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Research Paper

Achievement Motivation Outcomes in Context of Digital Education among College Students: An Experimental Analysis

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ABSTRACT

The present research was conducted to examine the influence of digital education on achievement motivation of college students. 50 college students selected using a baseline study were chosen and further divided into treatment and control groups with 25 students each, and were observed using a controlled experimental design of study. Achievement motivation of these students was measured through pre- and post-tests. Further employing an intervention, the treatment group was engaged with digital educational resources for a specific period of time, while the control group continued with traditional methods of learning. Results indicate a significant increase in achievement motivation for the treatment group as compared to the control group suggesting digital education as a potent tool for enhancing students' achievement motivation. These findings have significant implications for curriculum design in higher education.

Keywords: *Achievement Motivation, Digital Education, ICT Tools, Intervention, Education*

The desire for achievement as a significant factor driving students' behavior has been highlighted to a great extent. The idea how achievement motivation as a result of self-efficacy, self-determination, task value boosts up the academic performance of the students across different learning contexts has also been the focus of numerous studies. In today's world of out and out digital education and/or a perfect blend of old school methods with modern education technologies achievement motivation no doubt drives students to overcome challenges to pursue success and expertise which further leads them to success in academic life.

Achievement motivation with regard to modern Learning Contexts

Ever since Covid-19 hit the world like all other fields education system has also changed at a great pace for good (or for bad). Researchers have now paid attention towards the impact of digital education on the level of academic motivation. The ongoing studies found that digital education further enhances the autonomy, offers flexibility of time and gives freedom to express our own viewpoint which leads to originality. One cannot afford to deny the fact that an over dependence on digital education may limit intrinsic motivation which at the same time keeps one from being socially aware and engaged (Zhao et al., 2022). Frontiers (2023) found that the digital world with the possibility of emotional learning can keep the

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participants connected removing the fear of being socially aloof. The educators and/or facilitators must prioritize metacognitive skills along with achievement motivation which may help make online teaching-learning even more effective (Aryadoust et al., 2023). With time, there emerges a need to educate people about the self-regulation techniques to make use of and organize the limitless information that is available all around.

Achievement Motivation at all Educational Levels across different cultures

Cultural background affects the level of motivation making it possible for the socio-economic status of an individual to take it a little further. Jansen et al. (2022) observed that the global aspects of achievement motivation play a vital role as people from a collectivist society may vary from those who come from individualistic culture. They have altogether different priorities in terms of the individualistic and community-based goals respectively. If this fact remains so the researchers must rely upon cultured specific interventions for the success of individual growth and skill set (Jansen et al., 2022).

Digital learning in education set up

Education for all and that too a cost-effective education has always been the sole purpose of digital education and ICT tools. Digital technologies have no doubt revolutionized the world of work as well. The need of educating all or using technologies to provide a bigger platform during pandemic has made it a compulsion to use ICT tools which in result made it all a possibility. Covid-19 pandemic shook the world for sure but at the same time it turned into a blessing for the world of education. Students and working professionals have been using smart phones, laptops, projection systems and the large screens to learn, enhance and to showcase their talents. One aspect of using digital technologies has to do with minimizing the paper waste at enlarge. There has been a growing interest in how digital education and/or ICT tools can further affect the academic achievement and achievement motivation of the students especially those who come from an underprivileged background. A student's intrinsic desire to achieve success and perform up to the mark, to be effective in academic set up and to strive for excellence is called achievement motivation which determines academic success too.

ICT tools and digital technologies have further refined the education possibilities taking it worldwide to each corner of the world. Gone are the times when people used the traditional time taking ways to inculcate knowledge. Now is the time of gadgets that are at their best and are turning dream into reality. AI assisted tools, large screen projection systems and virtual presence of people are taking it to altogether another level. The usage of web-based technologies made it possible for students and professionals to learn from someone sitting abroad and then to explore the possibilities of their own employment globally with the same technique.

Looking back at the whole scenario certainly makes us aware of the need of having the use of digitization of education ever since the very beginning but it is the pandemic that forced it upon us initially. Later with time we started enjoying the ease of getting connected with the each other virtually on different platforms. The educators found these ways easier to take their knowledge and learning worldwide keeping students intact. Initially the students too were a little hesitant to face the camera of their smart gadgets but at the same time could not deny the fact that technology came along with lot of benefits per say. Technology and to be more specific digital education were certainly a life Savior during pandemic (Javaid et al., 2020; Seale et al., 2021; Burlacu, 2011; Araújo et al., 2021).

Technology has further taken the teaching learning experience a miles away from where it used to be a decade ago making it more interesting, productive and at times more entertaining as well. Digital education truly gives a lifetime experience to all not keeping it to the level of verbal interaction only (Kryukov and Gorin, 2017; Halverson and Shapiro, 2012; Lopez-Fernandez, 2021; Kovács et al., 2015.

