



A THEORETICAL ANALYSIS OF STUDENTS' ACADEMIC ACHIEVEMENT AND ASSOCIATED FACTORS

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Abstract

The academic performance of student is influenced by several factors. Studies have been conducted in the field of educational data mining to find out what all the factors are that have an effect on a student's academic performance. There are many factors that can have an effect on a student's academic success, but our study aims to find the main factors that can have an effect on a student's academic performance. Predicting student performance becomes more difficult due to the large volume of information in academic databases. The responsibility of the teacher increases, she must be attentive to the activities and behavior of the student. To facilitate the work of a teacher, this study attempted to identify some factors that affect the academic performance of students. Our study could bring benefits and impacts to students, educators/teachers, and tutoring institutions. The factors investigated in this study are: student base knowledge, socio-economic status, college/school environment, environment pollution, teachers' support, parental/family support, friend circle and health.

Keywords: Academic Achievement, Base Knowledge, Environment Pollution, Teachers' Support, Parental/Family Support, Friend Circle.



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INTRODUCTION

Education incorporates a lasting effect on life. Educators are not happy with the easy list of student information, but they also need accurate data on a student's past academic performance and prediction of his/her educational future. Since the amount of academic details stored in traditional computer files and databases is increasing at an exponential rate. Structured or simple query languages are not enough to meet these increasing demands for

information. One of the biggest challenges is improving the level of the education system to improve student performance.

Academic performance (in other words, academic achievement) is the extent to which a student, teacher, or institution has achieved short- or long-term educational goals. According to Hasan et al. (2017), academic performance is the ability of students to meet the expectations of the courses in which they are enrolled and is generally assessed using the GPA (cumulative grade point average). As noted by Badiger and Aiholli (2017), academic achievement can be described as a skill in all academic disciplines, both in the classroom and in extracurricular activities. This includes excellence in sports activities, confidence level, communication skills, timely delivery, arts, culture and others, which can only be achieved when a person is well suited. Several studies have been conducted exploring educational data to find special cases in order to improve students' academic performance. In this article, the author investigated the use of data mining techniques using an a priori algorithm in a set of Istanbul students, to reveal the relationship between the courses that students failed. They took the data set of approximately 28 students from 74 courses to obtain the lowest reinforcement rate and at least an 85% certainty rate. In their study, they found that if a student failed a particular subject in ninth grade, he would also fail the following year.

After reviewing the literature following factors are significant to influence the academic achievement of students.

1. Students' Base of Knowledge and Academic Achievement
2. Socio-economic Status of Students and Academic Achievement
3. Environment and Academic Achievement
4. University/College/School Environment and Academic Achievement
5. Teachers' Support and Academic Achievement
6. Parental/Family Support and Academic Achievement
7. Friends Circle and students' Academic Achievement
8. Health of Students and Academic Achievement

1. Students' Base of Knowledge and Academic Achievement

According to the literature, students' prior knowledge plays an important role in academic performance, as found in the studies of Masui et al. (2014), Niessen et al. (2018) and Lin and Liou (2019). Some authors, like Zwick & Sklar (2005), pointed this factor as the main predictor of the behavior of university students during their first year. According to

Plant et al. (2005), prior knowledge has an indirect impact on academic performance at the end of the semester because of its influence on the amount and type of new learning that students must undertake to achieve a high level of mastery. Student language skills show a positive correlation with student achievement (Savolainen et al., 2008), but the literature points to a lack of basic skills such as text comprehension among many first year students (Hungwe, 2019). Despite the importance of this academic competence, which is crucial in addressing the academic challenges facing college students, analyzes of the role of reading, comprehension, and writing skills in student academic performance have received considerable and limited attention.

2. Socio-economic Status of Students and Academic Achievement

Student household income and parental education level are significantly related to student achievement and are closely related to student academic performance. The student's place of life, the community, the means of education, the mother's diploma, the father's diploma, the habits of the students, the economic situation of the family, are strongly correlated with the academic performance of the student. The result of the study of Ritu Chandra and Professor Shaikh Azimuddin (2013) revealed that high, average and low SES groups of students tend to vary in terms of their academic achievement. There is a positive correlation between SES and Academic achievement of secondary class students. Andrew McConney (2010) conducted a study, which lead him to state that that mathematics achievement was greater in students with higher socio-economic status as compared those with lower socio-economic status. Perhaps due to the factor that the tuition fees and debt continue to rise and poor students are still under extreme pressure to make ends meet, and for some it comes at the expense of their education. According to meta-analytic study of Seluck Sirin (2005), the SES achievement correlation had slightly decreasing change in the average correlation, since white's initial review was published.

