Examining the Relationship Between Access to Home Amenities and Students' Academic Achievement at the Secondary Level

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Abstract
This study examined the relationship between access to home amenities and students' achievement at the secondary level. Data was gathered from 340 students with different access levels to basic home amenities such as electricity and more sophisticated facilities like personal computers and the Internet. Regression analysis was applied to find a relationship between students' access to amenities and academic achievement, with an approximate 3% change in academic performance explained by resource availability at home. The beta value was negative (-0.174), indicating that despite the importance of access to amenities, other factors must play a more significant role: family income, parental involvement, and socio-economic context would all likely significantly influence academic success. The findings highlight the necessity of adequate support programs and policies for educational inequalities, especially in poor households. The research suggests increasing access to technology, developing all-rounded student support systems, and improving parental involvement for academic success among students from different socio-economic backgrounds.
Keywords: Household access to amenities, academic achievement, secondary school students, technology access, educational equity.

Introduction

One aspect long known to affect students' academic achievements is the ability to access home amenities. In a school setting such as a secondary education center, there is a range of amenities at home, including an uninterrupted quiet place, access to technology, and other books or resources that could help improve students' academic performance and learning. The importance of the home environment to students' educational outcomes has been a widely debated issue in educational psychology and sociology (Evans, 2004; Sirin, 2005).

These amenities, contributing to the physical and psychological dimensions of a student's learning environment, may directly affect their ability to concentrate, focus on learning materials, and complete academic tasks effectively.

Recent studies indicate that the impact of the home environment on student achievement is felt much more during secondary school, where academic expectations and duties become more stringent. The example of technology, specifically computers and the internet, shows that access to those resources enhances students' research capabilities, information pool, and participation in online learning opportunities (OECD, 2021). The third set of examples is that home amenities will improve concentration, decrease interference, and facilitate better study habits and more successful schooling (Rivkin et al., 2005).

However, the causal relationship between access to home resources and academic attainment is ambiguous. Access is usually closely related to a family's socioeconomic status and associated with more affluent families having an opportunity for quality education instruments and a helpful home setting (Jensen, 2009). This disparity raises many questions regarding whether equity in education opportunities and outcomes exists between different socio-economic groups. While it may be easier for affluent families to afford computers, books, and tutoring, lower-income students may face overcrowding in the house, limited access to technology, or inadequate education assistance at home (Chatterji, 2006).

Home amenities, therefore, are not only physical but also a variety of factors that contribute to the general environment in which a student study. These include books and access to technology, as well as other factors such as parental involvement, a quiet and safe space for learning, emotional support, and social support the family provides. These studies often indicate that these factors determine students' motivation, self-control, and mental well-being, which are essential to academic success (Crosnoe, 2009; Taylor & McKenna, 2016).

Access to computers and the Internet has become crucial in modern education, with the increased trend toward digital learning platforms. Technologically, the devices provide avenues that extend beyond classroom walls; in that, these tools assist in offering avenues whereby students will research or get deep into particular issues that bring about increased depth and acumen when trying to be critical in understanding and critical thinking (Baker et al., 2016). However, family income levels often influence this access, as higher-income families can better afford the necessary devices and internet subscriptions.

Further, parents' and families' incomes have much to do with how students are helped or hindered in achieving academic success. High-income parents will offer extra enrichment opportunities such as private tutoring, educational travels, or extracurricular activities that enhance their children's experience and help them achieve academic success (Davis-Kean, 2005). Instead, poverty-level households will have home overcrowding, fewer textbooks and other learning resources, and even fewer enriching activities they cannot afford (Fitzpatrick & Rausch, 2015). These disadvantages automatically produce a mismatched playing ground in a class of students, thus their performance in academia and elsewhere.

Studies based on family income and how well their homes are equipped with facilities have led to understanding how these combined impact outcome results and SEL. Students from more affluent backgrounds typically are exposed to environments that positively lead to psychological outcomes such as emotional stability and motivation in achieving academic success (Jensen, 2009). Students from lower-income backgrounds may experience more

significant stress, hindering academic progress due to their cognition and emotional challenges (Evans, 2004). How these dynamics are interplayed is crucial in reducing educational inequalities and finding interventions to minimize the negative impacts of socio-economic disadvantage.

