

USE OF METAVERSE IN EDUCATION – EDUCATORS OPINION AND ADAPTABILITY**Dr. Ritu Bhattacharyya¹ and Dr. Sangita Kohli²**¹Director –GNVS Institute of Management and ²Principal Vedanta College¹ritubhat05@gmail.com ²sangitha1209@gmail.com**ABSTRACT**

Purpose –The purpose of this paper is to find out the educators' views on the concept and use of "metaverse" in the teaching learning process.

Design/methodology/approach – The paper is based on secondary as well as primary data collected with the help of Google forms and interviews. A questionnaire consisting of closed and open-ended questions about the metaverse and its use in the field of education was administered to 122 teachers.

Findings– The results showed that approximately 65% of the teachers stated that they knew the concept of the metaverse and its applications. In addition, approximately 55% of the teachers stated that they first heard about the metaverse concept from social media, and 45% stated that they were most aware of metaverse applications in the field of play. Most teachers (69.7%) answered no about the benefits of the metaverse platform in education. Approximately 95% of the teachers stated that they wanted seminars and workshops on metaverse applications in education and wanted these studies to be mostly aimed at introducing the metaverse platform and its applications in the educational environment.

Practical implications – With the help of technology things in the world are done differently, we can participate in a virtual lesson at one end of the world with our avatars and exchange information, we can organize our workouts and calculate the daily calories we burn, and we can earn money in the virtual environment with a unique piece of art we have designed. This all is done virtually and thus the role of metaverse is become very important

Originality/value – There has been no study done earlier in India on use of metaverse by teachers from different disciplines and ages thus this study could help us get the view point of different teachers who teach different age group of students and a variety of subjects.

Paper type - Research paper

Keywords – Metaverse, teachers, education

INTRODUCTION

Use of technology in education has become an essential part of teaching- learning. The use of Artificial Intelligence and Augmented Reality to create a realistic virtual classroom has gained a lot of importance. In a high population country like India it is possible to create virtual lessons in one part of the country and exchange them throughout the country especially in remote areas or places that lack teachers. Metaverse is one of these essential and popular technologies that can be utilized extensively for exchange of knowledge

The term metaverse was first used by an American science fiction writer, Neal Stephenson, in his novel Snow Crash (1992). The term metaverse is used to describe a virtual, online parallel universe, where the real and digital worlds merge. The metaverse is a virtual network created in 3D (Three-Dimensional), it thus provides a sense of reality, and an experiences of being present in the virtual world along with other users. Metaverse is defined as “a permanent virtual space based on computer interaction, where several users live, represented by iconic images called avatars, which can communicate with each other in a synchronized manner” (Reis, Escudeiro Escudeiro, 2010). By using virtual reality and augmented reality an immersive environment is created, which gives a feel of near reality and is interactive and can have multi-users.

A person can enter the platforms by creating a virtual identity or avatar, buy the products they want, interact with other people in the platform, visit places they are not able to travel to and attend events they would otherwise not be able to attend. Organisations like Facebook, Pokemon, Microsoft, Coca-Cola, Dolce & Gabbana have moved to the metaverse. A report by Gartner (2022); stated that 25% of people will use at least one hour a day for education, socializing, shopping, and having fun on the metaverse by 2026.

In order to work in the metaverse universe infra such as hardware, network, computing, virtual platforms, exchange tools and standards, payment methods, metaverse content, services, assets, and user behaviors must come together (Ball, 2021). Hardware such as VR (Virtual Reality) devices, headsets, and gloves, high bandwidth and high- speed internet infrastructure are required for the metaverse.

Teachers need to update their class planning and executing skills to meet new teaching- learning needs. The use of new technologies such as metaverse in education require the teachers to, first be comfortable with the technology in order to provide better learning environment. Virtual and augmented reality technologies directly related to the metaverse have an important area of use in education (Damar, 2021).

