Ed-Tech: An Innovation in Education

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Abstract— Innovation and reinvention is the key factor for any business to succeed. Reinvention is the improvisation made o the innovation considering the key factors of the innovation whether organization or individual. Ed-tech has brought about innovation in the field education. With the emerging of new ideas and technology, learning has become much more fun and interesting. Since the old school method of learning had become monotonous and was harder at times for students to communicate with teachers thus the invention of the newer concept in the field of education is becoming more acceptable for students of every age group. This paper is a brief analysis on how ed-tech has brought changes in the field of education system and in the process of teaching at the same times how it is helping the ed-tech companies to earn profits and role of management in this process. By discussing about the ways and processes by which organization deals with this it sheds light on how management plays a vital role in the entire process at the same time in innovation and reinvention.

Keywords— Ed-tech, social media in education, artificial intelligence in teaching.

I. INTRODUCTION

Management plays a very vital role in every organizational process to help organization operate smoothly. At the same time the management also has to innovate the ways to sustain the business. The organizational business needs to be continuous. In the field of education, the ed-tech companies have also brought about a revolution in the technique's methods and ways of learning and teaching. The recent education system has gone beyond the classroom system. The old school education system is now getting converted to new school method. Educations has become online and through social media the mode of communication between teachers and students have become easier, from sharing of study material to communicating information's mostly everything is dependent on social media communications.

In fact, even if the class held are offline but the still submission of assignments is through email, Google forms or submission in Google Drive, compiled mainly either in MS Word or MS Power Point. Taking this into consideration several companies have come into existence that have developed technologies to teach students online with the help of either Artificial Intelligence or with the help of teachers taking online classes. This is a platform where the companies have come up with ideas of teaching students ageing from 10 months to entrance exam preparation for post-graduation admissions.

Though the process of has changed over the years that major change has been brought about by the involvement of technology in the process of teaching and studying. This has brought about a revolution education almost changing the old school style of studies. This has led to take the classroom beyond those four walls. And more curriculums have been made to add technologies in them as well. Thus, this report is to discuss further on this topic.

II. PROBLEM-STATEMENT

There are several topics to do research on. But this is a topic that is booming since the recent few years. To explain in brief in the recent decade there has been an in-coming of a newer concept of education with the help of technology on making education different from that of the typical old school style. The concept of providing education to the students through internet and conducting classes online, in devices like laptop, mobile phone, and tablet. This has got even more boom in the last one year due to coved that forced each and every one to get them locked within the four walls of the houses. This was the time when this industry got its boom by providing the facilities of online coaching, doubt solving etc. with the help of visual learning and with a stronger concept of "making learning fun". This also states that no concept is absolutely flawless and so this. This also has few problems that can be highlighted:

• Less direct contact is a problem that both teachers and students are facing: Even if the classes are made interactive still many teachers find it difficult to make the classes interesting as face to face interaction is low.

• Money matters more: This is a part very much essential to consider, as money is one of the important aspects in this case, as these companies provide with tablets fully loaded with application and other benefits. That has to be purchased at the very first place and that worth in

thousands. But in case of any kinds of problem arising in the device or breakdown of the device they are not much ready to take responsibility or replacing even if it is within weeks. That has led to a huge rise of these companies worth in billions of dollars in just 2020.

• Wrong style of marketing: The way of marketing is not correct as it tends to target the students and their confidence is being with the taglines, as that tag line sometimes tends to say that without taking up classes in these portals they would be left behind in the rat race of becoming a topper.

• Results in health issues and other problems: These companies target the children of very small age groups like 5 years. One of those companies is White Hat Jr that promises kids to teach them coding and help them develop their own apps. This leads kids to get enrolled in the classes along with parents forcing or encouraging them to take up these classes. Though this might indeed be a very good idea to enhance skills, but kids of this age should be burden less and kept away from rat race to live their childhood. Moreover, prolonged expose to computer screens are leading to eye sight issue and lowering the creativity level as they are not much interested to search for answers rather prefer one click solution.

