

DOES AGRICULTURE EDUCATION AFFECT COLLEGE READINESS?

BY

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THESIS

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ABSTRACT

This study focuses on the different areas that affect college readiness during student's high school experience. This includes, but is not limited to, socioeconomic status, percent of students enrolled in agriculture classes, teacher quality and retention, and school resources. The data will be collected by reviewing previous studies on the above factors. After the factors are determined, the statistics will be collected from the Illinois Report Card website and the Illinois Agriculture Education website. This study is expected to find that in schools in which agriculture education is present, college readiness statistics were higher. Another point of this study is to find factors that correlate with college readiness.

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CHAPTER 1: INTRODUCTION

Education in the United States is in a tumultuous situation with the continuous threats on funding at the federal level. In the state of Illinois, the situation is exacerbated by the continuous budget crisis. While agriculture education is essential to students, teachers, and communities, most of the agriculture classes are not considered core classes (Illinois Agriculture Education, 2017). Because of this, programs are often one of the first programs to be evaluated when looking for areas in which to make cuts. In communities where the program is not defined, stable, or well-known, keeping the program running could be harder than anticipated. However, if agriculture education could tie into to improving college performance, programs might have more of a footing to defend themselves.

Agriculture education encompasses several different modes of teaching and requires several different skills such as writing, speaking in public, reading, science, and math (Illinois Agriculture Education, 2017). Most of these skills and subjects show up later on tests like the ACT that determine college readiness. The skills and curriculum that students learn in other classes are built upon and put into different contexts in agriculture classes. This has been said to be helpful for students to assist them to think of the curriculum differently (Illinois Agriculture Education, 2017). Sometimes applying old concepts in new ways helps the students understand it better. Agriculture curriculum also has several ways to provide hands-on learning opportunities, which also helps with building knowledge (Illinois Agriculture Education, 2017). This study will be helpful to those administrations that are possibly looking to save, cut or add to their agriculture programs. The Illinois Report Card has data on each school in the state of Illinois, which includes a percentage of students that tested high enough to be considered college-ready. Comparisons will be made between the rate of college-ready students and the number of students

that are involved in agriculture classes. Other factors analyzed will include but not be limited to: teacher attendance/retention, teacher salary, low-income students, and college remediation will also be related to the college readiness statistic. Conclusions made from there will identify the most substantial influence is on college readiness and if agriculture education is among them.

Another issue that arises is the way that college readiness is defined. The Illinois State Report Card and several other databases determine college readiness through student performance on standardized tests such as the ACT and the SAT. There is a lot of discourse about the reliance on standardized tests, especially when it comes to different teachers having to “teach to the test” to receive funding from the state and ensure college admissions for their students (Styron & Styron, 2012). There is a need for research to uncover a few areas that agricultural education professionals could look at that will help determine the college readiness of students.

Research Purpose and Objectives

We are aiming to determine if agriculture education can link to improving college readiness. The purpose of researching this data is to possibly offer high school agriculture education programs more leverage when defending their value to the school and community. Collection and analysis of the data will lead to providing administrators and educators the areas in which assessment and changes can be implemented.

CHAPTER 2: REVIEW OF LITERATURE

College Readiness Defined

Conley (2007) defined college readiness as “the level of preparation a student needs to enroll and succeed - without remediation - in a credit-bearing general education course at a postsecondary institution.” The way that high schools determine college readiness is with the ACT (students who score a 21 or above are deemed college ready). Several issues have risen with this, the main one being the disagreements surrounding whether the ACT accurately depicts the numerous social and mental skills needed to be successful in college. In her literature-based discussion about teaching to the test, Dr. Jennifer Styron (2012) reveals that after middle school, some teachers become so focused on preparing students for the ACT that they do not sharpen critical thinking skills anymore (Styron & Styron, 2012). This becomes an issue when students get to college and need critical thinking skills to complete classes and projects (Venezia & Jaeger, 2013). Conley (2007) claims that to predict college readiness better, the above definition of needs to be expanded and built upon to give high schools a better idea of where to improve their programs and to teach focuses.