During Covid-19 the online learning process became main stream, teachers were highly challenged for delivering class room content as they were not tech savvy. Teachers had to adapt technology and also learn to use it for teaching- learning in a hurry. However, the teachers adapted the same mode as classroom teaching even online and it was not very effective and most students found it very boring and did not attend the classes. A need was thus felt for creation of classes where the students were involved. The creation of virtual environment with augmented reality was felt but, the teachers' did not possess the knowledge or experience of using virtual reality additionally there were no ready instructional material that could be used by them.

With development in metaverse a lot of problems such as interaction in the online environment involvement of students and presence of students in the lesson get resolved. Virtual or augmented reality stimulates the student's five senses, providing opportunities to participate in activities that are difficult to experience due to space and cost constraints or risks (Han & Noh, 2021). As a result, active learning instead of passive learning can be experienced, especially in the metaverse world.

Using the metaverse in the educational environment allows students to enter the virtual environment with their friends. Each student, classmate, and teacher has an avatar in three- dimensional virtual environments such as the metaverse. An environment which is very close to physical reality is created in the metaverse environment, students are able to feel a sense of being presence in the learning environment along with their friends and teachers in a three- dimensional classroom environment.

Table 1 Differences between the online meeting platform and the metaverse platform (Jeon & Jung, 2021)

Factor	Online meeting platform	Metaverse platform
Education leadership	Teacher > Student	Teacher = Student
The role of the instructor	Event leadership	Limited intervention at events
	Providing educational materials	Providing materials tailored to learners' needs
Instruction formats	Teacher-centered learning	Student-centered learning
	Knowledge transfer and sharing	Seeking and accessing information
Scope of use	Using the instruction screen	Use of various interaction states
Participation	Available only when the teacher opens an online meeting	Continuous access
		Flipped learning opportunity

Source: (Jeon & Jung, 2021)

Technology integration with teaching supports student learning and enables them to keep up with the digitalized society (Mayer, 2019; US Department of Education, 2020). However, the effectiveness of using technologies in teaching varies depending on how they are used during instruction (Chauhan, 2017; Stegmann, 2020). It has been seen that teachers are themselves not comfortable in use of technology and thus make only limited use of the different potential of technology in their lessons. In this context, the study was conducted to determine teachers' views of the metaverse platform in teaching-learning. This study was carried out with teachers from different fields, age groups and experience to know about using the metaverse, in the field of education.

METHOD

Research Model

This study was conducted to understand the teachers' views of the metaverse platform. The survey model was used for the study, which enables inferences from the selected sample.

Participants

The sample consists of teachers, who are instructors at levels of education and branches working in schools Graduation level colleges, Post Graduate colleges and Universities in Mumbai District. The study was conducted with 244 teachers. Demographic information of the teachers participating in the survey is given in Table 2. The study group was determined by the easily accessible sampling method.

Table 2 Demographic variables regarding participants

Variables		N	%
Gender	Female	144	41.3
	Male	100	58.7
Age	25-29	8	3.3
	30-34	34	14.0
	35-39	86	34.7
	40-44	58	24.0
	45-49	30	12.4
	50-54	12	5.0
	55-59	16	6.6
Seniority	1-5	30	12.29
	6-10	26	10.65
	11-15	42	17.21
	16-20	64	26.22
	21-25	44	18.03
	26 and over	38	15.57

Source: Primary Data

Data Collection Tool

A two-part questionnaire was designed in order to collect data. The first part had demographic information like gender, age, seniority at work place. In the second part, closed- ended questions about the metaverse platform, and its utility in education.

Pilot Study

While forming the survey questions, a literature review was conducted, and interviews were held with 10 academicians who are experts in school education, information technologies, and Management. By making a preliminary study with a group of 10 teachers, information about the responsiveness of the questionnaire was obtained, and it was decided that the questionnaire was suitable for the research.

Data Analysis

The data collected was analyzed using descriptive statistics. The calculation of frequency tables and percentage was done. The data was then tabulated on variables like gender, age, and seniority. The third part of the questionnaire had open-ended questions, the responses were given by the teachers were shown in categories.