III. BACKGROUND ON ED-TECH

The main concept of ed-tech has come into existence in the very recent years, with the fundamental concept of bringing the classroom system virtually and at the same time to make learning fun. The very first online classes were brought into limelight was by BYJU'S founded by Biju Raveendran in the year 2011. The major growth that is ever recorded by Biju's is in 2020 during lock down due to cover the record was of 7.5 million new users and the usage of app rose from 70 minutes before lock down to 91 minutes during lock down with the increase in revenue to 350 crores in only Bangalore based firm. At the same time online involvement has also increased in the social media sites. This is due to the practice of uploading information's in the social media and making them the major mode of communications. WhatsApp has also become a major mode of passing of study materials as well as information's. The major grip of the market includes the language classes' online classes and technology has been the major fondness for the students. It is clear that that the company leading the Indian market in the field of ed-tech is Biju's with a net valuation of $5.7 billion, though the company has spent a good 10 years in the market to reach this stage acquiring a market share of 65%. The basic startup of the company was a stealth mode for four years from 2011 to 2015 and then they came up with the app after it gained a grip over the market.

Venture capitalist (VC) plays an important role in financing the companies. There are several VC that support the Indian Ed-tech companies; these ventures are often recognized as rocket fuel. Few of these ventures that have been fueling or financing the Ed tech companies like Biju's, Vedanta, and Topper etc. can be listed as:

☐ Blume Venture: This has made investment in the array of segment of B2B white label apps for coaching classes, online tests preparation, gamified learning.

☐ Omidyar Network: This provides investments in the early stage of enterprise.

☐ Saiph Partner: This venture has invested in few top companies like: Topper, and Unacademic.

☐ Nexus Venture Partner: This has funded Unacademic, White Hat Jr, and Quizizz.

☐ Inn oven Capitals: They provide funds to the major companies like Biju's and Erudite.

According to Inc42.com, a website these ed-tech companies have a basic revenue model as a startup that helps them generate revenue at the early stage these models are:

☐ Freemium upgrades: This is a very basic kind of revenue generation model where the student is given free subscription of classes, videos etc. for a few days before they charge the full amount.

☐ Course subscription: This is another way through which they attract their customers, where students need to pay only for the course they are willing to take up benefitting their education.

☐ Pay Per Session Module: This is another kind of way where the companies charge for the number of sessions attended or the number of modules accessed.

☐ They also leverage revenue through content sharing and advertising commission.

Thus, it is clear that with around 1.5 million schools, 260 million students and 35000 colleges ed- tech could have easily flourished in India it had massive playground for the ed-tech players but the ed-tech industry is still in its nascent stage and would need some more years to gain the desired market. And the reasons behind this would be discussed in the next parts.

IV. OBJECTIVE

The objective of the study and this paper are:

☐ To examine on how ed-tech has brought changes in the field of education system and in the process of teaching at the same times how it is helping the ed-tech companies to earn profits and role of management in this process.

☐ To review about the pros and cons of involvement of technology in education, incoming of the concept ed-tech and different online coaching portals and their involvement in the lives of students.

☐ And lastly few discussions on the innovation in educations and analysis of different ed-tech companies and their comparison with each other.

V. LITERATURE REVIEW

On considering the concept of ed-tech and education on social media there has been different views of different people to quote and discuss few, we can enlist: Nathan Rang-Lad (2019), 0ne of the leading educational interventionalist said on twitter that: "The time has come for all teachers to embrace that the 21st century has brought needed change, created new ways of thinking & learning, & in a sense has created 'new students.' No road should ever

lead educators back to the industrial way of teaching. We're all 'new teachers'". T. Pushpa Nathan, (2013) said that not only that ways of education are changing but also the teaching methods where there is maximum participation of real life throughout rather than only classroom centric, he also added that according to Rabindranath Tagore development of intelligence should be developed through education, this develops the power of thinking and imagination. UNESCO (2019), UNESCO celebrated Mobile Learning Week in 2019 from 4th to 8th March, to celebrate the concept of Artificial Intelligence for Sustainable Development in the form of global conference. It aimed at the concept of imposing Artificial Intelligence in the process of education and learning, AI boosted learning management system (LMS), emphasizing on new forms of personalized learning, improvement of education management system. According to the government of India, Ministry of Electronics and Information Technology, the new generation should be made ready for the new technology driven world including AI. NCERT (2014) said that Ed-tech is no more an outsider that is to be sold in parents-teacher meetings or in any colleges or universities. Students are themselves aligned to what is happening and toward their interest. EklavyaParv, (2014) he coined a term Edusomedia which means education through social media which means extensive use of social media platforms in teaching-learning methodology. Rogers (1995) according to him reinvention is the modification made for adoption. Goodman et al. (1993); Yetton et al. (1999) institutionalization of innovation depends not only on how it fits with variety of user requirements and circumstances but also on user receptivity on its implementation process.