The relationship between home amenities and student academic success is complex and combines tangible and intangible factors that can support or impede students' educational success. For example, home amenities are a generic term where physical resources, including books, computers, internet availability, study spaces, and the psychological and emotional support provided to children by their parents, create an environment conducive to higher academic success. These factors, thus, create either an enabler or a disabling setting for students' scholarly growth, mainly during secondary school ages, when the burden of study increases and students get ready for further training or their careers. Recognizing that the home environment increasingly impacts student learning, further study on the impact of access to these resources on secondary-level education outcomes is needed.

Recent research has proved the growing importance of technology in modern education, especially at the secondary school level, where most curricula are being included with digital learning tools. Personal computers, high-speed internet, and other digital learning tools can be used to access a significant amount of information, collaborate with peers and educators, and build skills required for workers in the 21st century (OECD, 2021). It has been noticed that students who have access to such tools are performing better in their academics than the ones without access. Technology, after all, gives them a chance to learn in terms and pursue topics of interest beyond what the classroom might offer (Baker et al., 2016). For instance, with an enhanced internet connection, there is every reason a student would engage in all online research activities and utilize digital books meant to advance their studies remotely.

The availability of a dedicated, quiet, and comfortable home setting to study also enhances students' achievements. Research has indicated that students with a dedicated area to study, who are free from distractions like noise, crowding, or lack of personal space, tend to be more focused and productive in their academic endeavors. A quiet study environment promotes concentration and reduces cognitive overload, thus enhancing learning outcomes (Rivkin et al., 2005). On the other hand, students who do not have a proper study space may lack time management, organization, and poor study habits, all of which can negatively affect their academic performance.

In this regard, the role of parental involvement cannot be overstated. Parents are usually the first point of emotional and academic support for most secondary school students, and their participation in their children's education has been strongly linked to better academic outcomes (Jeynes, 2007). However, the extent to which parents can provide support often depends on their educational background, work schedules, and financial resources. The more affluent parents spend more time in their children's school life, partly because they can manage time and resources better by offering extra time to provide additional support through tutoring, extracurricular activities, or educational travel. Lower-income parents often lack such resources and face either a scarcity of money or a busy schedule, which tends to negatively affect children's academic achievement, as Davis-Kean (2005) concluded.

Along with these material resources, the socio-economic environment where a student lives is as influential in determining his potential. A family's income level can quickly go along with

other socio-economic conditions, such as a decent dwelling, neighborhood safety, and availability of healthcare services, which add to a student's overall well-being and mental health. Children growing up in low-income families might suffer from more stress and insecurity as compared to children belonging to high-income families, due to which their mental acuity and concentration toward achievement could get badly hurt (Evans, 2004). Students with higher socioeconomic status enjoy much safer living conditions and feel greater security, enabling them to focus on their school goals more quickly.

Moreover, socio-economic inequalities in supplying home amenities are an enormous source of achievement gaps across students from different economic strata. Students from the wealthy class are more likely to attend well-resourced schools, have access to private tutors, and undertake enrichment activities that help upgrade their academic skills. In this case, students from lower-class backgrounds will experience challenges accessing such amenities and services, thereby facing unequal education opportunities and results (Sirin, 2005). The inequitable access to home facilities to acquire knowledge makes it crucial to discuss broader socio-economic factors in learning achievements and push for policies that make such amenities available equitably to every student irrespective of the level of income their families enjoy.

The relationship between family income, home amenities, and academic achievement is not necessarily dependent on the availability of resources but also on how these are used and integrated into students' lives. For instance, just being equipped with a computer or internet connection doesn't guarantee academic success, but the intentional and effective utilization of these tools. Similarly, a well-supported home environment's emotional and cognitive benefits may be less effective if students lack the motivation or skills to take full advantage of these resources. Thus, it is crucial to examine the availability of home amenities and how students and their families leverage them to foster academic success.