RESULT AND DISCUSSION

Table 3: Answers to the question

"Do you know about metaverse in education?"

Table 3		Yes	No	Total
		Freq. (%)	Freq. (%)	Freq. (%)
Gender	Female	90 (62.5)	54 (37.5)	144 (100.0)
	Male	68(68.0)	32(32.0)	100(100.0)
	Total	158 (64.8)	86(35.2)	244 (100)
Age	25-29	6(75.0)	2(25.0)	8 (100.0)
	30-34	20 (58.8)	14 (41.2)	34(100.0)
	35-39	56 (65.1)	30 (34.9)	86 (100.0)
	40-44	42 (72.4)	16 (27.6)	58(100.0)
	45-49	22(73.3)	8(26.7)	30 (100.0)
	50-54	6(50.0)	6 (50.0)	12(100.0)
	55-59	6 (37.5)	10 (62.5)	16 (100.0)
	Total	158(64.8)	86 (35.2)	244 (100)
Seniority	1-5	14 (70)	6 (30)	20 (100)
	6-10	22 (68.8)	10(31.3)	32 (100)
	11-15	36 (60.0)	24 (40.0)	60 (100)
	16-20	46 (71.9)	18 (28.1)	64 (100)
	21-25	28 (70.0)	12 (30.0)	40 (100)
	26 and over	12 (42.9)	16 (57.1)	28 (100)
	Total	158 (64.8)	86 (35.2)	244 (100)

Source: Primary Data

The response to the question on whether the teachers were aware about metaverse in education a large percentage of about 64% response was YES, and about 35% said that they did not know the exactly about metaverse in education.

The data also indicated that women were less aware about metaverse and its use in education (38%) as compared to men (32%)

Mainly the younger teachers knew more of metaverse and is application in education. The senior teachers were less aware about the concept and use of metaverse in education.

Table 4 answers to the question

"Rate your level of knowledge about the metaverse from Naïve, Beginner, Intermediate to Advance?"

Table 4		Naive level	Beginning Level	Intermediate level	Advanced level	Total
Gender		Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
	Female	64 (44.4)	64 (44.4)	12 (8.3)	4 (2.8)	144 (100.0)
	Male	34 (34.0)	40 (40.0)	14 (14.0)	12 (12)	100 (100)
	Total	98 (40.2)	104 (42.6)	26 (10.7)	16 (6.6)	244 (100)
Age						
	25-29	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	8 (100.0)
	30-34	12 (35.3)	16(47.1)	6 (17.6)	0 (0.0)	34 (100.0)
	35-39	36 (41.9)	32(37.2)	10 (11.6)	8 (9.3)	86 (100.0)
	40-44	16 (27.6)	30 (51.7)	6(10.3)	6(10.3)	58 (100.0)
	45-49	14 (46.7)	14 (46.7)	0 (0.0)	2 (6.7)	30 (100.0)
	50-54	4 (33.3)	4 (33.3)	4(33.3)	0 (0.0)	12 (100.0)
	55-59	8(50.0)	8(50.0)	0 (0.0)	0 (0.0)	16 (100.0)
	Total	98 (40.2)	104 (42.6)	26 (10.7)	16 (6.6)	244 (100.0)
Seniority						
	1-5	10(50.0)	6 (30.0)	2 (10.0)	2(10.0)	20 (100.0)
	6-10	12 (37.5)	12 (37.5)	4(12.5)	4 (12.5)	32 (100.0)
	11-15	28(46.7)	20 (33.3)	8 (13.3)	4 (6.7)	60(100.0)
	16-20	16 (25.0)	38 (59.4)	8 (12.5)	2 (3.1)	64 (100.0)
	21-25	18 (45.0)	16 (40.0)	2 (5.0)	4 (10.0)	40 (100.0)
	26 and over	14(50.0)	12 (42.9)	2 (7.1)	0 (0.0)	28 (100.0)
	Total	98 (40.2)	104(42.6)	26 (10.7)	16 (6.6)	244(100.0)

Primary Data

Based on data collected on the level of knowledge on metaverse approx. 40. % of teachers are at the naive level; **Source:** 43% at beginner; 11% at intermediate and 7% at advanced level.