Another central issue that presented itself earlier is that to take the ACT successfully, to excel in high school and to be prepared fully for college-level classes are all fundamentally different things. Everything in college is different than high school; the expectations, the workload, and the pace of lessons. One year in high school is comparable to one semester in college. The amount of effort that is necessary to be successful goes up tremendously in college, and high schools are not preparing students for that. In fact, the amount of time that students are expected to put into homework outside of the classroom is going down in high school and up in college. An example of the timing and pacing difference that Conley (2007) uses is writing

research papers. In high school, students can take several weeks to write one, maybe two, research papers in their entire four years. However, in college, some students can have several papers to complete at the same time, with higher standards and less time to achieve them. All in all, the environments in high school and college are opposites.

This first issue with defining college readiness strictly by test scores can be summed up as: college readiness requires more than being able to take a test, it requires time management and communication. One significant aspect of succeeding in college has a good work ethic. In most high schools, students tend to be able to get away with more than they would in college. An example commonly used is that of a student who is struggling in a class, who meets with the professor near the end of the semester and requests extra work to help make up for their bad grades. In college, most professors will turn the student away. But, it is much more likely that those students tried the same thing in high school where it worked in their favor. Also, some students who did not struggle in high school or got good grades by doing the bare minimum, come to college expecting the same thing. The cultural normalcy in college compared to high school is a polar opposite. This again poses the question of the effectiveness of using the ACT as a college-ready benchmark when it does not test several of the skills needed to be successful in college courses. One thing that all articles written on this topic agree on is that there is a significant disconnect between the expectations in high school versus college.

In their article about transitioning from high school to college, Andrea Venezia and Laura Jaeger (2013) talked about the increase of high school students who wish to pursue a college degree, whether that be an associate's or a bachelor's degree. The number of students who sought a college degree in 1980 versus 2002 increased by 41 percent. Even more interesting, the most substantial increase came from low-income students. However, college professors are

stating that students are still entering college with little or no primary content knowledge or skills complete the college course-work successfully (Venezia & Jaeger, 2013). The increasing amount of students who are interested in pursuing a higher education degree is promising. However, if we keep sending kids to college unprepared what is going to happen to them? There are two possible outcomes for a situation like this: the student struggles tremendously through college and eventually sharpens their skills necessary to succeed, or the student drops out.

There is an obvious issue here, whether it be how college readiness is defined or how high schools are preparing kids for college or both. Venezia and Jaeger (2013) interviewed students who had 4.0 GPA's in high school. Even with high school academic success, these students did not feel prepared to perform at a college level. This points to more of an issue with how schools are preparing kids for the next step in their life.

One point of concern could be that the goals of high schools are not focused on sending every student to college. High schools are designed to equip students with the knowledge to be successful in life, not just preparing for college. When looking at the class of 2016, an estimated 64% of the graduating class took the ACT. This is an increase from the previous years. Of the 64% that took the test, only 26% of those students tested high enough to be college ready in all four subjects (English, Reading, Mathematics, and Science) (The ACT, 2016). Of the 2016 high school graduates in the United States, only 69.7 percent went on to enroll in college, leaving the rest of class going to the workforce after high school (Bureau of Labor Statistics, 2017). By looking at these numbers, it is inferred that high schools have two different goals in mind: prepare students for college, and prepare students for the workforce, which are both necessary. However, this data may be telling us that high schools as a whole, might be failing to meet both needs successfully.

Teacher and School Qualities Effect on Student Achievement

Teacher turnover has been a concern for many schools and how it affects the students. Teacher retention, or lack thereof, has been seen to adversely affect the quality of education, especially in low-achieving schools (Hanushek, Rivkin, & Schiman, 2016). Furthermore, Hanushek et al (2016) found that a high rate of teacher turnover even affected students in classrooms whose teachers remained. In the study, they also addressed the theory that maybe teacher turnover was improving education through the loss of the less capable teachers that were leaving the school. However, the results showed that the adverse effects of high rates of teacher turnover outweighed the positive effects of losing less than desirable teachers. A study conducted by Ronfeldt, Loeb & Wyckoff (2013) also found that teacher turnover was a detriment to student achievement, especially in those schools with larger populations of lower-achieving students. Those students crave normalcy and stability, which they are deprived of with a high rate of teacher turnovers. They found that in years when all of the teachers were turned over, the students scored almost 10% lower on math tests. In the same study, in the instance that there was no teacher turnover present, the student's math scores increased between 2% and 4%.