VI.   METHODOLOGY

Being a research scholar considered qualitative research method and in this discussed with various authors, various researchers, reviewed different articles books and secondary sources to conclude and prove the objectives. To prove on the qualitative aspect's methods used are:
•   Article review of An Omidyar Network India.
•   Review of documents available in the public sources (journals, news accounts, and company websites).
•   Review of article of BusinessIndiser.com.
•   Review of different ed-tech company websites.
•   Interview and understanding point of views of students regarding technology in education and online teaching process.
Again, there has been a review on quotative aspect where 110 students from 3 schools one of them is a CBSE school one ICSE school and one West Bengal government school, from Durgapur, West Bengal were interviewed considering students from classes 11 and 12, dispatching questionnaire through Google forms from there I got the responses and accordingly concluded. They were asked few questions like:
•   How comfortable they are with online classes?
•   How helpful it is when notes and other study materials are being circulated over WhatsApp or other kinds of online platforms?

•   What is their point of view regarding the exams taken online?
•   How strong bonds they are able to make or keep with the students taking new admission?
•   Is there any issue faced regarding the internet connectivity?
•   Are there any kind of health issues and any kind of monotony they face during the class?
The samples taken and considered are also segmented on demographic segmentation on few categories like:
•   Population (number of male student and number of female student).
•   Family income (per month).
•   Belongs to (rural, urban).
•   Getting benefitted by ed-tech.
•   Mainly subscription taken for which purpose.
•   Results of class 10 (percentage)
Calculated the result using MS Excel formula that came out to be as:

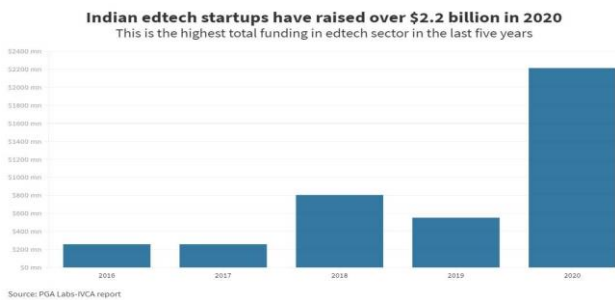| Table no.- 1: Demographic Representation			Number	Percentage
		Category	Number	Percentage
1		**Population**	**110**	**100**
	A.	Male	60	55
	B.	Female	50	45
2		**Family Income (per month)**		
	A.	Below 25000	25	23
	B.	Above 25000	30	27
	C.	Above 35000	20	18
	D.	Above 50000	35	32
3		**Belongs to**		
	A.	Rural Area (Panchayat governance)	44	40
	B.	Urban area (municipal governance)	66	60
4		**Getting benefitted by ed tech**	**27**	**25**
5		**Among 25% Students who have taken subscription of ed-tech**		
	A.	For normal classes	7	6
	B.	For competitive exams (NEET or JEE)	20	18
6		**Results of class 10**		
	A.	Below 60%	40	36
	B.	Above 60% to 75%	20	18
	C.	Above 75% to 90%	35	32
	D.	90% and above	15	14

