

Impact of E-learning on Achievement Motivation and Academic Performance - A Case Study of College Students in Sikkim

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Abstract

Globalization of society is connected to remarkable development in Information technology and global networking has given birth to e-learning phenomena, which broadens our horizons of traditional learning and creates opportunities for all stakeholders in the teaching and learning process. This study focused on the impact of e-learning on achievement motivation and academic performance. E-learning has been revealed in this study a positive impact on achievement motivation and academic performance contrary to the expectations of this study. The paper also examines the data for the presence of interaction effects of e-learning study on male, female and socio-economic characteristics.

It is concluded that in order to improve motivational effectiveness and academic achievement, higher education should consider aiming to develop e-learning strategies that encourage greater engagement and also take into consideration the different learning styles found within the student body.

Keywords: E-Learning, Achievement Motivation, Academic Performance, Socio-economic Status, Intelligence

1. Introduction

E-learning is gaining lot of popularity in the country due to various socio-economic parameters and the rising demand for education. The campus based education system is not able to cope with the increased demand for training, education and updating knowledge. E-learning has grass root as a viable option for lifelong learning and as a means for human resource development in the world. The importance of e-learning is being realized by the educators and policy makers across the globe as it has the potential to provide access to higher education. It is a very encouraging feature of the education which has something to offer to people across the whole society. It is acquisition of knowledge and skills through mediated information and instruction. It covers all

technologies and supports the pursuit of lifelong learning for all.

Students today are well-versed with technology and can adapt to it much faster than earlier generations. "The digital student has arrived at institutions and there is no generation gap, but digital divide when it comes to students and teachers. When we look at the dynamics of education, we stand on certain premises. We have the 19th century curriculum, 20th century teachers and 21st century students. Piecemeal approaches will not help" (Kaiser Dopaishi, Principal, Singapore International School). Technology has brought in an ocean of knowledge learning and information to all of us. We have to be futuristic and tomorrow, virtual classes will be the buzzword.

Perhaps the biggest advantage that technology brings to education is in reaching students and geographies



10th International CALIBER-2015
HP University and IAS, Shimla, Himachal Pradesh, India
March 12-14, 2015
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that have not been brought into the fold yet. For example- Gujarat government has started a satellite-based education system and provided computers and TV sets to all schools in Gujarat. Schools now decide a timetable according to these satellite-based telecasts. Furthermore students in rural areas that do not have good teachers benefit from it. (Rajesh U Purohit. Director, GCERT, Education Department, Gujarat).

2. Concept of E-learning

The e-learning is an umbrella term that describes learning done at a computer, usually connected to a network, giving the opportunity to learn almost anytime, anywhere. E-learning is efficient as it eliminates distance and subsequent commutes. Distance is eliminated because the e-learning content is designed with media that can be accessed from properly equipped computer terminals and other means of Internet accessible technology.

Deeply imprinted impressions of classroom-based education and the importance of guidance of a teacher, who is there with a personal touch, have often restricted people from trying to get fair perspective of e-learning. But the advent of internet in the business and social spectrum the world over has transformed the whole process of learning. The e-learning space is becoming wider and increasingly vital with everyday passing day.

Fry (2000) and Wild et al. (2002) describe E-learning as the delivery of training and education via networked interactivity and distribution technologies.

Khan (2005) pointed that E-learning has been described in various ways as learning using a number of different technologies and methods for delivery e.g. Computer Based Training (CBT), Internet-based training (IBT), Web-based instruction (WBI), ad-

vanced distributed learning (ADL), distributed learning (DL), distance learning, online learning (OL), mobile learning (or m-learning) or remote learning and learning management systems (LMS).

Al-Ammari and Hamad (2008) In E-learning system, students are able to interact anytime from wherever with different instructional material (text, sound, pictures, video and so on) through Internet. In addition, learners can communicate with teachers and classmates both individually and as a group discussion with the use of message boards, instant message exchanges and video conferencing.

As there is unlimited social interaction in an e-learning set up, students must keep themselves motivated; they must communicate with each other and the instructor frequently to accomplish their assigned tasks.

