ใช้ในการทำวิจัยนี้มาจากสำนักงานสถิติการศึกษาแห่งชาติของประเทศสหรัฐอเมริกา (U.S. National Education Longitudinal Study of 1988) ที่ทำการเก็บข้อมูลต่อเนื่องระยะยาวขณะที่ผู้เข้าร่วมการวิจัยมีอายุ 14 ปี และ 26 ปี (เก็บข้อมูล 2 รอบ ห่างกัน 12 ปี) ผลการศึกษาพบว่า ผู้ที่มีทัศนคติเชิงบวกต่อครูเมื่อเติบโตเป็นผู้ใหญ่จะเป็นผู้ที่ชอบค้นคว้าหาความรู้ด้วยตนเองตามห้องสมุด และเป็นผู้ที่ต้องการพัฒนาตนเองให้มีความก้าวหน้าในอาชีพอยู่ตลอดเวลา

คำสำคัญ: ผลกระทบระยะยาว ทักษะพฤติกรรม นิสัยการเรียนรู้ตลอดชีวิต คุณภาพครู

Abstract

The emergence of a competitive global economy has placed an increasing emphasis on lifelong learning. Despite its growing importance, little was known about how teachers played a role in developing students' long-term inquiry habits during adulthood. This study hypothesized

that lifelong learning was a "skill", which can be nurtured and developed during the childhood period. Using the U.S. National Education Longitudinal Study of 1988 (NELS: 88) data, the objective of this study was to examine the impact of teachers on the attitudes towards lifelong learning of their former students 12 years later (n = 11,168). The findings indicated that lifelong learning habits were positively related to how one perceived the quality of their former teachers. More specifically, adults taught by a good teacher were likely to visit the public library and participated in job training through self-initiative.

Keywords: long-term effect, non-cognitive skill, life-long learning habit, teacher quality

Introduction

If one asks a teacher what is the only gift that she wishes to give to her students, in today's knowledge-based economy, most will answer "the desire to keep learning." Lifelong learning is having a thrust to learn new skills on

one's own throughout his or her life (Laal, 2011). The emergence of a competitive global economy has placed an increasing emphasis on lifelong learning around the globe. In Europe, for example, 42 organizations and 50,000 educational institutions have developed a lifelong learning platform that delivers formal, informal and non-formal education to millions of people across the region (The Lifelong Learning Platform, 2018). In the U.S., then-President Bill Clinton introduced the Lifetime Learning Tax Credit (LLTC) to promote lifelong learning by encouraging working-age people to continue education, while generating sufficient tax liability to be eligible for the tax credits (Hoxby & Bulman, 2016).

Despite its growing importance, we know very little about what factors influence attitudes towards lifelong learning. According to Olatunde (2009), attitudes towards learning were directly linked to learning experiences and school context. More specifically, students learned to form their attitudes towards learning by following the example of their role models, which often were their teachers in a classroom setting (Olatunde, 2009). Olatunde underlined the point that students constantly observed teachers' beliefs about learning and whether their teachers thought learning was important or not important, difficult or easy, and useful or useless. Students later formed their own attitudes towards learning that oftentimes reflected their own teachers' attitudes. In other words, the way teachers taught, behaved, or felt in the classroom can be more influential to students' attitudes towards learning than what

was actually being taught. As a result, it was reasonable to believe that teachers who regularly expressed their appreciation towards literacy were likely to influence their students to become avid learners for years to come. For example, Boaler & Greeno (2000) showed that positive attitudes of teachers towards mathematics were a significant determinant of students' decisions to take more advanced mathematics courses that were not compulsory.

A large volume of research has concluded that teachers were the most important school-related factors affecting student achievement such as improvement in test scores, psychological development, and learning growth (Bressoux & Bianco, 2004; Darling-Hammond, 2000). Many outcomes were short-term gains that have been made from one semester to another or from one grade to another. Little was known with regard to longer-term effects of teachers. This was somewhat puzzling when anecdotal evidence would lead us to believe that teachers have a long-lasting impact on their students' lives for years to come. The need for increasing accountability and results requires educational resources to have a sequential impact throughout educational systems to create cost-efficiency and to justify the long-term investments of taxpayers in education. Did teachers have a long-term impact on students? This was the main question the study attempted to address.

Researchers have defined long-term student achievement in many different ways. For K-12 researchers, long-term student achievement was commonly referred to students' basic

intellectual and verbal skills and physiological development that have progressed from one semester to another or from one grade to another (Bressoux & Bianco 2004; Heck, 2007). Research on this type of long-term outcomes was prevalent in the fields of early childhood education and primary school education (Entwisle & Hayduk 1988). For higher education researchers, long-term outcomes were measured over longer time periods such as college entrance tests, college entry and college graduation (Baum & Payea, 2004). Often based on the analysis of the economics of education, long-term student achievement was the quality of employment as measured by wages and earnings (Hanushek, 2006).