The female sample was mostly as naive and beginner level, the male sample was found to be mostly at the beginner level. But at the advanced level there were more males than females

Looking at seniority levels, most teachers were at naïve, Beginner or intermediate levels.

Table 5: answers to the question

“Where did you get to know about the concept of metaverse?”

Table 5							
		Social media (Facebook, Youtube Instagram, etc.)	From students	From educational environment s such as conferences, seminars, etc.	From people around me	Thanks to this study	Total
Gender		Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
	Female	84 (58.3)	22(15.3)	12 (8.3)	22(15.3)	4 (2.8)	144 (100.0)
	Male	56 (56.0)	10 (10.0)	10 (10.0)	22 (22.0)	2(2.0)	100 (100.0)
	Total	140 (57.4)	32 (13.1)	22 (9.0)	44 (18.0)	6 (2.5)	244(100.0)
Age	25-29	4 (50.0)	2 (25.0)	0 (0.0)	2 (25.0)	0 (0.0)	8 (100.0)
	30-34	16 (47.1)	4(11.8)	2 (5.9)	12 (35.3)	0 (0.0)	34 (100.0)
	35-39	54 (62.8)	8 (9.3)	10 (11.6)	10 (11.6)	4 (4.7)	86 (100.0)
	40-44	34 (58.6)	6 (10.3)	8 (13.8)	8(13.8)	2 (3.4)	58 (100.0)
	45-49	16 (53.3)	6 (20.0)	2 (6.7)	6 (20.0)	0 (0.0)	30 (100.0)
	50-54	8(66.7)	4 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	12 (100.0)
	55-59	8 (50.0)	2 (12.5)	0 (0.0)	6 (37.5)	0 (0.0)	16 (100.0)
	Total	140 (57.4)	32 (13.1)	22 (9.0)	44 (18.0)	6 (2.5)	244 (100.0)
Seniority	1-5	12 (60.0)	4 (20.0)	0 (0.0)	4(20.0)	0 (0.0)	20 (100.0)
	6-10	14(43.8)	4 (12.5)	4 (12.5)	10 (31.3)	0 (0.0)	32 (100.0)
	11-15	32 (53.3)	6 (10.0)	8 (13.3)	12(20.0)	2 (3.3)	60 (100.0)
	16-20	46(71.9)	6 (9.4)	4 (6.3)	4(6.3)	4(6.3)	64(100.0)
	21-25	18 (45.0)	8(20.0)	6(15.0)	8(20.0)	0 (0.0)	40 (100.0)
	26 and over	18 (64.3)	4 (14.3)	0 (0.0)	6 (21.4)	0 (0.0)	28 (100.0)
	Total	140 (57.4)	32 (13.1)	22 (9.0)	44 (18.0)	6 (2.5)	244 (100.0)

The reply to the question of where the teachers got to know about the concept of metaverse, the maximum response was from social media 57%; students were responsible for 13% of the teachers knowing about the concept, 9% learned from conferences, seminars, etc., 18% from people around them especially their children, and 2.5% had heard of the metaverse concept because of this study.

Most female and male teachers heard of the concept from social media (58)

The educational environment hardly contributed to the knowledge even in case of younger teachers.

In terms of seniority it was seen that the younger and mid seniority people were more active on social media for their knowledge of metaverse

Table 6 answers to the question of

“In which field/area have you heard about the use of metaverse most?”

