



**ACADEMIC PERFORMANCE AND BEHAVIORAL CHANGE AMONG
ONLINE CLASS ATTENDANTS - STUDY WITH REFERENCE TO DIGITAL
EDUCATION**

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Abstract:

COVID-19 Pandemic brought tremendous changes to the whole world. The people around the world had to transform all of a sudden to the digital era. College students had the opportunity to continue their learning from remote areas. Managing technology is even more crucial as basic skills required in navigating day-to-day life. Every innovation has pros and cons but the learners have to be brave and cautious in adapting them effectively. The Post COVID-19 had brought difference in the attitude and behavior in College Students. The aims of the study are to find out the level of Academic Performance (AP) of students who attended online classes during and after COVID-19, analyze the Behavioral Change (BC) among the students who attended the Online Classes, to find out the whether the students have had Opportunity (OP) to gain knowledge and enhance their skills. The data were collected through structured questionnaire using Google Form from 276 College Students. It has been found that E-learning has been a support to teaching-learning process by providing customizable materials for teachers and learners in new forms such as MOOC, OER, and Educational Apps which potentially make education available to anyone, anywhere, at any time.

Keywords: COVID-19 Pandemic, Digital Technology, Digital Education, Behavioral Change, Innovation, Post COVID-19, Academic Performance, Opportunity.

Introduction

Education is sometimes perceived as a sector which is resistant to change, while at the same time it faces a crisis of productivity and efficiency [7]. Education is perceived in most countries as a means of enhancing equity and equality. Innovations could help enhance equity in the access to and use of education, as well as equality in learning outcomes [7]. Technology-based innovations in education reshape the environments in which colleges operate. In general, they tend to open up learning environments, both to the digital world and the physical and social environment [7].

Statement of the problem

Education sector could foster an innovation-friendly environment, with a greater focus on methods over technologies [7]. Despite the many challenges involved in integrating technology in teaching and learning, digital technology offered a great opportunity for education during covid-19 pandemic [7]. The classrooms were shifted to digital mode supported by quality teaching-learning and student engagement through

collaborative workspaces, remote and virtual labs. Many ICT tools help connect learning to authentic, real-life challenges [7]. Hence, this study was undertaken to know whether the digital technology based education has rescued the students or changed the attitude and behavior of the college students.

Objectives of the study

1. To examine the level of academic performance (ap) of students who attended online classes during and after covid-19.
2. To analyze the behavioral change (bc) among the students who attended the online classes.
3. To know whether the students had an opportunity (op) to gain knowledge and enhance their skills.

Research gap

Articles relating to online education were extensively reviewed. Most of the studies were related to the improvements of student learning outcomes, development of higher-order thinking skills, preference and satisfaction of online education, and expand the range of learning

opportunities available to students using ICT tools. No specific study has been carried out to analyze the attitude and behavioral changes of the college students through online education. Hence, the present study was undertaken.

Review of literature

Sabah, nasser. (2013) investigated the impact of four learning approaches: face-to-face learning, blending learning, virtual classrooms and video streaming by students at Al-Quds Open University. We explore the students' attitudes, motivations and expectations towards e-learning. Also, realistic implications to incorporate e-learning model and their impacts on the teaching and learning process were included. The collected results show that students appreciate and favor the blending of e-learning and face-to-face learning. E-learning is more efficient when the whole learning and teaching approach is applied. The paper induces that e-learning should be incorporated as part of the whole learning approach in which technology is one of the integrated tools that enhances the learning quality [1]. Hunt, a., & Tickner, s. (2015) "online pedagogies based on sociocultural methods require openness to difference, understanding, and sharing; but it is a challenge to support productive learning communities that span diverse cultural backgrounds. The survey was trialed with 112 students and four lecturers in 11 online teacher education courses offered by a New Zealand university. Although respondents exhibited a wide range of choice in the survey, the participants were not sufficiently diverse to reveal any differences that might be attributed to culture. It was concluded that the cultural dimensions of learning framework could provide a useful stimulus to promote discussion amongst learners and teachers and that this discussion could raise awareness of the diversity of approaches to learning that could have a cultural basis" [2]. Suner, a. Et al., 2019 "evaluated usage habits, attitudes and perceptions towards mobile learning (m-learning), as well as to identify variables related to those attitudes amongst undergraduate dental students. The dental students have generally positive attitudes towards m-learning. Students raise awareness towards the promise of m-learning in order to apply their individual technology use and learning behaviours. Designing learning materials and applications for mobile devices may increase students' performances" [3]. Laura Sbaffi & John Bennett (2019) conducted a study to gain insights of students' experience of a jointly-taught, distance learning, part-time postgraduate