In a study conducted by Mayer, Wiley, Wiley, Dees, & Raiford (2016), they looked at several different qualities of teachers that had a potential effect on student's achievement. The focus of the research was to analyze the No Child Left Behind Act and its impact on improving the qualities of teachers. They cited several studies that agreed that teacher characteristics played a role in student achievement, however, some of them did not align. A study conducted in New York City compiled data on student achievement and teacher certification. The outcomes were indicative that as the number of highly certified teachers rose, so did the achievements of students (Mayer et al., 2016).

Some believe that teachers must have a certain number of years' experience before they are a positive influence on student achievement. However, several studies show that teachers with even one year of experience positively affect student achievement (Mayer et al., 2016). Mayer et al. (2016) found that with each additional year that a teacher spends in the classroom, students reading and math scores increased. Since teacher retention affects students in the classroom, a low rate of retention will lead to a lower rate of college-ready students.

In rural schools, the thought of consolidation is always looming around. State legislatures believe that consolidating school districts will help to save money. But, will the mergers help the students? In some situations, they might, and in others, it may adversely affect students and teachers alike. According to a study conducted by Robert Pittman and Perri Haughwout (1987), increasing school sizes does not always “produce proportionate increases in academic offerings or finances” (Pittman & Haughwout, 1987).

Another issue that has surfaced is how individual students and their involvement in school activities are affected by an increase in the student body. Pittman and Haughwout (1987), also stated that students who attend smaller schools have more diverse participation in school than students who attend larger schools. More varied interests also help students with real life, the more experience and knowledge they can obtain, the worldlier they become.

High School Agriculture Education

Agriculture education classes are a different beast when it comes to how students interact. One of the main focuses in agriculture education is that students learn through experiential learning (Illinois Agriculture Education, 2017). In agriculture education, there is a three-circle model. This model encompasses classroom learning, experiential/work-based learning, and leadership (Illinois Agriculture Education, 2017). This model is something that sets the

agriculture education classes apart from other subjects. One would think that agriculture education would increase a high school student's readiness for college. Because agriculture education encompasses more critical thinking and necessary functions to be a productive member of society, one would think it would be beneficial for post-secondary education as well.

However, being a high school agriculture teacher is stressful, and teacher retention can be an issue. According to Croom (2003, p. 1),

Agriculture teachers draw upon physical, emotional and intellectual resources to be useful in the classroom (Cano, 1990). Teachers often find themselves working well beyond a 40- hour week as they supervise student projects, coach career development teams, evaluate student work and prepare lessons (Straquadine, 1990). The long hours at work, coupled with the stress of teaching could eventually lead to debilitating health problems (Vaughn, 1990).

As previously stated, teacher retention affects the performance of students. If high school agriculture teachers are burning out, not staying in the profession or just plainly moving to different schools frequently, students can be adversely affected. While the burnout level was lower in agriculture education teachers than other subject area teachers, Chenevey, Ewing & Whittington (2008), found that "older agricultural education teachers in this study are less stressed than younger teachers." This means that as a younger agriculture teacher, the struggle is more than for older, more experienced teachers. This could lead to younger teachers not staying in the profession as long, leaving schools and students without an agriculture program.

When looking at using the ACT as a benchmark for different school attributes, there is drawbacks present. One negative impact mentioned in the article "Teaching to the Test: A Controversial Issue in Quantitative Measurement," was that low-income students continue to

struggle to develop critical thinking skills (Styron & Styron, 2012). This is where agriculture education could help to reverse the damaging effects. Agriculture education strives to give experiential learning opportunities in every topic discussed (Illinois Agriculture Education, 2017). These educational experiences can lead to sharpening critical thinking skills that are necessary for collegiate work.

Income, Race and the Achievement Gap

In his study of the increasing achievement gap in education, Sean Reardon made significant findings. One of the first issues that he was able to see was the difference in achievements attained between high-income families and low-income families. His study showed that they had increased dramatically (Reardon, 2013). For example, in the 1950's the difference in the achievement gap between high and low-income families was 0.9 of a standard deviation (Reardon, 2013).

However, in the 1970's the gap began to widen, and now we are left with a gap that is larger than before. While looking at the achievement gap, Reardon (2013) also noted that something else has changed. While the income inequality has risen, the racial disparities have lessened. Now, an income achievement gap that is wider than the racial inequality gap in education is present (Reardon, 2013). Another significant finding in Reardon's research was that college completion rates between high and low-income families are widening as well. Higher income families have seen considerable growth in college completion. However, lower-income families have not seen as much of a change (Reardon, 2013).