Table 6		Educa tion	Econ omy	Game	Marketi ng	Health	Cultur e	I did not hear	Total
	Gender	Freq. (%)	Freq. (%)	Freq.(%)	Freq. (%)	Freq.(%)	Freq.(%)	Freq. (%)	Freq. (%)
	Female	16(11.1)	36(25.0)	52(36.1)	16(11.1)	2 (1.4)	20(13.9)	2(1.4)	144(100.0)
	Male	10 (10)	18(18.0)	58(58.0)	8(8.0)	2(2.0)	2(2.0)	2(2.0)	100(100.0)
	Total	26(10.7)	54(22.1)	110(45.1)	24(9.8)	4(1.6)	22 (9.0)	4 (1.6)	244(100.0)
Age	25-29	0 (0.0)	0 (0.0)	2(25.0)	2(25.0)	0 (0.0)	4 (50.0)	0 (0.0)	8(100.0)
	30-34	8(23.5)	10(29)	14	0 (0.0)	0 (0.0)	2(5.9)	0	34

)	.4)	(41.2)				(0.0)	(100.0)
	35-39	10(11.6)	20(23.3)	36(41.9)	14(16.3)	2(2.3)	2(2.3)	2(2.3)	86(100.0)
	40-44	4(6.9)	14(24.1)	26(44.8)	6(10.3)	2(3.4)	4(6.9)	2(3.4)	58(100.0)
	45-49	2(6.7)	4(13.3)	20(66.7)	0(0.0)	0(0.0)	4(13.3)	0(0.0)	30(100.0)
	50-54	0(0.0)	0(0.0)	8(66.7)	2(16.7)	0(0.0)	2(16.7)	0(0.0)	12(100.0)
	55-59	2(12.5)	6(37.5)	4(25.0)	0(0.0)	0(0.0)	4(25.0)	0(0.0)	16(100.0)
	Total	26(10.7)	54(22.1)	110(45.1)	24(9.8)	4(1.6)	22(9.0)	4(1.6)	244(100.0)

Metaverse has its maximum presence in gaming and the response from the teachers on “ In which field/area have you heard about the use of metaverse most” the maximum response was for gaming (45%) across gender and age.

Figure 2: Response to
“Do you feel that metaverse can change the way teaching- learning can happen in future”

		Yes	No	Can't say
Gender		Freq.	Freq.	Freq.
	Female	43(30)	86(60)	15(10)
	Male	31(31)	59(59)	10(10)
	Total	74(30)	145(60)	25(10)
Seniority				
	1-5	18(60)	6(20)	6(20)
	6-10	17(65.38)	4(15.38)	5(19.23)
	11-15	21(50)	16(38.09)	5(1.90)
	16-20	13(20.31)	44(68.75)	7(10.93)
	21-25	12(27.27)	26(59)	6(13.63)
	26 and over	3(8)	30(79)	5(13)

Regarding the benefits of the metaverse platform in education, approx. 60% of the teachers answered no, and 30% answered yes while 10% were not sure if metaverse were the future of education.

The data also showed that younger teachers felt that metaverse could change the teaching learning process in future but the senior teachers were not that confident of the same.

Table 7 answers to the question of
“Are you aware of the benefits of using metaverse for teaching in your class room?”

0.3

Table 7		Yes	No	Total
Gender		Freq. (%)	Freq. (%)	Freq. (%)
	Female	38 (26.4)	106 (73.6)	144 (100.0)
	Male	36 (36.0)	64(64.0)	100 (100.0)
	Total	74 (30.3)	170 (69.7)	244(100.0)
Age				
	25-29	6(75.0)	2(25.0)	8 (100.0)
	30-34	8 (23.5)	26 (76.5)	34 (100.0)
	35-39	28 (32.6)	58 (67.4)	86 (100.0)
	40-44	20(34.5)	38 (65.5)	58 (100.0)
	45-49	8 (26.7)	22 (73.3)	30 (100.0)
	50-54	0 (0.0)	12 (100.0)	12 (100.0)
	55-59	4 (25.0)	12(75.0)	16 (100.0)
	Total	74(30.3)	170 (69.7)	244 (100.0)
Seniority				
	1-5	6 (30.3)	14 (70.0)	20(100.0)