One cannot deny that the term facilitator suits really well as the teacher in modern time plays the role of a guide providing the efficiency to the efforts of students who are there to learn. Keeping the learner at the middle of this learning process helps in giving them an edge as they need to be more active, and find themselves tip toeing each moment keeping zero space for boredom (Halverson and Shapiro, 2012; Kovács et al., 2015; Osadchyi et al., 2021. Digital technology has given the so needed purpose to education along with inspiring all involved and motivating them to be certain.

Lack of research in the area and the empirical evidence regarding the promising potential of digital education and its impact on achievement motivation must not be denied. On one hand there are students who happily acknowledge the fact that digital tools keep them engaged and improve learning outcomes. On the other hand, there are countless students especially in rural areas who are yet to identify the truth that digital education can help them achieve their academic goals. Many are still not aware of the fact that internet and/or web can also be utilized to enhance knowledge along with using it as a source of entertainment especially in the context of higher education. By examining the effects of digital education on achievement motivation this study aims to address this gap in college students.

Challenges

The extreme to which digital education has opened new doors to improvement has its challenges at the same pace be it providing it in a real time, implementing it or using it for the betterment of humanity. There have been a million of times when the efficacy of technological aspects of education has been questioned by almost all. There was a time when people had doubts about whether or not the most needed interaction between the educator and the students would be possible. Looking back in time when pandemic hit the world all these doubts were raised and answered to day in day out. We must know the fact that to make the digital based education more productive and outcome based each involved must be aware of the aspects of what to or what not to do while learning or teaching virtually.

Educators do find it hard to overcome certain difficulties when those they are dealing with are not familiar with the criterion of teaching learning methods on virtual platforms (Bennett, 2012; Seale, 2015; Shilpa, 2021). The long due journey from the traditional classroom to the latest technology-based education has its own challenges in terms of the skills of the educator, their level of motivation, outcome-based performance and to keeping it all together at the same pace in the long run.

The monetary aspects of digital education that have to do with the availability of mobile phones at home, the ongoing charges of internet facilities provided by the subscribers, the environment at home in terms of its being open to technology-based education and certainly the outcomes play a vital role. The health issues attached with online education be it bad eyesight, harmful effects on hearing ability, backache issues and the psychological effects also exist. The question of theoretical and practical based subjects is also viewed as a threat

to digital education (Criollo, 2021; Njoku, 2015). The use of English language as a language of instructions on web, network issues when needed the most, instructions on part of educators, the skills that are required by the learners to make the best use of the provided knowledge are various other issues.

Objectives of the Study

The objective of this study is to see how digital education can bring about a change be it positive or negative in the achievement motivation of college students. The study specifically aims to:

- Evaluate how the achievement motivation of students exposed to digital education gets affected as compare to those using traditional classroom method of learning.
- Determine how digital education foster a motivation oriented academic atmosphere helping students achieve more.
- Digital education certainly influences the motivation of the students. With the help of the current study educators and curriculum designers can get an insight into how including digital tools for the purpose of educating students can keep students engaged as well as enhance their motivation ensuring their academic success eventually.

LITERATURE REVIEW

The ongoing trend of social media promises equal opportunities to all. Education per say has flourished to a greater extent with the use of smart boards, tablets, large screen projection systems and mobile phones for sure. Students learn at a great pace with the help of technologies as it is all over the place nowadays (Oliver, n.d.; Pacheco 2018; Turgut, n.d.). Ever since the beginning of the digital education people always had certain amounts of doubts regarding the final outcome of the use of technology in the field of education in terms of the level of interaction between the educator and students but these recent years have proven it all only doubts with no valid reasons. Like a magical wand in the hands of the students these days digital education is setting new standards of success for all. It is also noteworthy that social media platforms and the websites that promote education in any manner are open to feedback keeping the space for improvement. It certainly helps making teaching learning experience even healthier and divine. The usage of presentation through videos, training programs that are functional online and web learning methods are at peak in modern times (Ozdamli, 2020; Vavoula, n.d.; Lacka 2020). The use of classroom boards, the idea of sticking to text books, taking help from the tutors, jotting down notes through pen on a piece of paper is old-school (Schnackenberg, 2013; Gurunath, 2021; Collis, n.d.) Now is the time to use web to get first hand guidance at a pace and scan copies of notes to further use that saved time to refine the study material. Digital education has no doubt provided access to vast knowledge that comes from the best of the creators, which can be easily gathered, kept for the later time for further use, can easily get access of without a hitch and can travel miles away with in a spur of the moment if needed to share with someone and further leaves enough space for improvement (Hsu, 2007; Grainger, 2021); Lacka, 2020).