3. Concept of Achievement Motivation

Achievement motivation is the attitude to achieve rather than the achievements themselves. It can be considered as extended person-intrinsic motivation because its reinforcement is delayed. It arises from an interaction within the person. Achievement motivation is "A pattern of planning actions and of feelings connected with striving to achieve some internalized standard of excellence as contrasted for example, will power or friendship" (Vidler: 1977). The achievement can be defined as a motive to strive for success. Early attempt by McClelland (1961) was made to find out how need for achievement is reflected in societies and how as a societal value it affects the economic and political growth of a nation. He measured the need for achievement with Thematic Apperception Test (TAT). After McClelland his colleagues devised their method of measuring need for achievement. Parents who demand that

their children do things on their own at an early age, and do them well are likely to instill the need for achievement (McClelland et al, 1953; Wurter bottom, 1958). A second factor concerns the use of rewards and punishments by parents. It appears that independent training combined with rewards and affection for behaving independently are responsible for instilling the need for achievement in young boys. (Teevan and Me. Ghee, 1972). Thus, it can be concluded that individuals with high need for achievement are people interested in excellence for their own sake rather than the extrinsic rewards, if their personal responsibility affects the outcome; they tend to prefer to control their destinies and to make independent judgments based on their own evaluations and experiences. They choose challenging goals and prefer delayed larger rewards to immediate smaller rewards.

The achievement motive is being studied both in relation to economic growth and in academic performance by McClelland(1961) and Atkinson(1953). These studies highlight the importance of the formation of the standard for excellence in the development of proper study motivation in children.

4. Concept of Academic Performance

Academic performance has been a fundamental concern in education right through recorded history (Plato, Apology, 399 B.C.). While it is daunting to try to make sense of all the literature in this area, the dialogue tends to be centered along four major themes:

- i. Meaning and measurement,
- ii. Summative vs. Formative measurement,
- iii. Underachievement and overachievement, and
- iv. Predictors of performance.

This section seeks to review the issues centered on these themes. (Lavin, 1965) gives a valuable definition of the term academic performance: "As traditionally used, the term 'academic performance' refers to some method of stating or expressing a student's academic rank. Generally this is a grade for a course, an average for a group of courses in a particular subject area, or an average for all courses expressed on a 0-to-100 or other quantitative scale."

5. Through E-learning Achievement Motivation and Academic Performance

The younger generation is today more well-versed in technology. In this digital era maximum students are using ICT devices like-Smart phone, Notepad, Laptop and Tablets etc. for learning or gain the latest knowledge in interested field. These types of ICT devices are playing an increasingly important role in facilitating the educational process and system.

It is perceived that there is strong relationship between the academic performance of students and their motivational level to achieve excellence in e-education. Through the e-education students has been not required to travel to a particular location to attend the course. There is no need for the students to be in front of the teachers it is "learning by telling". The learners are connected to professional and expert both in and outside the organization. Through the e-education students can watch the static curriculum and class information. Student can also watch the active curriculum, new announcements, and personal grades learning situation and online test or exercise. They have not need to pay any money for course curriculum.

Student motivations are influenced by the quality and perceived ease of use of e-learning courses, functionally of e-learning platforms and the level of stu-

dent computer skills (Aixia & Wang: 2011). Their computer experience including perceived self-efficacy, enjoyment and usefulness of using e-learning also a role (Liaw & Huang: 2011). In turn, positive motivational attitudes and behaviors towards e-learning are critical to their learning readiness and acceptance (Hong & Tan: 2008).

Hence, the e-learning style is the key factor of achievement motivation and academic performance of student.

6. Review of Literature

Bhuasiri, Xaymoungkhoun, Zo, Rho and Ciganek (2012) found that in developing countries the most significant factors were related to increasing technology awareness and improving attitude towards e-learning, enhancing basic technology knowledge and skills, improving learning content, requiring computer training, motivating users to utilize e-learning systems, and requiring a high level of support from the university. In addition, attributes used to assess the attitudes towards ICT of students, teachers and principals have been categorized in two groups: demographics (age and gender) and computer experience (training, years of using computer, ownership of computer, access to a computer, intensity of computer use) (Papaioannou & Charalambous, 2011; Wen & Shih, 2008).

Trucano et al. (2012) The use of the web, computer, and mobile-based technologies has drawn a lot of interest among students, who use them for educational purposes as well as for social networking. This at least implies a degree of familiarity with these technologies and the skills for using those.