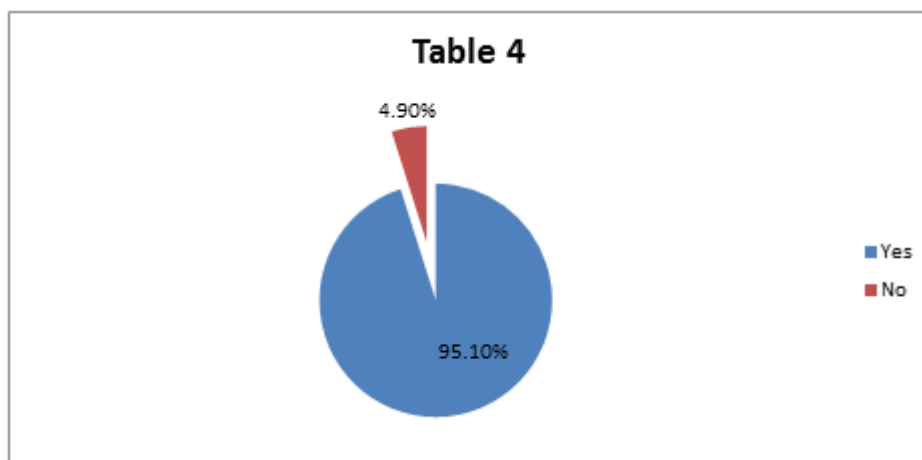
	6-10	14 (43.8)	18 (56.3)	32 (100.0)
	11-15	20 (33.3)	40 (66.7)	60 (100.0)
	16-20	24 (37.5)	40 (62.5)	64 (100.0)
	21-25	6(15.0)	34 (85.0)	40 (100.0)
	26 and over	4(14.3)	24 (85.7)	28 (100.0)
	Total	74 (30.3)	170 (69.7)	244 (100.0)

The data shows that mostly all teachers male 64% and female 74% are not aware of the benefits of using metaverse in their classroom. Teachers who were aware mainly came from technology background and the least aware were teachers of commerce and economics.

Very senior teachers were also not aware of the benefits that metaverse would bring into their classrooms.

Figure 4 answers to the question

“Do you feel that seminars and workshops by Universities and Education Department on metaverse applications in education would be helpful”



95% of the sample feels that if there was an effort made by the education department through workshops and trainings teachers would better understand as to how metaverse would help them to teach better.

CONCLUSION

The aim of the study was to understand the teachers' views on metaverse and its utility in the classroom. The first step though was to find if teachers and educators themselves were aware of the concept. With help of a few questions it was attempted to find the level of familiarity of the concept among teachers, their willingness to adopt the concept to teach their subject and their opinion on whether it would make a difference in the teaching learning practice.

Data shows that most teachers are aware about metaverse and its applications. Though very few are at a level that can be termed as ‘Expert’. There is a fear of application of technology and most teachers don’t know how to create content or get content for their subjects. Many non-technology teachers are in total denial and feel that metaverse is of no use to them and will not be useful even in the future. Senior teachers even in the field of technology are not very enthusiastic about the utility of metaverse in education.

It is felt that since most people are not aware as to how metaverse can be used in the class room they are not very keen on adopting the same for teaching. Also since metaverse has become very popular in gaming it is also felt by most teachers that it is useful only for additional activities to supplement class room teaching and cannot a used as a tool to impart complete education.

Thus it is important that teachers are training to use metaverse to impart education, for which content should be made available or teachers must be taught to create content. The best part is that in India metaverse is used to a very great extent in schools to give young students clarity of concept and to have interactive learning experience. The same cannot be told about middle and high school and definitely not about Higher education.

High end schools have generated content that they use for teaching young children similarly high end higher education institutes who are subsidized by the Government and who are not short of funds can create modules which can be shared to small and rural higher education institutes so that all students of the country can benefit.

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