3. Environment and Academic Achievement

The environment, specifically classroom environment is an important place in a student's academic growth. Students spend most of their time in class. This is the place where they learn various skills necessary for success in the future. The classroom is where they begin to understand the world and its problems. It is the place where the student develops knowledge of it. Learning is often affected by inadequate ventilation and air circulation systems in classrooms. Stagnant air increases carbon dioxide levels and prevents carpet and paint fumes from escaping. It has a direct impact on mental capacity. Learning Liftoff (2019)

referenced the findings on the indoor air quality in 70 schools, with a total of 140 classrooms, in a study conducted by the University of Tulsa's indoor air program. They tracked student performance on standardized tests and compared student performance in classrooms with poor air quality with classrooms with better air quality. Students in poorly ventilated classrooms scored 74 points lower on average on 2,400-point tests. Moreover, environmental pollution, which can be classified as air pollution, water pollution, soil pollution, food pollution, noise pollution and radioactive pollution etc., also revealed by the studies as to affect the academic achievement of the students (Appannagari 2017). In general, the effects of pollution can in turn cause weather events such as acid rain, heat islands and flash floods. In addition, according to Sun and Zhu (2019), outdoor air pollution can increase the prevalence rates of various diseases such as cardiovascular disease, lung cancer, respiratory problems, asthma, unwanted pregnancy and bad deliveries. Overall, the major attribute is the attendance of the student in class: the attendance of the student shows his interest in studies.

4. University/College/School Environment and Academic Achievement

The college/school environment plays an important role in the academic development of students. The students are the real players in the university/school. In return, the institution must be able to provide full support to improve the student in his studies, as well as to shape the career of the student in a beautiful way. A student's early academic success is a predictor of their future success. To increase the success rate of an institution, students must benefit from academic and social support. With all of these things in mind, not many schools / colleges have set up tutoring centers, writing centers and have started experimenting with peer tutoring as well. Some private schools/universities have student support initiatives and try to find methods to bridge the gap between theory and practice. The second attribute is the student's level of concentration in the classroom: it mainly depends on the circle of friends in which the student is. If the student is part of a group that has no interest in studying, they are more likely to be influenced by the group and not be successful academically. If the student is part of a quality group, even if she was not interested in learning new things, she naturally develops an interest in academics. The third most important attribute is the student's study time: the time that the student spends daily after school hours is very important for the student to excel in his studies.

5. Teachers' Support and Academic Achievement

Since students spend a large portion of their time with their teachers in school, teacher support can be vital for students' academic development, including not only learning

outcomes, but also affective or emotional. Teacher support improves a teacher's relationship with a student. Numerous empirical studies have shown that teacher support was significantly positively correlated with positive academic emotions (such as pleasure, interest, hope, pride, and relief) and negatively with academic emotions (such as anxiety, depression, shame, anger, worry, boredom and hopelessness), as revealed by Liu et al. (2016), King et al., 2012, Mitchell & Della Mattered (2011), and Skinner et al. (2008). The self-determination perspective suggests that teacher support arises when students perceive cognitive (Skinner et al., 2008), emotional (Skinner & Belmont, 1993), or autonomy-oriented support. Teachers, who support their students, show their care and concern for their students, so these students often share this concern and respect for the teacher by adhering to class standards (Longobardi et al., 2016; Chiu & Chow, 2011). When teachers yell at students, blame them or discipline them aggressively, these students often show less interest in their teachers and less cooperative behaviors in the classroom (Miller et al., 2000).

