RESEARCH PAPER

A Study of Technology Quotient and Academic Achievement of College Students

* Dr.Yatendra Pal, Principal
38, Keshav Bunglows, Opp. Luby, S.P.Ring Road
New Shahibaug, Ahmedabad (Gujarat)
Email: yatinpal@yahoo.com, 9427029229(M)

Abstract

The main thrust of this study was to investigate the technology quotient and academic achievement of first year science college students of Ahmedabad city. 100 male and female college students from the college of Bachelor of Science were included through randomized sampling technique in this study. A self-made Technology Proficiency Test was used as major instrument to obtain the data for this study. The SGPA of the semester of university examination of first semester was used to in order to determine students' academic achievement. Mean. S.D., t-test and coefficient correlation statistics were used to analyze the research data. The result of the t-test found that there is significant difference of the technology quotient according to gender. The result of the Pearson's product moment correlation (r) showed that there is a significant relationship between the technology quotient and academic achievement of the college students in this study. The present study concluded that the technology quotient is one factor that affects the academic achievement of college students.

INTRODUCTION

Technology is everywhere and entwined in almost every part of our life and culture these days. However, too much use of technology may bring some adverse effect too on human generation. Once **Albert Einstein** said, *"I fear the day that technology will surpass our human interaction. The world will have a generation of idiots"*. Technology has also entered in the field of education from the twentieth century. Today's students are fundamentally different from students of twenty years ago. Due to the technology revolution, students interface more with screens and growing up in a global community without leaving their homes. Instead of the teacher being the only source of help in a classroom, students can access web sites, online tutorials, and more to assist them. Education doesn't stop at the end of the school days now.\ and continues even after schooling.

Technology can help in virtual field trips, electronic forms instead of paper, email instead of printed memos, virtual labs, electronic textbooks, and the thousands of free online resources. All that can save institutes' money and give students excellent educational experiences. Somewhere, Robots have also been used as educational assistants to teachers who teach students at elementary and high school levels. Educational Robots can help children to learn about mathematics, physics and electronics as well.

Technology has the ability to enhance relationships between worldwide teachers and students. When teachers effectively integrate technology into subject areas, they grow fulfilling the roles of adviser, encourager, content expert, and coaches as well. Technology helps to make teaching and learning more meaningful and recreational. Integrating technology into the classroom is an effective way to connect with students of all learning styles. Using technology in the classroom gives teachers and other faculty members the opportunity to develop their students' digital citizenship skills. The traditional passive learning model is broken. Teachers have lot of pressure to change their teaching techniques and strategies due to technology change. Technology creates a more digital educational culture. Most of the teachers and parents say that technology helps the education and is useful in improving academic achievement. Is there any correlation between TQ and AA? To find the answer of some such questions, the researcher chose to conduct this study.

STATEMENT OF THE PROBLEM

This study aimed to 'study the Technology quotient and academic achievement of college students'. It was also being conducted to find answers of the following questions:

1) What is the level of technology quotient of the college students?
2) What is the academic achievement of college students?
3) Is there any significant difference in the technology quotient of college students according to gender?
4) Is there any significant relationship between the technology quotient and academic achievement of college students?

HYPOTHESES

Ho$_1$: There will be no significant difference between the mean scores of technology quotient of male and female students of college in this study.

Ho$_2$: There will be no significant relationship between the technology quotient and academic achievement of college students in this study.

CONCEPTUAL FRAMEWORK

The impact of technology has been overwhelming and its usefulness also. As far as its adaptation is concerned, it continues to increase. However, it is difficult to predict how it will shape students' behavior and academic achievement. Psychologist focuses on various perspectives of human behavior, such as the relationship between the EQ and academic achievement; or an IQ and academic achievement. In this study, researcher has focused on new tern, technology quotient and academic achievement. Technology quotient refers to the uses of technology in daily life, knowledge of technology in use of daily activities, application of technology in various activities,

Academic achievement refers to the Semester Grade Point Average (SGPA) of the college students obtained by the end of the semester. It is a method the university use to evaluate how well the student performed academically within the semester. IQ is the common factor that directly affects the academic achievement to the students. People generally think that if a person possesses a high IQ, his or her academic achievement will be equally high; but in this era, technology is growing rapidly. Teaching and learning method is also changed due to technology. In this study, the researcher has tried to explain that aside from high IQ, TQ (Technology Quotient) can also be a vital component to obtain good academic achievement. In this research, the researcher hypothesizes that the level of TQ affects the academic achievement of college students. That is, a high level of TQ, can help to achieve a good academic achievement.

SIGNIFICANCE OF THE STUDY

The findings of this study will help college students to discover their level of TQ and the relationship between TQ and academic achievement.

For the school administration, the findings regarding the college students' profile of technology quotient will highly be important. It may help them in designing teaching programmes, teaching material, use various devices and appropriate strategy which can enhance improve their behavior leading to academic achievements.