Rahamat et al. (2012) Wu Tennyson & Hsia (2010) Positive learning climate and performance expectations affect student satisfaction, and performance

expectations provide the greatest contribution (total effect) to learning satisfaction. Users (students and instructors) will hold positive attitudes towards e-learning if they recognize that it would help them improve their learning and teaching effectiveness and efficiency. Chen and Huang (2012) stated that understanding student attitudes can help expand e-learning system functions and meet student needs, which should further increase the impact of learning and enhance satisfaction with the learning process. Aixia and Wang (2011) found that the vast majority of students who were satisfied with an e-learning environment held positive beliefs and attitudes towards it; perceived satisfaction was identified as one of four factors that helped explain 83.8% of the variance of student attitude.

Me. Clelland (1961) has provided ample evidence in support of the achievement motivation and economic growth. He has argued and proposed that societies having high 'n' achievement show greater economic growth than those low in 'n' achievement. Empirical evidence on the relationship 'n' achievement and academic performance has been inadequate. Riccui et al (1955) found out a positive correlation (0.23 to 0.33) between 'n' achievement and school grades. Therefore, it may be concluded that there existed some kind of relationship between the level of achievement motivation and academic achievement.

Abrol (1977) studied achievement motivation in relation to intelligence, vocational interests, achievement, sex and socio-economic status (SES), with a sample of 414 students of class X from six higher secondary schools from the urban area of Delhi. The mean n-ach scores of boys were significantly greater than that of girls. A significant and Positive correlation of moderate value was found between achievement motivation and scholastic achievement.

From the above review of researches the evidences in support of the hypothesis that n^o achievement is related to academic achievement are prominent. In the above backdrop, the present study endeavours to examine the relationship of achievement motivation and academic performance.

7. The Objectives of the Study

- i) To find out of student motivation towards technology.
- ii) To study of male and female student motivation towards technology.
- iii) To study the achievement motivation of college students and categorize the according to achievement motivation.
- iv) To find out the difference in achievement motivation of college students in respect of interaction of Gender and SES, Gender and intelligence, SES and Intelligence.
- v) To study the difference in academic achievement in relation to the variables of Gender, SES and Intelligence.
- vi) To know the relationship between achievement motivation and academic performance of the student in relation to Gender, SES and Intelligence.

8. Hypotheses

The hypotheses have been formulated in accordance with the objectives framed. All the hypotheses have been expressed in null form for ease of analysis.

Ho1: There is no significant difference in motivation towards technology between male and female students.

Ho2: There is no significant difference in achievement motivation of college students due to Gender, Socio-economic status and Intelligence variations.

Ho3: There is no significant difference in achievement motivation of college students due to the interaction effect of Gender and Socio-economic status.

Ho4: There is no significant difference in achievement motivation of college students due to the interaction effect of Gender and Intelligence.

Ho5: There is no significant difference in achievement motivation of college students due to the interaction effect of Socio-economic status and Intelligence.

Ho6: There is no significant difference in achievement motivation of college students due to the interaction effect of Gender, Socio-economic status and Intelligence.

Ho7: There is no significant difference in academic performance of college students due to Gender Socio-economic status and Intelligence variations.

Ho8: There is no significant difference in academic performance of college students due to the combined effect of Gender and Socio-economic status.

Ho9: There is no significant difference in academic performance of college students due to the combined effect of Gender and Intelligence.

Ho10: There is no significant difference in academic performance of college students due to the combined effect of Socio-economic status and Intelligence.

Ho11: There is no significant difference in academic performance of college students due to the combined effect of Gender and Socio-economic status and Intelligence.

Ho12: There is no significant relationship between achievement motivation and academic performance.

9. Scope and Delimitations of the Study

The scope of this study was limited to the extent of measuring the impact of achievement motivation by a projective technique and the academic performance at the college level students in Sikkim. The study was delimited to only the affiliated college of Sikkim University Sikkim selected on a simple random basis.

10. Method of the study

10.1. Research Design

The design selected for the study was a normative survey of ex-post facto type where the college students' achievement motivation was considered as the independent variable and the academic performance as the criterion variable.

10.2. Sample

The sample was drawn from among the college of Sikkim state. 110 college students of 10 colleges (5 Government and 5 private) were selected in simple random sampling procedure. 64 male and 46 female students were selected for the study.