VII.   ANALYSIS

 GRAPHICAL STUDY ON BYJU'S V/S OTHER ED-TECH COMPANIES
Based on few studies it is found that there has been a vigorous growth in the ed-tech companies. They have grown and held a good grip over the market within a decade. Amongst those Biju's got the most grip over the market and has earned the maximum profit with its innovative idea and approach. They believed that education should be for everyone and this is what they have with their moto: Democratization of Education. They have setup a pillar based on which they continue to work:
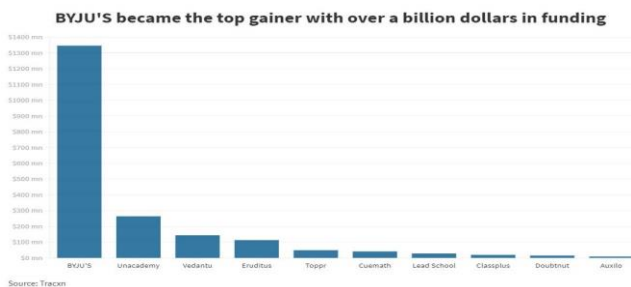•   MAKING LEARNING INCLUSIVE AND FUN-They believe that learning should be interactive and fun, though a continuous process but they strive to empower every child to their curated learning process.
•   ENABLING   LEARNING   THROUGH TECHNOLOGY- Through this Biju's tries to say that technology has always been an aid to resolve their problem of reaching children and also overcome the hurdle of traditional education system.
•   CREATING   PERSONALIZED   EDUCATION SYSTEM – They have considered the fact that learning

process of every student is different and unique. Thus, with personalized teaching, in-depth knowledge concept mapping they had tried to make learning fun and easy.

According to an article published by the Business Insiders in the website, there has been many more reputed companies that have also tried to gain popularity, though not as much as Byju's. Though there has been the maximum growth in the year 2020 due to the covid situation and closing down of all schools, colleges, coaching centers, which have been turning points for all these companies to grow in market making the maximum of business enhancing maximum profit at a rapid pace. Some graphical representation to show various outcomes of the analytical studies to put forward:
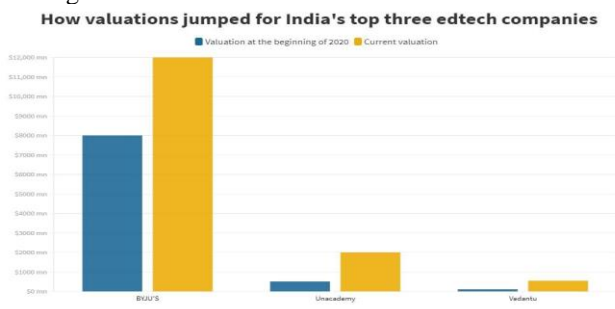

Indian edtech startups have raised over $2.2 billion in 2020
This is the highest total funding in edtech sector in the last five years

Source: PGA Labs-IVCA report

The entire ed-tech business has in together saw a massive growth made a profit of $2.2 billion out of which only Byju's has made a profit of $1.35 billion. This is the maximum growth in the last five years. And all thanks to this coming of covid that the entire education has become dependent upon the online teaching. This has led to Byju's becoming the most valued company followed by vedantu merging with unicorn to become company valuing worth $2billion.

On further analyzing the few more results can be considered that:

BYJU'S became the top gainer with over a billion dollars in funding

Source: Tracxn

Byju's has become the most funded company in 2020, leaving the rest behind in the race.

How valuations jumped for India's top three edtech companies

■ Valuation at the beginning of 2020 ■ Current valuation

Source: Media reports

BI India

Byju's has become the top valued company. This is not only because of the investors that they have invested all their money and faith in the company. This could also happen because of the rapid growth of intake of admission in the online classes which also mean that there has been a growth of 4.5 million paid subscribers. In an interview with the Business Insiders Byju Raveendran the founder if Byju's said that "A lot of them are trying out online learning and that's happening more than before. Unfortunately, it eventually took a crisis like this for people to try out online learning and all stakeholders, not just students".

BYJU'S, Unacademy and Vedantu all three registered a massive user growth in 2020
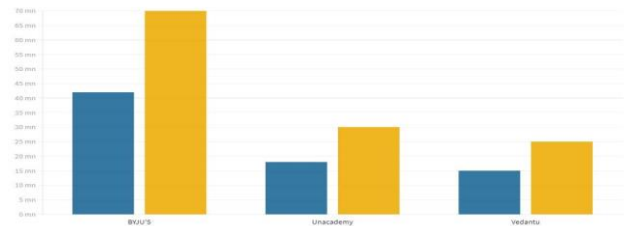
BI India

Though the three companies have witnessed a massive growth in the year 2020 they would definitely hope the same in the year 2021.