DELIMITATION OF THE STUDY

This study was limited to the college students of Ahmedabad city. Only science stream of first year college students were selected in this study.

DEFINITION OF KEY TERMS

Technology refers to the tools, including machinery, modifications, arrangements and procedures used by humans. Technology is the application of math, science, and the arts for the benefit of life as it is known. In this study, focus is made on technological advancement on account of the use of technical instruments, which certainly lead to improve the education system.

Technology quotient refers technology maturity of students. Most people know about IQ and more recently EQ, but now it is time to consider another key measure....Technology Quotient (TQ). TQ is our ability to assimilate or adapt to technology changes by developing and employing strategies to successfully include technology in our work and life. A high TQ includes the right attitude, capabilities and decision-making strategies to fully leverage technology. A person with a high TQ can organizes work to take full advantage of available technology. An improved TQ helps people adapt to a future in which rapidly changing technology is even more central to every business function. Focusing on TQ helps to adjust our thinking about technology as not just gadgets and software but enablers of success. We can also call it *"Digital Quotient"* because it measures students' digital maturity, which means their digital strengths and weaknesses.

Academic achievement refers to Semester Grade Point Average (SGPA) of last semester of the year of selected students. It is the method that university uses to evaluate how well the student performed academically in the semester.

Technology Proficiency Test (TPT) was the major tool that researcher used in this study to measure Technology Quotient of selected college students.

RESEARCH METHOD

In this study, Descriptive survey method was used; because researcher wanted to find the level of students' Technology Quotient and their academic achievement of last semester of university examination.

A comparative method was also used in this study to find the significant difference in the level of Technology Quotient and Academic achievement of college students according to gender.

The co-relational design was also used to determine whether there is any significant relationship between the level of Technology Quotient and Academic achievement of college students.

POPULATION

The population of this study was college students of Ahmedabad city. Only first year science students of degree colleges of Science were the population of this study.

SAMPLE

The researcher selected 50 male students and 50 female students of first year science students from the science colleges of Ahmedabad city. Thus, the researcher selected equal number of students according to gender. These students were selected from Bachelor of Science course. Thus, finally the researcher selected total 100 students as a sample for this study.

SAMPLING TECHNIQUE

The researcher used randomized sampling technique in this study. He listed out science colleges of Ahmedabad city, out of these random selection of three science colleges was done. From these three science colleges, the researcher selected students from the first year science group purposively because the researcher wanted to implement the tool only on the first year science students. Thus, the researcher selected equal number of male and female first year science students randomly from all these first year science classes of Bachelor of Science Course.

INSTRUMENTATION

To obtain the necessary data for the study to determine the Technology Quotient level, the researcher used the 'Technology Proficiency Test (TPT)' as the tool for this study. There were twenty five statements in this Technology Proficiency Test. The researcher included only those statements which showed the respondents' technical usage experience and skills expected at that age relating particular educational courses. Each statement had four options. A respondent was needed to select the best and appropriate answer that would describe his/her current usage and skill level of technology. If the first option was selected by a student, then 1 point was given, for the second option 2 point was given, for the third option 3 point was given and for the fourth option 4 point was given to the respondent. The researcher put the numerical score (1-4) beside the number for each question. Then the researcher totaled each respondent's answer of all the statements. If a respondent gets 0-100 score, then she/he has the low Technology Quotient. If the respondent gets 101-300 score, then she/he has the average technology Quotient. If the respondent gets 301-400 score, then she/he has the high technology Quotient. Thus, an individual with a score below than 100 is

considered to have low TQ and an individual with a score more than 301 is considered to have high TQ. An individual with a score between 101 to 300 points, came under the level of 'average TQ'. Thus, the highest score of this test was 400. This shows the level of technology usage, skill and experience in technological areas.

DATA GATHERING PROCEDURE

First of all, the researcher obtained permission from the principal of the colleges to use the Technology Proficiency Test (TPT) personally. After getting permission, the researcher approached the respondents and distributed the self-made tool to them. The researcher read and explained carefully the instructions. Then he requested the students to answer honestly and attend to all the statements in the test, and complete it as soon as possible. After it was done, the researcher collected the Semester Grade Point Average (SGPA) of all the respondents. Finally, the researcher collected all the data.

STATISTICS USED

After collecting all the data, the researcher worked out respondents' TQ scores. The researcher used Mean, S.D., t-test to determine the significant difference between TQ according to the gender difference. The Pearson correlation (r) was utilized to determine whether there is a significant relationship between the level of Technology Quotient and Academic achievement of college students.

ANALYSIS AND INTERPRETATION OF THE DATA

After the administration of the tool, the test papers were collected. Then, the researcher checked and tabulated them and used the appropriate statistics to analyzed the data.

Analysis-1: What is the level of technology quotient of the college students?