programme. A mixed-methods approach involving an online survey and semi-structured interviews was adopted. The results show that students concentrated their perceptions on three main areas: the academic content of the programme, seen as current, interesting and relevant to their professional lives; delivery processes, including the advantages of the flexibility and tailored approach and the disadvantages of being exposed to different teaching styles and lack of face to face interaction; the administrative and practical aspects, accounting for the majority of complaints due to the discrepancies across the two schools responsible for the delivery of the programme. Differences in experience emerged depending on gender and year of enrolment [4]. Hawley, s. R., et al., 2021 "the covid-19 pandemic has altered the landscape of higher education, forcing institutes across the globe to lock down campuses and shift instructional methods. To determine the impact of these changes on students, the author collected qualitative information about the pandemic-related concerns of higher education students across multiple countries and continents. Major areas of concern included education, safety of others and self, mental health, financial and employment instability, uncertainty about the future, and the pandemic's impact on relationships. The results of this study provide broadly endorsed international information on student needs for support and continuity of learning. Overall, student feedback about concerns can guide institutes of higher education in better supporting students during the covid-19 pandemic, as well as other emergencies that require a modification of usual learning methods [5]. Hargitai, d. M. Et al., 2021 "investigated about the students' pre-epidemic learning habits, their use of communication tools and their preferences for solutions usable in distance education, with a special focus on gender and education level. An important contribution to knowledge management studies by addressing the lessons that universities should learn and translate into managerial frameworks after the usage of extensive e-learning systems as a result of the covid-19 pandemic, and adds to existing research on business students' learning preferences and habits with respect to the influence of the internet. The author explored that the relationship between knowledge management and e-learning in the case of universities, can be used for future academic studies as well as to make practical

improvements and develop a culture and processes that promote and implement concrete km measures and actions after the covid-19 pandemic in universities with respect to students' opinions regarding e-learning and, more generally, learning habits [6].

Research methodology: convenient sampling method was applied to collect the data from 276 students belonging to arts and science college and diploma college of vellore district. Structured questionnaire using google form circulated to the college students. The secondary

data was collected from journals, magazines, newspaper, books, websites etc. The analysis used for the proposed hypothesis was factor analysis and sem model.

Data analyses & interpretations

Demographic profile: table 1 outlines the details of the respondents selected for the study. Majority of them are male (72%), 18 to 20 years of age (68%), belong to rural area (65%), pursuing graduation programme (65%), in the second year (63%), mostly attended classes in the online mode (92%) during and post covid-19.

Table 1: respondent demography

| Demography | Category | Frequency | Percent |
|--------------|-----------------|------------|------------|
| Gender | Male | 198 | 71.7 |
| | Female | 78 | 28.3 |
| Age | 18-20 | 188 | 68.1 |
| | 20-22 | 59 | 21.4 |
| | 22-24 | 29 | 10.5 |
| Geography | Rural | 178 | 64.5 |
| | Semi-urban | 42 | 15.2 |
| | Urban | 56 | 20.3 |
| Education | Diploma | 25 | 9.1 |
| | Graduation | 179 | 64.9 |
| | Post graduation | 67 | 24.3 |
| | Others | 5 | 1.8 |
| Level | I year | 42 | 15.2 |
| | Ii year | 173 | 62.7 |
| | Iii year | 57 | 20.7 |
| | Iv year | 4 | 1.4 |
| Online class | No | 9 | 3.3 |
| | Sometimes | 13 | 4.7 |
| | Yes | 254 | 92 |
| | Total | 276 | 100 |

Reliability analysis

Table 2 elucidated the cronbach alpha which help to find out the reliability of scale and validity of items. The table reveals that the

reliability statistics for 24 items was 0.953 indicating high reliability and most suitable for the analysis.