Keeping all it together there is a need to study the fact that how digital education can eventually help a student increase and sustain his achievement motivation throughout the process.

There is certainly no doubt about the fact that in higher education per say the effect of digital education and ICT tools on learning outcomes have extensively been studied but its impact on achievement motivation is an area which is less explored.

Sample

In the present study a controlled experimental design employing pre and post-test measures have been used. A group of 50 students have initially been selected on the basis of a baseline study to involve students from rural area who are still engaged in the traditional methods of studying. A diverse representation of the sample was ensured keeping gender and academic major in consideration. These 50 students are further assigned to experimental (digital education) and control group (traditional education).

Instrument

A Hindi version of Costello achievement motivation scale (Mishra & Srivastava, 1990) originally developed by Costello (1967) was administered in pre and post-test measures. The correlation between English and Hindi version was 0.88 (P<.01) whereas test-retest and split-half reliability coefficient were 0.80 and 0.82.

Procedure

Treatment group is put under a series of online modules making the students aware of the scope and advantages of digital education and ICT tools. The control group followed the traditional classroom method that is primarily lecture based.

- *Pre-test:* Initially baseline achievement motivation levels were established through a pre-test of achievement motivation so that all the participants start at the same point.
- *Intervention:* Digital education method was employed three times per week over a course of four weeks on the treatment group.
- *Post-test:* After the intervention again the achievement motivation scores were measured for both control as well as treatment group.

Data Analysis

Along with mean, standard deviation and paired sample t-test was used to compare pre and post-test scores. The effect size was also calculated using Cohen's so that the practical implications of the findings can be evaluated. To determine statistical significance a significance level of <0.5 was established.

RESULTS

Table 1 shows the Mean, Standard deviation and paired comparison t-test scores for pre- and post-tests in both treatment as well as control group.

Table 1 (Mean, standard deviation and paired comparison t-test summary)

Condition	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	t-Statistic	p-Value
Treatment Group	12.46	0.93	22.13	2.03	18.84	1.77E-15
Control Group	10.71	0.75	12.46	0.59	9.56	1.78E-09

Pre-Test, Mean and SD (for each group):

- *Pre-test Mean:* Pre- test mean represents the average score of the participants in each group (Treatment and Control) before the intervention. For treatment group the average pre-test score is found to be 12.46 whereas for control group the pre-test score is 10.71.
- *Pre-test SD (Standard Deviation):* The standard deviation shows the amount of variation/spread in the pre-test scores within each group. For the treatment group the standard variation is 0.93 and for the control group it is 0.75.

Post-Test Mean and SD (for each group):

- *Post-test Mean*: The post-test mean score represents the average score after the intervention (the post-test). The treatment group post-test score is found to be 22.13 which shows an improvement from the pre-test mean whereas for the control group the pre-test score is 12.46 which shows a modest increase from the pre-test scores.
- *Post-test SD (Standard Deviation):* The spread or variability in the post-test scores is measured by standard deviation. Treatment group standard deviation score is 2.03 which is higher than the pre-test score whereas the control group standard deviation score is 0.59 which is even lower than pre-test standard deviation which is quite consistent with pre-test score.

t-statistic:

With the help of a paired t-test the means of the pre- and post-test scores within each group were measured wherein t-statistic is simply a measure used in it. A larger t-statistic typically indicates a significant difference between the means. The treatment group t-statistic is found to be 18.84 which clearly indicates a strong positive effect of the intervention. On the other hand, the control group t-statistic is 9.56 which is comparatively lower than the treatment group though it shows a significant difference between the pre-test and pro-test means.

p-Value:

The p-value shows the statistical significance of the difference (between pre-test and post-test scores). A p-value below 0.05 generally specifies that the difference between the groups is statistically significant (i.e., not due to random chance). The p-value for the treatment group is 1.77E-15 which indicates that there is a statistically significant difference between the pre-test and post-test scores. The control group p-value score is 1.78E-09 which shows a statistically significant difference between the pre-test and post-test scores. Though for both treatment and control groups the p-value scores are statistically significant but for the treatment group these scores are easily noticeable.

DISCUSSION

Results show that digital education has a positive impact on achievement motivation as a significant improvement in the scores have been found in the treatment group that was exposed to digital education.

A high t-statistic and a p-value close to zero clearly shows that the intervention certainly had a strong positive impact on the treatment group. The statistically significant difference between pre-test and post-test scores supports the idea that the intervention was truly effective. Though the control group also shows a statistically significant increase in post-test scores but the effect is quite negligeable.

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Conflict of Interest

The author(s) declared no conflict of interest.

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