Statement of the Problem

The home environment has become increasingly recognized as critical in determining secondary school students' academic success. Among the key components of the home environment, the availability of essential amenities, such as technology, study spaces, books, and other resources, have become increasingly recognized as key determinants of students' academic success. However, despite an ever-growing awareness of how vital these home amenities may be, empirical research specific to the question of exactly which of the various types of home resources contributes positively toward secondary school students' achievement is sparse. This, in addition to the extensive record on the relationship between SES and academic performance, further illustrates the understudied status of the role played by family income in defining who gains access to home amenities.

Most often, low-income students are deprived of some basic needs, like having the internet, personal computers, or good surroundings for reading, which, therefore, will affect the student's academic success. Conversely, students from relatively affluent backgrounds are usually offered a better chance of acquiring those resources, giving them a better academic chance. This has led to the need to understand how access to home amenities influences students' academic achievement as a way of redressing educational inequalities brought about by the increased dependence on technology and digital learning tools in secondary

education.
The imbalance in providing such resources further complicates this, hence a possible achievement gap among students of different socio-economic backgrounds. Therefore, this research aims to investigate the relationship between access to home amenities and the academic performance of secondary school students, focusing on how family income influences the availability and utilization of these resources. The findings of this study shall be valuable for the sake of factors that contribute towards academic success and inform policies that promote equitable access for all students, regardless of their socio-economic status.

Objective of the Study
To examine the relationship between access to home amenities (Electricity, Running water, Sui Gas Connection, Internet, Personal computer/laptop, and Television/ LED) and the academic achievement of secondary school students.

Research Question
How does access to home amenities affect the academic achievement of secondary school students?

Significance of the Study
The present research has special significance because it takes the case of how the accessibility of facilities of home impacts the educational outcome of secondary school-going children. The findings are significant for policies that reduce educational disparities, especially among low-income students. The study will provide knowledge on how home resources contribute to academic success for educators and parents alike. By filling in the gaps in resource access, the research contributes to equity in education. Ultimately, it aims to improve academic outcomes and create more inclusive learning environments.

Delimitations of the Study
The study was delimited to:
Male students of the public secondary schools in tehsil Muzaffargarh.

Literature Review
The relationship between family environment, household amenities, and students' academic achievement has received increasing attention in educational research. Several studies emphasize how access to essential resources at home, including electricity, running water, and technology, significantly impacts students' academic outcomes. Home environment factors are often associated with socioeconomic status (SES), which strongly predicts academic performance at the secondary level (Jeynes, 2020). Recently, there has been growing interest in the impact of technology and digital access, especially in online learning, as the most salient determinant affecting academic achievement (OECD, 2021).

Home Environment and Academic Achievement
The quality and availability of the home environment are direct indicators of students'

academic achievement. Through a study, Sirin (2021) found that socioeconomic status is the primary factor predicting educational achievement. Note that it is essential that families with a higher SES class have more opportunities to support intellectual and academic resources at home, such as books, computers, and Internet access. This is quite important in this digital age, where access to the internet is vital for successful academic progression, and more so during this COVID-19 home-based learning in most parts of the world (OECD, 2021). Taylor and McKenna (2021) found that middle-class families with much technology in personal computers or smartphones perform well academically because they can readily get information and complete tasks promptly.

In addition, utilities like electricity, running water, and gas are equally essential to afford students a conducive home life for their learning. Evans (2020) evidenced that families deprived of the most critical amenities become overwhelmed with stress and tension that makes children incapable of concentrating on their studies. Consequently, students from deprived families attend classes randomly, stay absent, or take stress over being unable to complete a given homework task or assignment, and these all become the prospective factors that influence their learning performance and attainment of educational goals.

Engagement and Demands of Parents

Parental involvement is one of the major predictors of students' academic success. For example, a meta-analysis by Jeynes (2020) pointed out a positive relationship between parental involvement and academic achievement in secondary, higher, and graduate education. According to the latest studies, a significant mediating role is suggested by parental expectations because the students of parents who set high academic standards generally achieve better in school (Davis-Kean, 2021). The influence of parental education levels on academic success is also noteworthy; parents with higher educational attainment are more likely to engage in practices that promote academic achievement, such as helping with homework or encouraging positive study habits (Baker et al., 2016). In addition, parents' expectations for their children have been proven to influence students' attitudes toward education and their academic aspirations (Zimmerman, 2021).