10.3. Tools

Achievement motive of Bhargava (1994) was used for assessment of achievement motivation. For assessing socio-economic status, the SES scale of Nayak (2005) was used for grouping the students into different groups.

Closed, quantitative questions (statements) were developed based on a number of studies conducted to measure student motivation towards technology (Mishra & Panda, 2007; Gasaymeh, 2009). They use a rating scale from "1" 'strongly disagree' to "5" 'strongly agree' to indicate their attitude towards technology in learning. Students were also asked to indicate how they used various technologies and their levels of skill with these technologies. They could choose between: "Don't know this technology", "To support learning", and "For other purposes". Students were allowed to select both "To support learning" and "For other purposes" if the two options applied to them. They were also asked to apply a rating scale (from "1" 'not skilled at all'; to "5" 'very skilled') to indicate their levels of skill in using these technologies.

10.4 Reliability Analysis

Measurement validity in terms of reliability and construct validity was evaluated. The reliability analysis was conducted in order to ensure the internal validity and consistency of the items used for each variables. (Zhang, Li, & Sun, 2006), recommended that Cronbach alpha values from 0.6 to 0.7 were deemed the lower limit of acceptability. An alpha of more than 0.7 would indicate that the items are homogeneous and measuring the same constant. The reliability results for the pilot survey are presented in table-1

Table 1: Reliability of Pilot Survey – Assessment of Cronbach's Alpha

Scale	Cronbach's Alpha
Access to technology	0.75
Use of e-learning	0.93
Usefulness of technology	0.89
Satisfaction with technology	0.86
Motivation towards technology	0.86
Impact on economy	0.89
Impact on social status	0.91

11. Result and Discussions

In order to find out the results of the study mean, median, mode, standard deviation and test of significance of difference between means were calculated for impact of e-learning with three variables of achievement motivation and academic performance.

11.1. Student Attitudes towards Technology

To determine which items accounted for positive student attitudes, an item analysis of responses to

the survey was conducted by the element of 'strongly agree', 'agree', 'strongly disagree' and 'disagree'. Table 2 shows that all the participating students had positive attitudes towards ICT and e-learning; they felt confident in using computers, enjoyed using ICTs in their studies, believed in the benefits of e-learning, and would be interested in studying courses that used e-learning. In particular, students believed strongly that e-learning would give them the opportunity to acquire new knowledge and enhance their learning experiences.

Table 2: Student attitudes towards technology

Components	Male	Female
I feel confident in using computers	52.73	47.27
I enjoy using ICT for my studies	44.55	55.45
I believe that e-learning gives me the opportunity to acquire new knowledge	50.91	49.09
I know that e-learning can enhances my learning experience	47.27	52.73
I think that convenience is an important feature of e-learning	45.45	54.55
E-learning increases the quality of learning because it integrates all forms of media	53.64	46.36
Adopting ICT and e-learning allows for increased student satisfaction	56.36	43.66
I would be interested in studying courses that use e-learning	48.18	51.82
Average of student attitude towards ICT and e-learning	41.82	58.18

11.2. Differential Analysis on Achievement

Motivation

The data were analyzed through descriptive as well as inferential statistics. The normality of distribution was studied through calculation of Mean (24.32), Median (24.64), Mode (25.28), Standard Deviation (6.08), Q (4.32), Q1 (19.93), Q3 (28.57), P9 (333.63) and P10 (15.82). The Skewness was found to be -0.148 and the value of Kurtosis was found out to be 0.242 as against the normal values of 0 and 0.263 respectively in case of normal curve which indicated the curve to be slightly negatively skewed and

leptokurtic. Basing upon the mean and standard deviation on the scores on achievement motivation categorization of the sample was made. It was observed that almost 14% had high level of achievement motivation, 16% above average, 52% of average level, 10% below average and 8% students had poor achievement motivation. To find out significant differences between two contrasting sub-samples, 't' ratios were calculated Mean, Standard deviation, Standard error difference and 't' values of all sub-samples wise calculated and the result has been presented in table-3

Table 3: Summary of 't' ratios between the two sub-samples on Achievement Motivation