Parents who do not have a healthy income will struggle to help their students with college costs. There is also the phenomenon that students in a low-income family tend not to be able to break the chains of a low-income life. Those students face harder challenges when trying to

prepare for and are successful in college. We expect to find that low-income students are less likely to work to succeed in high school and are less likely to go to college than their higher income counterparts.

While all literature agrees that the achievement gaps changed, they do not all agree on why they have changed. Jaekyung Lee (2002) looked at the achievement gaps and applied it to different races. He compiled statistics and data and connected theories together. Just as the achievement gaps related to income lessened in the 1950's, so did the achievement gaps related to race. The achievement gap of African American students begins to close in with those of their White counterparts (Lee, 2002). In specific, the high school education gap percentage has dropped and is now virtually non-existent. Also, the college education attainment gap has lessened as well. However, it has slowed since the 1980's (Lee, 2002).

As shown by the previously mentioned studies on the subject, college readiness in the United States is a very controversial topic of importance, with many factors that could affect the outcomes. With the constant drive to improve college readiness and the quality of education offered in high schools, several types of high school programs are evaluated.

CHAPTER 3: METHODOLOGY

The population will be run through a statistical analysis program to provide descriptive-correlational statistics. The population (N=103) is a random sample of high schools in Illinois that offer agriculture classes. 327 schools in Illinois have agriculture in their curriculum. The school names were transferred alphabetically into an Excel sheet. A random number generator was used to pick the schools that would be a part of this study. After identifying the names of the schools, the information about the schools was collected individually through the Illinois Report Card website. Illinois Report Card provides information about public schools in the state of Illinois. Private schools with agriculture were not included in this study because data was not made readily available on the Illinois Report Card website.

The variables collected from Illinois Report Card are as follows: percent college ready, percent enrolled in college, percent enrolled in college remediation classes, percent enrolled in agriculture, average teacher salary, average teacher attendance, average teacher retention, percent low-income students, and amount of spending per student.

The data on the Illinois Report Card website collects a school's information from data systems throughout the state such as the state's Student Information System. The amount of students that are college ready is the percentage of students who scored at least a 21 on their ACT before they graduate high school. According to the ACT organization, students receiving a 21 on their assessments should not have to enroll in remediation classes during their college careers. The aforementioned is referred to as "college ready" in this study. The percent of students who enrolled in college represents those students who have graduated from an Illinois, high school and enrolled in a two-year or four-year institution. The percent of students who are enrolled in remediation classes at Illinois community colleges is represented by the percent

enrolled in “college remediation” in this study. The percent enrolled in agriculture classes was collected through the Illinois Agriculture Education (2017) website. The number of students enrolled in agriculture education was divided into Excel by the number of students enrolled in the school. We will refer to it as "ag enrollment."

When gathering other statistics from the Illinois Report Card Website, the individual schools/districts name the average teacher salary. We will refer to this number as “teacher salary.” The average teacher attendance is the percentage of teachers that are absent ten days or less from school, in a year. “Teacher attendance” is the reference in this paper. The teacher retention percentage is the number of teachers that return to the same school the following school year. We will refer to this number as “teacher retention.” By analyzing the number of students at the school who are eligible to receive free or reduced-price lunches, live with substitute care, or live with families that are recipients of public aid, we define the low-income variable. “Low income” will be the reference for this data in this study. The amount of spending per student includes costs dealing with the teaching of students or interactions between students and teachers. Post-secondary enrollment (PSE) data points were collected as well.

103 schools in Illinois are analyzed in this study. When running the data, the linear regression and Pearson coefficients identified themselves. Pearson coefficients reveal the strength of the relationship between two variables. When the numbers show negative correlations, y increases as x decreases. When there is a positive correlation present, both x and y are increasing. A correlation of 1 means that they are perfect matches, and the closer that a number gets to zero, the less of a correlation there is between the two factors.

CHAPTER 4: RESULTS

We collected the following variables for each school included in the study: college readiness, college remediation, number of students enrolled in ag classes, average teacher salary, average teacher attendance, teacher retention, how much of the school classifies as low income, number enrolled in post-secondary education and the amount of spending the districts used for educational supplies. The following results were put into a chart and analyzed. Correlations that prove significant to a .05 degree are denoted by one asterisk. The results that were found to have significance as defined by a P value of .01 or less are indicated by two asterisks.