6. Parental/Family Support and Academic Achievement

Parents are the students' first teachers, the second teachers are the class tutors and the third teacher is the environment or environment in which the student lives. The education of a student is a shared responsibility of parents and teachers. Parental involvement in school has been shown to be a key factor in children's academic achievement. Lara Laura and Saracosti Mahia (2019) found that children whose parents have low participation have lower school results. The empirical results have shown a positive association between parental participation in education and school performance (Perez Sanchez et al., 2013; Tarraga et al., 2017), also improving children's self-esteem and school performance (Garbacz et al., 2017) as retention and school attendance (Ross, 2016). When students use all these facilities at home, they become more intellectual than bookworms. But that does not mean that students whose parents are not educated do not excel in their studies. All that matters are parents' attitudes towards education, perceptions of the value and relevance of education, or perceptions of the quality of education. The home is the place where you can take good care of the student. According to a recent survey by the European Union Monitoring Report (2013), students whose parents have a higher education level perform significantly better, on average, on science, reading and math tests than those whose parents have no higher education. They only have basic education. Parents who know the importance of education can search their children's notebooks after school or college or even hire a private teacher to teach them after school.

7. Friends Circle and students' Academic Achievement

As students grow older, their independent strength increases, interaction with a friend increases, and emotional conversation between friends plays a vital role in reducing pressure, relieving worry, and enhancing positive emotions. As a result, there is a decrease in communication with their families. Friendships have positive effects on other measures of well-being, including social life and happiness in college life. For children who have friends, these friendships contribute to the development of prosocial skills, help define self-esteem and self-esteem therefore inspire greater self-confidence, positively influence academic performance and help encourage or discourage deviant behavior (Schwartz, 2009; Hartup, 1983). Research has shown that in the middle the school having reciprocal friendships increases levels of prosocial behavior and academic performance (Wetzel, McNamara & Caldwell, 2004). Many children who are referred for emotional and behavioral issues have no friends or are having difficulty with their peers (Schwartz, 2009). Because emotional and behavioral issues can worsen the stress of everyday life, it can be assumed that social functioning and academically desirable paths become more difficult. Research suggest that having equal friends and followers in the classroom has a positive effect on studies. However, the number of friends in the social network beyond the first reciprocal circle of friends does not affect students. Additionally, the presence of non-reciprocal friends in the classroom has a negative effect on a student's learning outcomes. The influence of the friend is much weaker than the influence of the family and only 1.4% of the students consider that the friend is the most influential factor. We take into account the social support that friends provide, which mainly includes spiritual encouragement, emotional comforts and spiritual aspects but less material or financial help. When the student becomes mentally unstable, it is the family that strongly supports him. Family relationships have been relatively stable and strong. Friendship changes in relation to the new environment or when studying in a new school, perhaps this is one of the reasons why the influence of the friend is less than the influence of the family on the happiness of children. Therefore, if the student is in a good circle of friends academically, the student becomes strong. Good friends support each other, motivate each other, help each other, and grow in life. A bad circle of friends is a bad influence on students.

8. Health of Students and Academic Achievement

The inability to cope, helplessness, mental strain, and excessive workload are 'stressors' for students. Most students think they have been stressed at one point or another. An excessive information load for a student leaves less time for recreation and relaxation.

Sleep plays a vital role in the health of students. Sleep-deprived students have poor performance in attention, memory, and problem solving, which in turn has affected their academic performance. The California State Education System (2018) has published an extensive report linking academic performance and health. A study by university researchers Washington found that schools in Washington stated where the prevalence of drug abuse is lower he also obtained a higher score on the Washington Assessment of Student Learning (WASL) Arthur et al (2006). It also caused difficulties with academic work such as such as social integration, school adjustment, behavior regulation, attention and concentration, according to DeSocio and Hootman (2004). In a study, Nelson et al. (2004) about 83 percent of students with emotional and behavioral disorders he performed below the average of the control group in reading, writing and mathematics.

CONCLUSION

There are many factors inside and outside of school (academic and nonacademic factors) that contribute to the quality of students' academic performance. This study focused on academic and non-academic factors that influence students' academic performance. The main objective of the academy is to effectively educate students, so that they can achieve excellent results in their studies. To achieve this goal, educators must understand the factors that can contribute to student academic success. Therefore, the results of this article provide important information on the factors that could affect the academic performance of students. Predicting the factors that may have an effect on student performance is very helpful in assisting academics and novices in their learning and teaching methods.

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