Table 2: reliability and validity

| Item | No. Of items | Mean | Variance | Std. Deviation | Cronbach's alpha |
|------|--------------|-------|----------|----------------|------------------|
| Abc | 24 | 92.84 | 280.997 | 16.763 | 0.953 |

Source: computed

Factor analysis

Table 3 reflected that the value of kmo for 24 items was 0.949 which clearly states that the

sample taken to process factor analysis was statistically reliable and valid.

Table 3: factorial validity by kmo and bartlett's test

| Kmo and bartlett's test | | |
|--|--------------------|----------|
| Kaiser-meyer-olkin measure of sampling adequacy. | .949 | |
| Bartlett's test of sphericity | Approx. Chi-square | 5066.740 |
| | Df | 276 |
| | Sig. | .000 |

Table 4 illustrates that after examining the reliability of scale and the appropriateness of data, the questionnaire about abc analysis was

subjected to principle component factor analysis followed by varimax rotated factor analysis which yielded 3 factors. The solution was

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obtained by using fixed number of factors. Accordingly 9 items were selected for factor dimension **academic performance**, 10 items for

behavioral changes and 5 items for **opportunity**. The total variance explained for these 3 factors was 62.765%.

Table 4: loading of scale items on factors by rotated factor matrix

| Factors | Component | | |
|--|-----------|------|------|
| | 1 | 2 | 3 |
| Factor 1 – academic performance | | | |
| Attended classes regularly | | .669 | |
| Online classes were comfortable | | .804 | |
| Understood the subjects handled by teachers | | .868 | |
| Internet access were easy | | .550 | |
| Ability to clarify your doubts | | .721 | |
| Assignment & assessment were satisfactory | | .760 | |
| Ability to access the app's used for online classes | | .733 | |
| Utilization of time for online classes was appropriately used by me | | .893 | |
| Satisfied with online semester exams | | .610 | |
| Factor 2 – behavioural changes | .839 | | |
| Communication skills | | | |
| Time management | .742 | | |
| Understanding & grasping power of chapters | .753 | | |
| Reading and writing speed | .853 | | |
| Memorizing power | .793 | | |
| Physical & intellectual development | .830 | | |
| Extra-curricular activities | .739 | | |
| Moral values | .832 | | |
| Distraction by daily college routine | .775 | | |
| Addicted towards social networks | .683 | | |
| Factor 3 – opportunity | | | .659 |
| Acquisition of new knowledge | | | .854 |
| Enhanced my learning experience | | | .754 |
| Online classes were convenient | | | .849 |
| Quality of learning increased due to inclusion of all forms of ict tools | | | .863 |
| Acquisition of ict tools for online classes were useful | | | |
| Extraction method: maximum likelihood. | | | |
| Rotation method: promax with kaiser normalization. ^a | | | |
| A. Rotation converged in 5 iterations. | | | |

Factor correlation

Table 5 depicts that there is a high degree of correlation between the 3 factors of attitude and

behavioural changes in college students post covid-19.

Table 5: correlation matrix

| Factor correlation matrix | | | |
|---------------------------|----------------------|--------------------|-------------|
| Factor | Academic performance | Behavioral changes | Opportunity |
| Academic performance | 1.000 | .589 | .557 |
| Behavioral changes | .589 | 1.000 | .650 |
| Opportunity | .557 | .650 | 1.000 |

Extraction method: maximum likelihood

Rotation method: promax with kaiser normalization.

Structural equation modelling: the sem model combines various analysis like factor, regression and simultaneous equation model. This helps to analyse the structural relationship between the variables. Table 6 illustrates the model fit

summary indicating that cmin/df is 2.227/249 and the other variables in the model fit are also within the particular range. The model fit summary elicits that rmsea is 0.067 and pclose is 0.000; cfi is 0.938 and tli is 0.932; ifi is 0.939,

nfi is 0.894 and rfi is 0.883. Hence, it is revealed that the goodness of fit indices support the model fit and the structural model is said to be

acceptable. All the co-variances among the variables and regression weights were statistically significant ($p < 0.001$).