Impacts of Teacher Qualities

Teacher retention has been proved to be a significant factor that affects students and their performance. Table 1 explores the different impacts of teacher qualities, and what also influences those qualities. Teacher salaries must entice them to stay. This study further proves that teacher retention and teacher salary are positively correlated (0.327). This study also found significance between the amount of spending the district passes, and the teacher salary (0.706). The analysis showed a negative correlation between teacher retention and college remediation (-0.209). The analyzation of student's post-secondary enrollment and teacher retention showed a correlation of (0.213). We found no significant impact of teacher attendance.

Table 1
Impact of Teacher Performance on Teacher Qualities ($n = 103$)

Measure	Average Teacher Salary	Teacher Attendance	Teacher Retention
College Ready	0.185	0.036	0.113
College Remediation	0.18	-0.157	-0.209*
Ag Enrollment	-0.238*	0.078	-0.082
Average Teacher Salary	1.00	-0.169	0.327*
Teacher Attendance	-0.169	1.00	-0.097
Teacher Retention	0.0327	-0.097	1.00
Low Income	-0.051	-0.153	-0.122
Postsecondary Enrollment	0.187	0.061	0.213*
Spending	0.706*	-0.187	0.158

Correlations that prove significant to a .05 degree are denoted by one asterisk. The results that were found to have significance as defined by a P value of .01 or less are indicated by two asterisks.

Table 2 shows the correlations between agriculture enrollment and the remaining factors. When looking at agriculture education's impact on college readiness, we see that there are no significant correlations. As shown in Table 2, the most substantial correlation was college remediation (-0.278). The second correlation that came up was relating agriculture education to salaries within the district (Table 2). There, the analysis again showed a negative correlation (-0.238).

Impacts of Income

A negative correlation of (-0.645) shows that the higher amount of low-income students are present in a district, a lower amount of students will test college ready. Also, income negatively correlates with post-secondary enrollment (-0.545) and positively affects college remediation (0.388).

Table 2
Impact of Agriculture Education and Income ($n=103$)

Measure	Ag Enrollment	Low Income
College Ready	-0.135	-0.654*
College Remediation	-0.278*	0.388*
Ag Enrollment	1	0.055
Average Teacher Salary	-0.238*	-0.051
Teacher Attendance	0.078	-0.153
Teacher Retention	-0.082	-0.122
Low Income	0.055	1
Postsecondary Enrollment	-0.165	-0.545*
Spending	-0.189	0.213

Correlations that prove significant to a .05 degree are denoted by one asterisk. The results that were found to have significance as defined by a P value of .01 or less are indicated by two asterisks.

Impacts on College Choices

College readiness and its comparisons to the rest of the variables reveal some valuable information. In Table 4, college remediation increases as college readiness decreases (-0.236). One factor that identified as significant when compared to college choices had a low income. As the amount of low-income students increases, college readiness goes down at an alarming rate (-0.654). Again, as the number of low-income student's increase in schools, the amount of college remediation needed grows as well (0.388). Then, looking at the last college choice, deciding to enroll in a post-secondary institution, the correlation turns up negative (-0.545).

Table 3
Impact on College Choices (*n=103*)

Measure	College Ready	College Remediation	Postsecondary Enrollment
College Ready	1.00	-0.236*	0.501
College Remediation	-0.236	1.00	-0.191
Ag Enrollment	-0.135	-0.278	-0.165
Average Teacher Salary	0.185	0.18	0.187
Teacher Attendance	0.036	-0.157	0.061
Teacher Retention	0.113	-0.209	0.213
Low Income	-0.654*	0.388*	-0.545*
Postsecondary Enrollment	0.501	-0.191	1.00
Spending	-0.025	0.321	-0.024

Correlations that prove significant to a .05 degree are denoted by one asterisk. The results that were found to have significance as defined by a P value of .01 or less are indicated by two asterisks.

CHAPTER 5: DISCUSSION

The ACT is well-established as the benchmark for determining college readiness in this study and for the state of Illinois. Those factors include school qualities, and personal or family traits. Both types of factors would affect the child and their college readiness, but the amount of effect that they have was unknown.