It is been observed that most of the students prefer to take coaching for competitive or entrance exams much earlier than before just because of the increase in competition. And this is what has been adopted by these companies where they offer courses in different patterns and anyone can opt for these. To prove that their classes are very much effective they use certain tag lines that denotes the competition which convinces students to take up classes in order to not stay behind. In short, they target the self-confidence of the students. It can also be said that though online classes have been very much effect during the entire year of 2020 and also in 2021 to teach students but this has also led to zero face to face interaction which many students say that going to school is of much help than online classes as that helps in better understanding and better communication.

It is also understood that there are certain companies like WhiteHat Jr who target kids aging 5-6 years who age given the greed of learning coding to develop apps.

CREATIVITY SCORES AT GENIUS LEVEL

Source: https://www.whitehatjr.com

This is a graphical representation of different age group of students that have join WhiteHat Jr to learn coding. And this shows that amongst them children of 5years are the most.

Service Level Model Variations of EdTech

Educational Hardware	Educational System	Educational Technologies	Educational Threshold
Interactive Whiteboards	Learning Management Systems	Educational Gaming	Kindergarten
Interactive Displays	Learning Content Management Systemss	Educational Analytics	K-12
Interactive Tables	Learning Content Development Systems	Educational Enterprise Resource Planning (ERP)	Higher Education
Audio Systems	Student Response Systems	Educational Security	
Smart Printers	Assessment Systems	Educational Dashboard	
Smart Projectors	Collaboration Systems		
	Classroom Management Systems		
	Document Management Systems		
	Content Creation Systems		

Source: appinventiv.com

The above chart describes the basic model portfolio of ed-tech company's teaching or the model on which their apps are developed on.

VIII.   STUDY ON THE SURVEY CONDUCTED

The survey conducted on 3schools taking 110 samples of total number of students at random together form all the 3 schools, segmenting it into demographic segmentation and questionnaire format. Analyzed the demographic factors using the MS Excel formula and the also analyzed the questionnaires to get to a conclusion on what the students feel and think about ed-tech and online classes happening during the pandemic. Though the concept of ed-tech is not confined within the concept area of pandemic but it had impact earlier, but due to the coming of the pandemic it has triggered and has seen a rise in that impact during pandemic. Explaining each of the two segments in details it comes out to be

IX.   THE DEMOGRAPHIC ANALYSIS

In the demographic segmentation it is found that among the total number of respondents 55% of them are male students and 45% are female. Most of them come from middle class family having an average monthly income of around 25000 to 35000. And also, it is found that 40% of them comes from panchayat area. This also means that they belong to somewhat rural area. Amongst them the average marks received in class 10 is within 50% to 75%. And the most important part of the study, the acceptance of ed-tech in their studies is only 25%, which means not everyone is able to take in the facility of ed-tech for studies. It is again found that out of those 25% of students only 6% of them have taken the subscription of ed-tech for their regular studies along with competitive exams and the rest 18% only has the vision to taken the help of e-tech for cracking either their medical entrance or engineering entrance exams. This clearly means that there are still many students to which the entire facility of this new technology of ed-tech is yet to reach. They still lack due to many reasons, and mostly due to either financial reasons or internet connectivity. Many amongst those who have not adopted ed-tech at all in their education on questioning said either their parents have lost jobs during the pandemic or their financial condition is not that strong to spend a bulk amount at once on the service. They also face problems of internet connectivity, there are

many places where there persists a huge network issue. They say they are doing their online classes with great difficulty, due to poor internet connectivity, so taking up these classes it would be a complete waste as they would face problems in attending. There have also been few students who does not have any kind of problems but they feel it would not be of much help to them taking the subscription. To conclude this, it can be clearly said that to reach this facility of this advanced concept of teaching with technology with spend a bulk amount would still need time especially in the rural and few urban and semi urban areas as well. Their still many students who still prefer pen paper and old school style of education rather than the new school style.
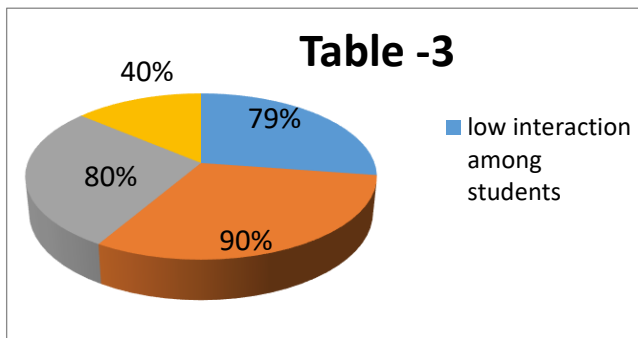
X.   THE QUESTIONNAIRE ANALYSIS

• 85% students prefer classroom-based classes as that helps them concentrate in what is being taught to them. They also feel that the practical classes are also lacking that might lead them to a serious problem during board exams.