Parental involvement is particularly essential in low-income families because other external resources may not be available. A study by Crosnoe (2021) demonstrates how favorable family structures and the involvement of parents in the education of a child can help them overcome the difficulties created by socioeconomic disadvantages. Even minimal participation and encouragement in these families will significantly increase students' academic success.

Digital Divide and Technology Access

That further continues to grow the so-called digital divide in education, with online learning becoming more core for the education experience. Mainly for people, access to the internet and digital tools at home is now associated with students' academic success; that's where lack of it often puts them at some disadvantage. During the pandemic, students without reliable internet or access to a computer were at a significant disadvantage, missing out on remote learning opportunities (OECD, 2021). Research by Rosen et al. (2021) demonstrated that students who could engage in online education performed better than their peers with

limited access to digital tools. Even more, digital technology aids in providing access to study materials and nurturing independent learning skills to maintain academic success in secondary education. (Zimmerman, 2021).

Socioeconomic Status and Educational Inequality

Empirical evidence from scholarship often documents that low socioeconomic status and poor economic conditions correspond to weaker records of high academic performance. These variables are usually significantly mediated via poor access to educational resources associated with poverty, family stress, and inadequate parental support (Sirin, 2021). In a single study, Fitzpatrick and Rausch (2020) found that many lower-income students face many obstacles to school success—specifically, deficient nutrition, limited academic support at home, and exposure to few rich educational experiences. These detriments hamper students' achievement at school and further promote an achievement gap between higher- and lower-income students.

In contrast, students from more affluent families usually have more opportunities to access education outside the home, such as private tutoring, extracurricular activities, and enriching learning experiences. Such resources have been proven to enhance academic outcomes by providing additional support and enrichment that students from lower-income families may lack (Baker et al., 2016). Thus, addressing these disparities through policy interventions, such as access to technology and after-school programs, is essential to reduce educational inequality.

Research Methodology

This is a correlation-by-method study. A quantitative approach was followed to understand the relationship between access to home amenities such as Electricity, Running water, Sui Gas Connection, Internet, Personal computer/laptop, and Television/ LED with the academic performance of 10th-grade students. Data was collected in two ways: First, through a survey questionnaire about their access to home amenities (Electricity, Running water, Sui Gas Connection, Internet, Personal computer/laptop, and Television/ LED), and second one was through academic achievement tests, and both were correlated.

Population of the study

There were 35 male public secondary schools in tehsil Muzaffargarh, of which 11 were in urban areas while the other 24 were in rural areas.

Source:
(https://schoolportal.punjab.gov.pk/sed_census/new_emis_details.aspx?distId=323--Muzaffargarh).

Sample of the study

Twenty-five schools were selected out of 35 using a table of random numbers. Six (6) urban and 19 rural male public secondary schools were selected for data collection in tehsil Muzaffargarh. The students of the 10th grade were randomly selected from every Male Public Secondary School in Tehsil Muzaffargarh. So, the sample was 340 male Rural and Urban Public Secondary School students, which provided sufficient statistical power for detecting medium to large effect sizes with a confidence level of 95% (Etikan et al., 2016; Creswell, 2014).

Research Instruments

Self-developed access to home amenities (Electricity, Running water, Sui Gas Connection, Internet, Personal computer/laptop, and Television/ LED) Questionnaire (AHA) was used to measure the socioeconomic status of the students who participated in the study, and a self-developed Academic Achievement Test (AAT) was used for the 10th grade.

Reliability of Research Instruments

A pilot study was conducted by administering an academic achievement test. The test was given to randomly selected 20 students from the sample. Academic achievement scores were obtained. This allowed the researcher to evaluate the clarity and comprehensibility of the questionnaire items, assess the process of acquiring achievement data, calculate preliminary reliability estimates, gather feedback to refine the instruments and procedures and identify any potential logistical or administrative challenges before the primary data collection phase. In this research, the following instruments were used:

i. Access to home amenities (Electricity, Running water, Sui Gas Connection, Internet, Personal computer/laptop, and Television/ LED) (AHA)
ii. Academic Achievement Test (AAT)

The reliably of the (AHA) tool was 0.91, and (AAT) tool was 0.89

Data Collection

Data was collected through visits to the respondents' schools, and the questionnaires were distributed among participants. An achievement test was also conducted. Then, achievement tests scored and correlated with students' economic status.