Impacts of Teacher Qualities

When looking at how significant teacher salary, retention, and attendance is on college readiness, the results were not too surprising and agreed with studies done before. Previous studies found that the lack of teacher retention adversely affected students (Mayer et al., 2016; Hanushek, et al., 2016; Ronfeldt et al., 2013). This study supports their claims with the negative correlation between teacher retention and college remediation and a positive correlation between teacher retention and post-secondary enrollment. As the teacher retention rate increases, the need for remediation decreases and the post-secondary enrollment choices increase.

Teacher turnover is related to teacher pay as well. The more teachers get paid, the better the chances were of having a higher success rate on the ACT. Students thrive off of stability. This is a fundamental concept for high school teachers in general to understand. The more consistent the teachers are with attendance, expectations, and discipline, the better the students will perform. While test scores are the only way that performance is determined here, discipline and general understanding of concepts and learning objectives will be better received as well with a more stable the learning environment.

Impacts of Agriculture Education

We concluded that there is a slight relationship between agriculture education and the need for postsecondary remediation. This could mean that the way students are learning the old

material in new ways in agriculture classes are helping them store that information and master it (Illinois Agriculture Education, 2017). With this being a negative correlation, that means it as agriculture education increases in schools, the need for college remediation goes down. The negative correlation leads us to believe that in some cases agriculture education is found to help college readiness, but not as much as the agricultural education field would think or hope.

As agriculture education enrollment goes up, the average teacher salary decreases. Most of the communities who offer agriculture courses in their high schools are from the smaller communities, most of which would not have a significantly large budget. This points out an interesting fact that most of the districts that have agriculture programs are lower paying and lower spending.

Impacts of Income

The implications of income have been the most telling when compared to college readiness. The similarities between the numbers show that the more low-income students that were present in the school, the lower the chances were of having a high amount of students score well enough on the ACT to be considered college-ready. This should not be surprising, and should further exploit the phenomenon that students rarely escape the economic status of their parents and families. Besides the rare success stories of students who strive to excel in education, those living in a household that does not stress the importance of educational success are rarely motivated enough to try to gain a higher degree than their parents or families.

As Reardon (2013) found in his study on the widening income achievement gap, students from lower-income families are less likely to have a successful education than their higher income counterparts. The data found in this study supports his findings as well by seeing that college readiness among low-income students is low, the choice of these students to attend

college is adversely affected and if they do attend college, they spend their first semester in remediation classes.

The income and achievement gap is widening, and that could be caused by low-income student's performance in high school and the choice not to attend a post-secondary institution. It can also show his point that college completion rates among low-income families are decreasing as well. With the negative correlation between college readiness and the positive relationship with college remediation, students could be struggling with college studies and decide to drop out.

Impacts on College Choices

The analysis tells us that the income and financial status of the individual students and families are significant indicators of student's futures. This is a sad phenomenon that has been proven time and time again. As stated in the previous section, students with lower incomes are less likely to attend college and be successful in their endeavors in higher education. Even more disturbing, as the number of low-income students increases, the choice to move on to a post-secondary institution decreases. Is this because of family influences or are schools letting students slip through the cracks?

CHAPTER 6: RECOMMENDATIONS

It is recommended that this study be replicated and added on to. The focus of the second study should focus on the impacts of agriculture education. Qualitative research that analyzes teacher and student feelings toward the effect that agriculture education has on academic performance is necessary. The aforementioned research will help refute or further prove agriculture education's role in providing a quality education for high school students. High school agriculture educators can take this information and present it as a defense for their impact on students and the lack of students need to enroll in remediation classes at postsecondary institutions.

A multitude of implementations can be made by administrators, counselors, agriculture educators, and students using this information. Supports for students in low-income situations can be assessed and improved, steps for decreasing the amount of teacher turnover should be assessed in school districts, and agriculture educators can continue to strive to reach all types of students who walk through their door.

Low-income students proved to be the most affected when college readiness comes into play. Schools can take action by creating supports for students who express their wish to attend postsecondary institutions after high school. While administrators believe that terminating less than desirable teachers will present a positive outcome for the school, the negative effects on students could outweigh the benefits. This is a factors that is crucial for consideration when teachers are evaluated. Supports, in-service programs and assistance should be offered before termination is carried out.

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