Depending on the educational outcomes being considered, some studies have found such teacher effects throughout students' lives, but others have concluded that the teacher's influence diminished over time (Entwisle & Hayduk 1988; Behrman et al., 1997; Bressoux & Bianco, 2004). Proponents of long-term teacher effects have reasoned that good teachers helped students establish a higher learning standard and reach their full potential (Entwisle & Hayduk, 1988). For example, teachers may influence their students' college choice decisions. Hossler, Braxton & Coopersmith (1989) found that high school teachers were among the first people from whom students sought college-going advice. Hossler and associates (1989) emphasized that the role of teachers in the college-going decision was so influential that it substituted for that of parents

when students had to make the decision to go to college. Opponents of long-term teacher effects have argued that teacher impact faded away over time. For example, Bressoux & Bianco (2004) concluded that teacher effects diminished within two years. The researchers only found a significant relationship between second-year teachers and their students' French and mathematics test scores. However, they found no relationship between first-year teachers and such test scores.

More recent research has found a connection between teacher effects and students' long-term non-cognitive outcomes. Such research has concluded that measuring a full impact of a teacher needed to consider non-cognitive skills, habits and long-term outcomes in adulthood. Terada (2019) and Jackson (2018) reported a teacher's long-term effect on students. They expressed that teachers did more for students than simply raising their test scores. The researchers concluded that students' long-term achievement was about behaviors and habits rather than academics. Jackson (2018) found that a teacher's impact on her students' behavior was 10 times more predictive on high-school graduation rates than her impact on students' test results. Terada (2019) conducted a survey to ask research participants about what made a good teacher. In the report, most respondents replied that a good teacher was one that helped her students reach their full potential and be successful as adults.

The current research contributed to the existing literature in two ways. First, this

research provided an estimate of longer-term teacher effects on student achievement by employing one of the few U.S. national data sets that allowed longitudinal assessment of post-secondary student outcomes in relation to teacher characteristics. The second contribution of this research was the inclusion of subjective measures of teacher quality such as students' perception of their own teachers in the analysis. To date, previous research examining the relationship between teacher characteristics and students' attitudes towards lifelong learning was scant. Hence, the objective of this current research was to see if a link can be established between the two after a long period of time. Therefore, the research objective was to examine the relationship between teacher characteristics and students' lifelong learning habits. The National Education Longitudinal Study of 1988 data provided a unique research opportunity to analyze school context and its relationship to the students' attitudes years later. The findings may shed light on how teachers played a role in shaping the attitude of students towards learning in the long run.

Research Questions:

1. Did teachers play a role in developing students' long-term inquiry habits such as visiting the library regularly?

2. Did teachers play a role in developing students' long-term self-directed learning habits such as attending job training through self-initiative?

Conceptual Framework

Alexander Astin was one of the earliest college impact researchers to use educational production functions in higher education research. Astin's version of production function is reflected in his I-E-O (Input-Environment-Output) model (1993). In Astin's I-E-O framework, students' individual backgrounds and characteristics were included in the input (I) component (Astin, 1993). In this study, the environment (E) included school text variables such as school types, teacher characteristics and student perceptions of teachers. The outcomes (O) included students' attitudes towards lifelong learning habits (see Figure 1). Therefore, the following hypotheses were formulated:

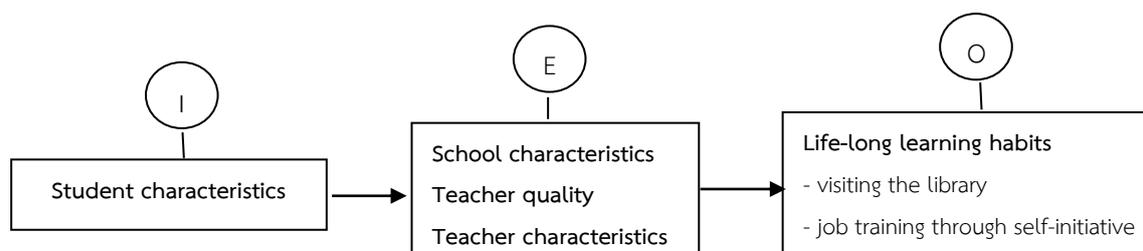


Figure 1: I-E-O model to examine life-long learning habits

H1: Teachers played a crucial role in developing students' long-term inquiry habits such as visiting the library regularly

H2: Teachers played a crucial role in developing students' long-term self-directed learning such as participating in job training through self-initiative.