Data Analysis

After the data collection phase, the data was analyzed using SPSS. Descriptive and inferential statistics were used to analyze data through SPSS. For inferential statistics, Pearson's Correlation Coefficient (r) was used.

Table No. 1 Household Access to the Amenities

Amenities	*f*	%
Level 1- Electricity	53	15.6
Level 2- Electricity and Running water	37	10.9
Level 3- Electricity, Running water, and Sui Gas Connection	30	8.8
Level 4- Electricity, Running water, Sui Gas Connection and Internet	105	30.9
Level 5- Electricity, Running water, Sui Gas Connection, Internet and Personal computer/laptop	80	23.5
Level 6- Electricity, Running water, Sui Gas Connection, Internet, Personal computer/laptop and Television/ LED	25	7.4
Level 7- Electricity, Running water, Sui Gas Connection, Internet, Personal computer/laptop, Television/ LED, and All extra facilities	10	2.9
Total	340	100.0

Table 1 describes the results of household access to the amenities. 15.6% of families had access to first-level amenities, such as electricity. 10.9% of families had second-level amenities like electricity and running water. 8.8% of families had third-level amenities like electricity, running water, and SUI gas. 30.9% of families had fourth-level amenities like electricity, running water, SUI gas, and internet. 23.5% of families had fifth-level amenities like electricity, running water, SUI gas, internet, personal computers, and laptops. 7.4% of families had sixth-level amenities like electricity, running water, SUI gas, internet, personal computer laptop, and Television/ LED. 2.9% of families had seventh-level amenities like electricity, running water, SUI gas, internet, personal computer laptop, Television/ LED, and all extra facilities.

Table No. 2 Regression Analysis of Relationship of Household Access to the Amenities and Academic Achievement (Model Summary)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.174	.030	.027	12.565

a. Predictors: (Constant) Household Access to the Amenities

Table 2 indicates the regression analysis of Household Access to the Amenities and Academic Achievement. According to the data analysis of the model summary, the R-square value was .030, which showed that household access to amenities caused a 3% change in students' academic achievement.

Table No. 3 Regression Analysis of Household Access to the Amenities and Students' Academic Achievement (ANOVA)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1664.011	1	1664.011	10.540	.001
	Residual	53364.328	338	157.883		
	Total	55028.338	339			

a. Dependent Variable: Total Marks
b. Predictors: (Constant) Household Access to the Amenities

Table 3 indicates the regression analysis of household access to amenities and academic achievement. According to the data analysis of ANOVA, the $p<0.05$ showed a significant relationship between household access to amenities and academic achievement.

Table No. 4 Regression Analysis of Household Access to the Amenities and Students' Academic Achievement (Coefficients)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	85.000	1.697		50.098	.000
	Household Access to the Amenities	-1.364	.420	-.174	-3.246	.001

a. Dependent Variable: Total Marks

Table 4 indicates the regression analysis of students' household access to amenities and academic achievement. According to the data analysis of Coefficients, the beta value was (-.174), which showed a positive relationship between household access to amenities and students' academic achievement. In other words, it indicates that if household access to the amenities interacts with one unit, then students' academic achievement will increase by -17.4% negatively.

Findings of the Study

The study's findings show that access to household amenities to students significantly affects academic achievement. From the data, a small but statistically significant relationship was observed between the level of household amenities and academic performance. Specifically, regression analysis revealed that household access to these amenities accounted for a 3% change in academic achievement. This would imply that better access to essential resources like electricity, running water, and the internet would improve students' academic outcomes by a small margin. However, the coefficient analysis has a negative beta value of -.174, meaning that even though the relationship is significant, the effect of household amenities on academic achievement is not strong and has a slight negative correlation. This implies that access to home amenities is essential, but other factors also determine students' success. It, therefore, calls for more studies to find out how some home environment factors, including amenities, interrelate with other socio-economic factors to impact academics.