• 70% students feel that the notes they wrote during the classes where more helpful than what is being provided to them in social media like WhatsApp.

• At the same time 82% of the students feel that information provided to them through WhatsApp helps them remember well about assignments and other information's, as they use their smart phones and is mostly active on social media.
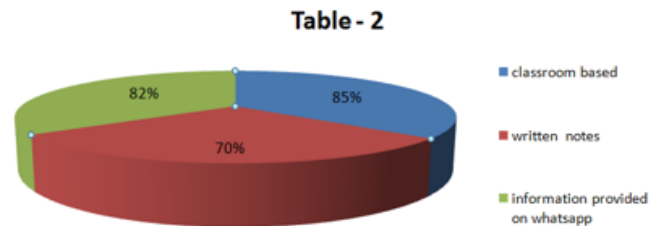
Table - 2

The pie chart shows the graphical representation of the analysis done on the responds collected based on the given questionnaire
.

• 79% of the students feel that as there are fewer interfaces this is leading newly admitted students to become introvert and shy also leading to making the roots of the concepts of group works weaker.

• 90% of the students feel that the exams being conducted online are not much effective for them.

• 80% of the students feel the classes are monotonous they doze off during classes as there is no face to face interaction that happens during normal classes

• 40% of them are facing health issues due to continuous looking at the screens for both classes as well as for solving assignments and homework.

Table -3

40%
79%
80%
90%

■ low interaction among students

The pie chart shows the graphical representation of the analysis done on the responds collected based on the given questionnaire

XI.   CONCLUSION AND RECOMMENDATIONS

To conclude the entire thing, it can be said that involvement of technology has both advantages as well as disadvantages. The companies have not only brought in new and innovative ideas in the field off education, but also have developed the process of education in completely newer way. The concept of online classes has helps students connect to their classes in just one click. There have been various processes thought which they help their students' clear doubts, but when these are in the process of recorded video that certainly brings about a problem for them to understand.

With the emerging of new technologies everything is becoming easier but at the same time this is creating a lack in fellow feeling and is also making ground weaker in the ground of team work. This has also brought about to look through the fact that the companies are really making profits with the greed they are giving to the students of topping exams be competitive exams or entrance or even normal school level exams.

Technology no doubt has numerous advantages to count on but every blessing can turn in curse when used wrong or in excess. As is it always said that excess of anything is injurious to health and so is this excessive involvement of social media and coaching platforms in the field of education, that is making students lazy and is restricting them to read books, their concept that has developed now is "why should we go for lengthy process when things are available in just one click. Or we need to adopt the concept work smart instead on work hard" thought working smart is definitely required along with working hard.

At the same time the companies should also work on their ways of advertising where this does not bring in the feeling of inferiority among students n not taking classes. Moreover, they should also take in the concern of health issues of younger children as certain companies even target children of 7-8 months, where they have brought in the concept that these children can sometimes use mobile phones better that many adults hence they have brought fun games that would help them learn to get grip over markets.

They simply ignore the health issues that can occur to these kids this should be taken care of, of not target these kids at least. Parents also fall in trap of these advertisements due to the concern of securing their child's future and better

education. Moreover, this is understood that profit making is the most important criteria of every business and this is the reason they work so hard. But at the same time, this should be kept in mind that the products they are coming up with should be pocket friendly as well along with user friendly and teaching process friendly. They should also come up with activities that are offline based as well per infect more of that so that it reduces the line students tend to sit in front of the screen.

The ed-tech and the involvement of technology has helped the management in ways as well, as said by the Ministry of Electronics and Information's Technology, India that young minds should be inclined towards technology this will automatically help the management to work smoother faster and more efficiently. Thus, though everything is interlinked but then also the vital and smaller things should not be neglected that might later lea to major losses

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