Method

Samples

Data used in the analyses are drawn from the National Education Longitudinal Study of 1988, a nationally representative survey of 24,000 8th-grade students. A subset of these students was resurveyed in 1990 (1st follow-up), 1992 (2nd follow-up), 1994 (3rd follow-up), and 2000 (4th follow-up). The research uses the 4th follow-up survey data, which had 11,169 participants left in the follow-up data. The dataset contained information about activities that the participants had done 12 years after they were first interviewed. In 2000, most participants in the dataset were 26-year-old adults, had finished college if they had ever entered it, and had begun their careers. The questionnaires asked students about a wide range of information such as family characteristics, school characteristics, teacher characteristics, educational aspirations, and a variety of student perceptions (National Center for Education Statistics, 2000).

Variables

There were two dependent variables, which were both dichotomous (1= yes, 0 = no): (1) whether or not individuals visited the library

regularly during adulthood, and (2) whether or not they attended a job training program through self-initiative. There were three sets of independent variables: teacher characteristics, institutional characteristics, and student characteristics. The main independent variables were teacher characteristic variables including teacher gender (1 = female, 0 = male); teaching experience (0= no teaching experience, 1= 1-3 years, 2 = 4-6 years, 3 = 7-8 years, 4 = 10-12 years, 5 = 13-15 years, 6 = 16-18 years, 7 = 19-21 years, 8 = 22-24, and 9 = more than 25 years); standard certification attainment (1 = years, 0 = no); and master's degree attainment (1 = yes, 0 = no). Students' perceptions towards their teachers were also included in the analyses as one of the measures of teacher quality. The original question used to code these variables asked students about the extent to which they thought their teacher was a good one (1= strongly disagree, 2 = disagree, 3=agree, 4 = strongly agree). To simplify the logistic regression interpretation, this variable was recoded into a dummy variable (1 = either strongly agree or just agree that my teacher is good; 0 = otherwise).

Other independent variables included in the analyses were students' characteristics including gender (1 = female, 0 = male); socioeconomic status (1 = below the 25th percentile rank for SES; 2 = at least 25th percentile but below 75th rank for SES; 3 = at 75th rank for SES); parental education (0 = no education, 9 = Ph.D.); and high school achievements (i.e., 10th reading and mathematics test score quartiles). Other schooling variables

included school location, school type, and diversity within school.

The general form of the model is $Y_{ij} = \beta X_{ij} + \alpha S_j + \varepsilon_{ij}$, where subscript i denotes individuals and j denoted institutional factors such as school. Y_i denotes attitudes towards lifelong learning of individual i , X represents individual and family background variables of students, S represents institutional and teacher characteristics, and ε is the random error term.

Data analysis

A separate logistic regression analysis was conducted for each of the two attitudes towards lifelong learning. The ordinal regression method was used to model the relationship between the dichotomous outcomes and their predictors. This method provided the probability of the occurrence rate as a function of independent variables. For the purpose of this study, the method provided the probability with values between 0 and 1 of their visiting the

library during adulthood and attending job training through self-initiative.

Research Results

Descriptive analysis

The sample used in the current study consisted of 11,168 participants. Descriptive statistics shown in Table 1 revealed general information about student backgrounds, teacher characteristics, institutional characteristics and their attitudes towards lifelong learning. On average, the students in the sample had at least one parent who either had a high school or a college education. About 53% of the participants in this study were female. More than 55.9% of the research participants attended job training through self-initiative, and 47.3% visited the library regularly. Most students were taught by teachers with some type of teaching certificate (96.2%). Sixty-nine percent of the students attended college on a full-time basis and 57.7% were between 18 and 22 years old (not tabled).

Table 1 Descriptive statistics of variables

Variables	\bar{x}	S.D.
<i>Attitude towards life-long learning</i>		
Often visited the library by the age of 26	0.473	0.499
Attended Job training through self-initiative	0.559	0.496
<i>Teacher characteristics</i>		
Had a standard teaching certification	0.962	0.189
Had a Master's degree	0.387	0.488
Teaching experience (1)	3.975	2.662
Female teacher	0.481	0.499

Table 1 Descriptive statistics of variables (Continued)

Variables	\bar{x}	S.D.
<i>School characteristics</i>		
Public	0.836	0.370
Urban	0.249	0.432
A proportion of minority students (2)	0.318	0.108
<i>Student and family characteristics</i>		
10 th grade math test scores quartile (3)	2.640	1.122
10 th grade reading test scores quartile (3)	2.619	1.035
Parental education (4)	0.306	1.263
Female	0.524	0.499
SES Quartile	2.542	1.128
Sample size (n)	11,168	

Logistic regression results

Teacher effects and the likelihood of visiting the library during adulthood

In general, the study found that students' attitudes towards lifelong learning were related to how they perceived the quality of their teachers. The study also found that students' attitudes towards their teachers and teacher gender were associated with their students' lifelong learning habits in relation to the likelihood of their visiting a public library during adulthood (Table 2). The odd ratio of students' perception of a good teacher (1.732) indicated that individuals educated by a good teacher

were more likely to visit the library regularly during adulthood, compared to those educated by an inferior one. Furthermore, the findings showed that some students' characteristics and backgrounds were positively associated with the likelihood of library visiting. Compared to their counterparts, individuals from a high SES family background (odd ratio = 1.862) were more likely to go to the library regularly during adulthood. As expected, those with an excellent reading ability (odd ratio of 10th grade reading test score = 1.651) were more likely to visit the library when they grew up.