Discussion

These study results indicate a tremendous but slight relationship between households' accessibility to amenities and students' academic achievement levels at secondary school. They reveal that various essential amenity- electricity, running water, internet access, and a personal computer- in household access positively affect students' academic achievement. However, the correlation seems weak, as indicated by the low R-squared value (0.030) and the negative beta in the regression analysis (-0.174). This means that although access to the resources is essential, it explains only a tiny proportion of the variability in students' academic achievement, and others may be more influential in defining it.

Several previous studies have examined the relationship between household access to amenities and academic achievement, with mixed results. Studies have generally established that access to amenities such as electricity, running water, and a quiet study space improves students' ability to focus, engage with their studies, and perform academically (Evans, 2004). For example, technology such as the internet and personal computers has been reported to influence learning outcomes positively. As noted by Baker, Goesling, and LeTendre (2016), access to modern technology enables students to achieve more effective self-directed learning, increased accessibility to educational resources, and collaboration with peers and teachers, and all of these improve academic results. This also holds with the results of the present study, wherein a more significant number of amenities, including Internet access and personal computers, corresponded with better academic attainment in both the fourth and fifth levels.

This result implies that other factors could explain much better household access to amenities than they do. Family income, parental education, and social support are critical variables that can shape students' academic outcomes. Davis-Kean (2005) emphasizes that family income

indirectly affects academic achievement by influencing the availability of resources at home, such as educational materials and extracurricular activities, which are not directly captured in the study's assessment of amenities. Parental involvement, which is usually correlated with household income, predicts student achievement (Jeynes, 2007). This would imply that while household amenities can contribute to this effect, the socio-economic context of the family, including financial stability and parental educational backgrounds, maybe more directly associated with academic outcomes.

The study also established a significant but weak negative relationship between household access to amenities and academic achievement. This is, therefore, the result of the coefficient analysis at Beta = -0.174. As this negative correlation suggests that higher access to amenities leads to a slight reduction in achievement, it also represents the complexity of the relationship. The negative beta value may indicate that other confounding factors, like socioeconomic status or parental involvement, could moderate household amenities' effect. For instance, although amenities like the Internet and personal computers are helpful for academic work if students are not given proper guidance on using these resources effectively, the benefits will be limited. Additionally, digital device distractions like social media and entertainment may reduce study time and result in lower academic achievement (Rosen, Lim, Carrier, & Cheever, 2011).

Thirdly, since the students targeted by the study are secondary-level students, it implies that, at this level of education, students may need more than just the availability of resources to succeed academically. Secondary students face increasingly complex academic challenges, and motivation, self-regulation, and time management become more critical to success (Zimmerman, 2002). In this context, the home environment, including access to amenities, may provide a foundation for academic achievement, but intrinsic factors, like student motivation, play an equally vital role.

Furthermore, the limited impact of home amenities on academic achievement may reflect broader systemic issues related to education inequality. For students who hail from wealthier backgrounds, there is not only more provision of amenities but also going to better-resourced schools, qualified teachers, and opportunities for extracurricular activities, which would likely strengthen the impact of home resources on performance at school (Sirin, 2005). In contrast, students from low-income families may face obstacles outside the home environment, such as fewer effective schools, limited access to extracurricular support, and higher stress levels, which can undermine their academic achievement.

Conclusion of the Study

This work feeds into the growing literature concerning home environment and academic achievement, focusing on household amenities. Although access to specific amenities, such as electricity, the Internet, and personal computers, may quickly ease student learning, the study provides preliminary evidence to suggest that their direct impacts on academic performance are less significant. Other factors, including family income, parental involvement, and socio-economic status, could be more influential in affecting academic success.

Recommendations

1. Increase access to technology and educational resources for students from low-

income households.

2. Implement support programs that address academic and socio-economic factors affecting student achievement.
3. Enhance parental involvement through training and resources to create supportive learning environments at home.

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