Variations	Sub-samples	N	M	SD	SED	't' Ratio	Remarks
Gender	Male	64	26.37	6.6	1.298	5.0	P<0.01
	Female	46	19.88	6.8			
SES	HSES	64	25.98	5.9	1.072	5.326	P<0.01
	LSES	46	20.27	5.3			
Intelligence	High Intelligence Group	54	25.21	6.2	1.249	0.96	NS
	Low Intelligence Group	56	24.40	6.9			

t_{0.05} for df 109=1.98; t_{0.01} for df 109=2.61

On perusal of the above table, it was evident that the 't' ratio in case of gender variation was highly significant, the boys showing supremacy in the degree of achievement motivation compared to the female. The 't' ratios in case of the sub-samples of socio-economic status variation group was also significant. Hence the null hypothesis that there does not exist significant difference in achievement motivation was rejected. But the null hypothesis in relation to intelligence group could not be rejected due to the fact that the 't' ratio was not significant. The result obtained in the study is in conformity with the earlier studies conducted by Mohanty (1998). But, in case of the studies conducted by Nayak (2005) the 't' ratio in case of intelligence variation was found to be significant. In the case it was not significant in the sense that a student of colleges irrespective of intelligence has all a need to achieve. Hence the investigator desires to conclude that the result obtained was appropriate.

11.3. Differential analysis on Academic Performance

In case of academic performance the mean of the distribution was 78.25, Median 78.70 and Mode 79.6. The standard deviation of the distribution was 9.55. When the normality in distribution of academic per-

formance scores was studied, it was formed that there are 75% of cases within 16 & 97 and 100% of cases within 26 & 36 respectively as against 68.26%, 95.4% and 99.97% of cases in a normal curve. The skewness and kurtosis of the curve was calculated which were found to be 0.141 and 0.236 respectively as against 0 and 0.263 for a normal curve. This revealed that academic performances of the students were not normally distributed. The Mean, SD and 't' ratios of the sub-samples have been calculated and presented in table-4

Table 4: Summary of 't' ratios of sub-samples due to Gender, SES and Intelligence variations on Academic performance

Variations	Sub-samples	N	M	SD	SED	't' Ratio	Remarks
Gender	Male	64	79.34	9.05	1.25	NS	
	Female	46	77.11	9.35			
SES	HSES	64	79.89	9.66	2.46	P<0.05	
	LSES	46	76.32	9.51			
Intelligence	High Intelligence Group	54	81.52	9.8	3.32	P<0.01	
	Low Intelligence Group	56	75.47	9.3			

On perusal of the above table it was observed that the 't' ratio in case of socio-economic status and intelligence variations were significant but in case of gender, it was not significant. Male and female did not differ in their academic performance. The result indicated that socio-economic status and intelligence levels are good predictors of academic performance. The result was in conformity with earlier studies of Monthly (1998) and Nayak (2005). On above basis

the investigator concluded that the result obtained in the present study was appropriate.

11.4. Interaction analysis on Achievement Motivation

The interaction effect of gender, socio-economic status and intelligence on achievement motivation were calculated and the result was presented in table-5

Table: 5 Summary of ANOVA OF Gender, SES and Intelligence on achievement motivation

Source of Variation	SS	Df	MS	F ratio	Significance
Gender	3740.54	1	3740.54	19.82	0.01
SES	220.86	1	220.86	1.21	NS
Intelligence	2809.03	1	2809.03	15.46	0.01
Gender & Intelligence	2.24	1	2.24	0.01	NS
Gender & SES	3050.03	1	3050.02	16.79	0.01
Intelligence & SES	650.99	1	650.99	3.58	NS
Gender vs SES vs Intelligence	1208.98	1	1208.98	6.65	0.05
Error variance	18529.99	102	181.66		

On perusal of the above table, it was observed that the main effects of gender and SES are significant at 0.01 level. When the mean scores of male and female were compared, it was observed that the mean score of male was greater than the mean score of

the female; the students of upper SES group had a greater mean score compared to the students of lower SES group. This leads the investigator to conclude that the factors of Gender and SES produce significant difference in achievement motivation of

the sample. The interaction between Gender and SES being significant indicated that the difference in achievement motivation of the students was there due to the interaction effect of Gender and SES. This might be interpreted as that, the different levels of Gender and SES interact significantly in assessing the level of achievement motivation in students. But interaction effect of Gender and Intelligence, SES and Intelligence did not discriminate the students on achievement motivation. The three factor interaction of Gender, SES and Intelligence was also significant was also significant at 0.05 level of significance. From this the investigator desire to conclude that Gender and SES, SES and Intelligence interac-

tion for separate levels of Gender differ significantly from each other. The reason for high achievement motivation in upper SES level might be due to the fact that children from upper strata aspire for power and prestige and pressure from their parents to do well in career and life motivates them. Therefore more prominent result had been obtained in case of the SES variation.