Table 2 Factors influencing students' attitudes towards life-long learning

Variables	Visiting the Library during adulthood		Attending training through self-initiative	
	Odds Ratio	S.E.	Odds Ratio	S.E.
Teacher characteristics				
Student's perception of a good teacher	1.732**	0.086	1.342*	0.125
Teaching certification	0.756	0.069	1.228	0.088
Female teacher	1.282*	0.164	0.783	0.226
Minority teacher	0.862	0.017	0.681	0.021
Teaching experience	1.473**	0.401	0.723	2.993
School Characteristics				
Urban	1.301	0.054	1.705**	0.074
Teaching faculty with a master's degree	1.501	0.061	0.977	0.085
Minority proportion	0.982**	0.150	1.522	0.084
Student Characteristics				
Parental education	0.886	0.439	1.138	0.099
SES	1.862***	0.027	0.681	0.057
Female	1.671***	0.133	1.907**	0.035
10 th grade math test scores	1.361**	0.002	1.131	0.116
10 th grade reading test scores	1.651***	0.040	1.027	0.050
Adjusted R-squared		0.542		0.347

NOTE. * $p < .10$, ** $p < .05$, *** $p < .01$. SES = Social economic status. *Regressions were run using sampling weights and robust standard errors.*

Teacher effect and the likelihood of students' participating in job training through self-initiative

Similarly, the results showed that individuals' attitudes towards their former teachers were related to their decisions to attend job training through self-initiative. Those having a positive attitude towards their teachers were more likely to participate in job training (odd ratio = 1.342). However, teacher characteristics were not associated with students' decisions to

take part in a job training program. The likelihood of participating in a job training program through self-initiative for females was greater than that for their male counterparts (odd ratio = 1.907), while students attending an urban high school were more likely than their peers to participate in job training through self-initiative (odd ratio = 1.705).

Conclusion and discussion

Two major conclusions can be drawn from this study. First, students' attitudes

towards lifelong learning were positively related to students' perceptions of their former teachers. Individuals taught by a good teacher were likely to visit the library regularly during adulthood and participate in job training through self-initiative. This research provided findings similar to Terada (2019) and Jackson (2018) that stressed the full measure of teacher effectiveness that should go beyond the test scores. The findings of this study is also in agreement with the discovery of Jackson (2018), which stated that a "good teacher" positively influenced their students' psychological and social aspects as well as learning in adulthood. In addition, the findings also supported the idea of "teaching through relationships" as discussed by Goodman (2015) and Rimm-Kaufman & Sandilos (2011). That is, lifelong learning was a "skill", which can be nurtured and developed during the childhood period. Positive student-teacher relationships as well as high quality academic instruction were critical parts of students' long-term academic and social development. Consistent with Goldhaber & Brewer (2000) also based on NELS data, the study found no impact of teacher licensure on student achievement. The second main finding was that student backgrounds and prior school achievement were associated with their views on lifelong learning. The present findings found students with prior excellent reading test scores were more likely than their peers to demonstrate some form of lifelong learning habit. These findings were consistent with Kern & Friedman (2009) that found reading skills

developed during childhood had a lasting impact on individuals across the lifespan.

Future research and Implication

The findings from this study must be interpreted with vigilance and caution. Establishing a long-range relationship between teacher attributes and students' attitudes posed some issues for measurement because there were important omitted variables that can establish such linkage over the years. For example, the analysis only included information about the teachers that taught students when they were in 8th grade, but students' positive attitudes towards life-long learning may stem from other teachers and people as well. Future research needs to examine teacher effects across grades and different student subgroups. The use of student test scores to solely evaluate teacher's impact on students would undermine teacher effectiveness. Future research attempting to measure a teacher's impact on students should also examine their role in improving students' non-cognitive skills and habits. The implication of this research is that teachers should be encouraged to engage in ongoing learning opportunities and professional development, so they can draw their students into the process of learning and promote their desire to learn. In conclusion, the findings suggested that the quality of teachers as measured by students' perceptions had a long-lasting impact on students' thrust of lifelong learning.

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