Table-1

Frequency and percentage distribution of the respondents on the level of Technology Quotient

Description	Frequency	Percentage
High TQ	15	15%
Average TQ	44	44%
Low TQ	41	41%
Total	100	100%

Above table No.-1 show that only 15 students possessed high technology quotient. 44 students or 44% students had average level of technology quotient; while 41 students or 41% students were in the low level of technology quotient. The statistics showed that there were almost similar number of students with average and low level of technology quotient. There were slightly less students who had low level of technology quotient as compared to average level of technology quotient. Based on these finding, the first year Science college students of Ahmedabad city showed poor uses, experience and skills in technology. They use & knowledge of technology relating skills are almost average.

Analysis-2: What is the academic achievement of college students?

Table-2

Frequency and percentile distribution of respondents' academic achievement

SGPA From-To	Grade	Classification of Result	Percentage/Marks (Normalized)	Description	Frequency	Percent
8.5-10.0	O+	First Class with Distinction	Above 85	Outstanding	0	0%
7.0-8.49	O		70-84.99	Excellent	3	3%
6.0-6.99	A	First Class	60-69.99	Very good	19	19%
5.5-5.99	B+	Higher Second Class	55-59.99	Good	11	11%
4.8-5.49	B	Second Class	48-54.99	Fair	23	23%
4.0-4.79	C	Pass Class	40-47.99	Average	42	42%
Below 4.0	D	Dropped	Below 40	Dropped or Fail	2	2%
Total					100	100%

Above table No.-2 indicates the frequency and percentile distribution of college students according to their academic achievements. Table shows that 42% of college students' (few less of the half of the college students) academic achievement fell into the average or pass class category. The fair, very good and good categories were within the level of 23%, 19% and 11% of the total number. There were only 3% college students in the excellent category and only 2% students were in dropped or fail category. It was very unfortunate that none of

the students secured an outstanding category. If we look at the above table carefully, we can say that only 33% college students secured 55% and above percentage, where 67% college students were reached the range below the 55 %.

Analysis-3: Is there any significant difference in the technology quotient of college students according to gender?

Table-3

Mean, S.D. and t-value of Technology Quotient according to gender

Gender	Mean	S.D.	t-value	Significance level	Conclusion
Male students	157	13.46	7.66	Significant	Reject Ho
Female students	163	12.80			

Above table no.-3 presented the result of the t-test to determine the significant difference in the technology quotient of male and female college students. As shown in the table the mean score of technology quotient of male students' is 157, whereas the mean score of technology quotient of female students' is 163. The t-value is 7.66, which comes to be significant at .01 and .05 level of significance. The mean score of female students is higher than the male students on technology quotient.

Analysis-4: Is there any significant relationship between the technology quotient and academic achievement of college students?

Table-4

The result of correlation coefficient of Technology Quotient and academic achievement of college students

Variable	r	r2	Analysis	Conclusion
Technology Quotient	0.287	0.0823	Significant	Reject H0
Academic Achievement				

The table No.-4 shows the value of Pearson 'r' that test the relationship between technology quotient and academic achievement of college students. Pearson r is 0.287. If r is greater than the table value at 0.05 level is significance. It means the null hypothesis is rejected. It means

there is a relationship between technology quotient and academic achievement because r (98) = 0.287, p<0.05 in this study.

FINDINGS

The main findings of this study are:

- The level of technology quotient was found in average percentage among highest number of the first year Science College students.
- The largest percentage of the first year Science College students in this study in term of SGPA was those who had obtained average or pass class academic achievement.
- The technology quotient of the first year Science College students was influenced by their gender. The female college students' technology quotient was higher than the male college students in this study.
- The level of technology quotient and academic achievement of first year Science College students were found significantly related to each other.

CONCLUSIONS

- Gender difference greatly affected the technology quotients of selected first year Science College students in this study.
- There is a significant relationship between the technology quotient and academic achievement of first year Science college students as measured by the technology proficiency test in this study.

SUGGESTIONS

Technology is helping teachers to expand beyond linear, text-based learning and helps in engaging students who learn best in other ways. Its role in schools has evolved from a contained "computer class" into a versatile learning tool that could change how we demonstrate concepts, assign projects and assess progress. Libraries are converting into eLibraries now. Assessment process is going to be technolized. It appears that in future online evaluation will completely enter in all the examinations. However, students need to improve their technology quotient. Every student needs to possess better TQ to obtain good academic achievements. Educational methods and techniques are likely to improve by innovative technologies day by day in this era. Students need to be aware of it and adapt it. If students collaborate with the new technology during their academic achievement, they will attain better in academics. In future, technology will be the most essential part of education. It will cover and connect almost all the things related to education. In short,

technology will show its potential for improving education in all the ways and academic achievement of students. So, students and teachers will walk with pace due to technological improvement.

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* Corresponding Author
Dr.Yatendra Pal, Principal
38, KeshavBunglows, Opp.Luby,S.P.Ring Road
New Shahibaug, Ahmedabad (Gujarat)
Email: yatinpal@yahoo.com:9427029229(M)