11.5. Interaction Analysis on Academic Performance

Interaction effect of Gender, Socio-economic status and Intelligence was studied on academic performance of the students. The result was presented in table-6

Table 6: Summary of ANOVA of Gender SES and Intelligence on Academic Performance of students

Source of Variation	SS	Df	MS	F ratio	Significance
Gender	149.60	1	149.60	2.27	NS
SES	388.80	1	388.80	5.91	0.05
Intelligence	9534.28	1	9534.28	144.91	0.01
Gender vs. Intelligence	6690.46	1	6690.46	101.69	0.01
Gender vs. SES	20.87	1	20.87	0.32	NS
Intelligence vs. SES	34273.20	1	34273.20	520.95	0.01
Gender vs. SES vs. Intelligence	690.84	1	690.84	10.50	0.01
Error variance	7368.54	102	65.79		

On perusal of the above table it was clear that the main effect of gender was found to be non significant on academic achievement. This showed that both male and female were equal in academic performance. This result was supported by the findings of researchers like Mohanty (1998) and Jain (1983). The main effect of SES and Intelligence were significant. From the above table, the combined interactions of SES and Intelligence, Gender and Intelligence, Gender, SES and Intelligence on academic performance were all significant except gender and SES.

The result was in conformity with earlier studies of Mohanty (1998) and Patel (1981).

11.6. Relationship Study

Relationship study between achievement motivation and academic performance was studied by many researchers like Abrol (1997), Ghuman (1978), Gupta (1978) and Mishra (2007). In this study also the investigator attempted to find out relationship between achievement motivations is the acquired tendency and disposition to strive for success with same

standard of excellence. In that context, relationship between achievement motivation and academic performance in relationship to the personal variables

of Gender, SES and Intelligence were computed and result was presented in table-7

Table 7: Co-efficient of Co-relation between Achievement Motivation and Academic Performance

Variation	Sub-samples	N	r	Remarks
Gender	Male	64	0.41	P<01
	Female	46	0.33	P<05
SES	HSES	64	0.43	P<01
	LSES	46	0.33	P<05
Intelligence	High Intelligence	54	0.53	P<01
	Low Intelligence	56	0.36	P<05

From the table, it was observed that in each case was the relationship was significant. The study was in conformity with earlier studies of Abrol (1977) and Ghuman (1978).

12. Findings

- i. High intelligent students show higher degree of achievement motivation compared to lower intelligence group.
- ii. The difference between the male and female in achievement motivation is not independent of the levels of SES and the vice versa.
- iii. Interaction effect of male and intelligence on achievement motivation is not significant.
- iv. Different levels of gender and SES interact significantly in assessing the level of achievement motivation in students.
- v. Gender and SES interaction for separate levels of intelligence, gender and intelligence interaction for separate levels of SES, SES and intelligence interaction for separate levels of gender differ significantly from each other.

- vi. SES background and level of intelligence have a role to play in academic performance.
- vii. Different levels of gender and SES interact significantly in determining the level of academic performance.
- viii. The interaction between gender and intelligence was found to be significant which indicated that different level of intelligence and gender interact significantly on academic performance.
- ix. Gender, SES and Intelligence interact significantly in determining academic performance of the student.
- x. In each case the relationship between Achievement Motivation and Academic Performance is significant.

13. Conclusion

Advances in technology have caused vital in many domains of social and individual life. As an innovative tool, technology has played a central role in improving teaching and learning in light of educational reforms around the globe. E-Business, E-Govern-

ment, E-Banking and other such 'E' words have appeared and become globally popular. E-Learning is one of them. E-learning can enhance economic outcomes through multiple mechanisms; it is difficult to measure the benefits. (Roffe: 2002).

In Higher Education Institutions e-learning programs are applied in three different areas to fulfill different demands- off-campus study programs for classroom-based students; online distance study programs for distant students and E-learning/ Training programs for organization.

Hence, e-learning can reduce the cost of education per student by increasing the relative economic benefits of investment in education

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