

A STUDY ON THE ARTIFICIAL INTELLIGENCE USED IN VIRTUAL CLASSES AND STUDENTS' PERCEPTION TOWARDS VIRTUAL MENTORING

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ABSTRACT

The Clayton Christensen Institute has published a research "*Teaching in the Machine Age: How Innovation Can Make Bad Teachers Good and Good Teachers Better*", where the author assures us that Machine Learning improves the quality of work in any sphere. **The recent developments in Artificial Intelligence** gave developers an opportunity to teach a computer to perform complicated tasks by their own. The algorithm progresses by self-teaching. That's how computers imitate people, to some extent, however, we have to admit that the capabilities of **Artificial Intelligence in education** are still limited. The system can't substitute professionals, but it can perfect teachers' skills and education process.

Development of Artificial Intelligence for education sphere brings one more advantage for school and teachers. Now, they don't need to create the educational program from scratch and to search for the needed materials. The system processes training materials thusly, improving the effectiveness of a teacher.

Virtual volunteering means mentors working with students from a distance, primarily communicating via telephone, Internet, e-mail, Facebook, etc. Virtual mentoring shares the goal of face-to-face mentoring: establishing a trusting, nurturing, positive relationship between the mentor and student.

Through this paper, a study was made on the role of artificial intelligence in virtual mentoring and students' perception and inclination towards virtual classes. Both primary and secondary data was collected for the analysis. A questionnaire was distributed to 75 students and the secondary data was collected from various relevant sources. The paper has made an attempt to know the role of artificial intelligence in virtual learning, find out the inclination of students towards virtual classes and also has analyzed the demand for virtual classes in the future.

Key Words: Artificial Intelligence, Virtual Mentoring, Automization.

INTRODUCTION

An Artificial Intelligence advances day by day. The Clayton Christensen Institute has published a research “Teaching in the Machine Age: How Innovation Can Make Bad Teachers Good and Good Teachers Better”, where the author assures us that Machine Learning improves the quality of work in any sphere, but can a machine replace a teacher?

The recent developments in Artificial Intelligence gave developers an opportunity to teach a computer to perform complicated tasks by their own. The algorithm progresses by self-teaching. That’s how computers imitate people, to some extent, however, we have to admit that the capabilities of **Artificial Intelligence in education** are still limited. The system can’t substitute professionals, but it can perfect teachers’ skills and education process.

Virtual volunteering means mentors working with students from a distance, primarily communicating via telephone, Internet, e-mail, Facebook, etc. Virtual mentoring shares the goal of face-to-face mentoring: establishing a trusting, nurturing, positive relationship between the mentor and student.

The Virtual Mentoring Program (VMP) is an extension of our Academic Mentoring Program (AMP). College Bound students who matriculate into a college or university are offered continued support through the Virtual Mentoring Program. College Bound alumni are assigned a “virtual mentor” who will serve as a resource for students while in college. This is critical during student’s first year as it helps support a fluid transition. In many cases, the “virtual” mentor will be the partner who has been a part of the student’s life for much of high school. In some cases, new mentors will be assigned.

The design and development of truly transformative learning is a long, considered, often painstaking process. It can be sped up, at the cost of quality, by rapid development authoring tools, but it usually relies on the expertise of instructional designers and developers combined. As AI becomes more and more competent, however, these roles could be entirely superseded by AI in the near future, becoming one of the 47% predicted to become obsolete in the next 20 years due to technological change. Even if it doesn’t entirely take over the creative process anytime soon, AI could begin to assist it in various ways; working together with human creators. This is what is adopted in virtual mentoring.

OBJECTIVES

- To know the role of artificial intelligence in virtual learning
- To find out the inclination of students towards virtual classes
- To know the present improvements in the field of virtual mentoring
- To analyze the demand for virtual classes in the future

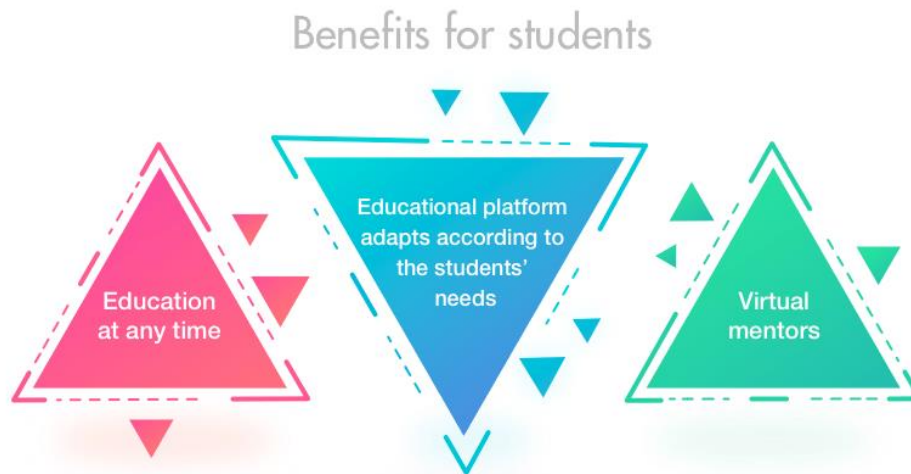
INDUSTRY PROFILE

AI - Complementing in-class teaching

Traditionally, schools adopt a one-size-fits-all approach to teaching. But students learn at different paces and have different progress rates. Meanwhile, teachers often find it hard to identify and deal with the educational needs of students attending their classes.