Table 6 criterion for model fit

| Criterion for goodness of fit model | Result |
|--|--------------|
| Cmin/df | 2.227/249 |
| P value | 0.000 |
| Root-mean squared error of approximation (rmsea) | .067 |
| Pclose | .000 |
| Tucker lewis index (tli) | .932 |
| Incremental fit index (ifi) | .939 |
| Comparative fit index (cfi) | .938 |
| Nfi | .894 |
| Rfi | .883 |

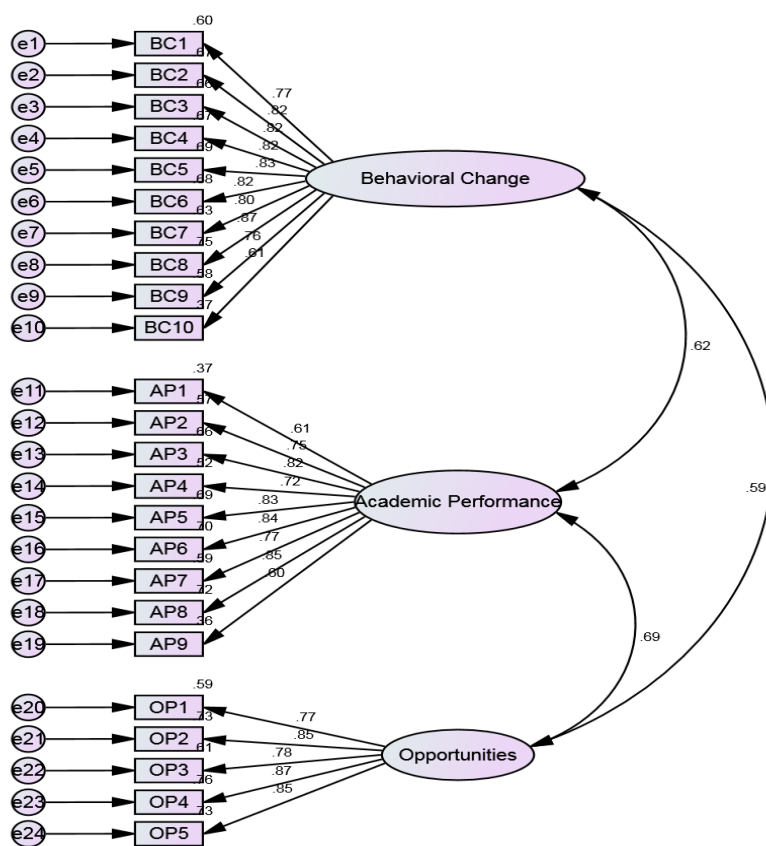


Figure 1 structural modeling (cfa)

Findings and implications

Based on the study, it is inferred that the students were satisfied with their academic performance wherein technological tools helped them to gain lot of insights in higher education. And also students feel that they had an opportunity to learn and develop new technologies such as learning analytics, enhancing skills and understanding for tomorrow’s innovation societies. Every innovation has pros and cons. In such a way, students agree that these digital tools used for

education has brought lot of changes in their attitude and behavior post covid-19. Students believe that changes have occurred in their communication skills, time management, lsrw, moral values, addicted towards social networks and so on [7]. E-learning has grown steadily in recent years as an option for higher education and is expected to expand progressively around the world [7]. From the student’s perspective, online teaching-learning should be a part of curriculum in a positive and effective manner.

Conclusion

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E-learning has been a support to teaching-learning process by providing customizable materials for teachers and learners in new forms such as mooc, oer, and educational apps which potentially make education available to anyone, anywhere, at any time. The successful integration of technology in education is not so much matter of choosing the right device, the right amount of time to spend with it, the best software or the right digital textbook. The key elements for success are the teachers, college management and other decision makers who have the vision, and the ability to make the connection between students, computers, mobiles and learning in a best possible manner [7].

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