This is a problem that Artificial Intelligence is solving. Machine Learning algorithms, programs that glean patterns from data and provide insights and suggestions, help teachers to find gaps in their teachings and point to where students are struggling with subject matter.

Benefits of Artificial Intelligence in education for students



Firstly, educational platform adapts according to the students' needs. The AI software development system helps scholars work on their weaknesses. During the process, the program discovers where the student has difficulties and sends needed materials to improve his or her skills. The adaptive education uses AI basic algorithm. This algorithm analyzes data, that was received after teacher uploaded training materials into the system and a student did his homework.

Secondly, it is an education at any time. You can study when it's convenient to you in a real-time mode and get feedback all the time.

Thirdly, virtual mentors. Now, it's a point at issue. Teachers all over the world object the automation of an entire education process, insisting on the idea that we can't refuse teachers. As they believe, that only a professional can understand all needs of a scholar and only a human can harmonize a training program. Yet, the experience of a ThinkerMath platform that uses **Artificial Intelligence latest developments** proves the opposite.

Advantages of Artificial Intelligence in education for schools and teachers



Ability to detect weaknesses

The ability to detect weaknesses in various spheres of a training course. For instance, Coursera notifies teachers when the majority of students gave incorrect answer on a question. It shows what material they should concentrate on.

Deep involving into the education process

It can be achieved with an engagement of various computer materials, Virtual Reality technology, gamification and machine knowledge control.

Personalization

The same algorithms allow to detect strengths of a pupil and hidden talents, which he can develop.

Curriculum automatic creation

Development of Artificial Intelligence for education sphere brings one more advantage for school and teachers. Now, they don't need to create the educational program from scratch and to search for the needed materials. The system processes training materials thusly, improving the effectiveness of a teacher.

Chance to find the best teacher

For example, such system as MyEdMatch applies working principles that are similar to a dating site. They match a school and the most appropriate candidature based on a set of specific criteria, such as teaching experience and soft skills, comparing this information with a school or a class, that need this experience the most.

Other Advantages of online or computer-based learning

- Class work can be scheduled around work and family
- Reduces travel time and travel costs for off-campus students
- Students may have the option to select learning materials that meets their level of knowledge and interest
- Students can study anywhere they have access to a computer and Internet connection
- Self-paced learning modules allow students to work at their own pace
- Flexibility to join discussions in the bulletin board threaded discussion areas at any hour, or visit with classmates and instructors remotely in chat rooms
- Instructors and students both report eLearning fosters more interaction among students and instructors than in large lecture courses
- eLearning can accommodate different learning styles and facilitate learning through a variety of activities
- Develops knowledge of the Internet and computers skills that will help learners throughout their lives and careers
- Successfully completing online or computer-based courses builds self-knowledge and self-confidence and encourages students to take responsibility for their learning
- Learners can test out of or skim over materials already mastered and concentrate efforts in mastering areas containing new information and/or skills

Other Disadvantages of online or computer-based learning

- Learners with low motivation or bad study habits may fall behind

- Without the routine structures of a traditional class, students may get lost or confused about course activities and deadlines
- Students may feel isolated from the instructor and classmates
- Instructor may not always be available when students are studying or need help
- Slow Internet connections or older computers may make accessing course materials frustrating
- Managing computer files and online learning software can sometimes seem complex for students with beginner-level computer skills
- Hands-on or lab work is difficult to simulate in a virtual classroom

Artificial Intelligence in Virtual Learning

Futurists envision a doomsday scenario where robots rise up against us. But Artificial Intelligence and robots are not the same thing, and Artificial Intelligence software has quietly crept into many facets of our lives. Artificial Intelligence is also used in computer games and other similar softwares. Artificial Intelligence is about designing intelligent software that can analyze its environment and make intelligent choices for easy online learning.

Artificial Intelligence Can Create Immersive Experiences, Not Lessons

Machine learning in artificial intelligence should be directed toward meaningful lessons and not just passing a quiz. Artificial Intelligence systems are able to identify each student's needs and come up with models which focus on method and reason rather than mere facts.

Artificial Intelligence in Virtual Learning: The Future

Access to all the information on the internet and Big Data analytics is actually a faster and more complex process than simply coming up with a new lesson plan. Educators in the future may feel and also may find themselves in the position of simply feeding results into databases and developing theories and algorithms for Artificial Intelligence to validate or dismiss. When it comes to eLearning, the best instructors end up becoming the best software engineers. An introduction to Artificial Intelligence may be definitely required for future educators.

The benefit of Artificial Intelligence comes from its ability to evaluate, learn, and adopt a dynamic strategy. While the existing evaluation of educational techniques indicate that one-on-one instruction from a human tutor leads to better understanding than either classroom or online lessons. But that is not always possible for every student. And Artificial Intelligence in eLearning is still basically in its infancy. The future of artificial intelligence lies in its potential for making the most of all the elements that make eLearning so promising.

One of the best benefits of eLearning is that it allows students to learn at their own pace, time and explore new material turned up by simple searches. eLearning from an Artificial Intelligence instructor means that students are free to explore and learn topics in depth, and test their knowledge in complex scenarios rather than simple right-or-wrong answers.

Some detractors may maintain that a computer is less “relatable”, but a computer's ability to reproduce human images and voices is child's play even now. Artificial Intelligence instructors that are more dedicated, more knowledgeable, and less error-prone than human instructors will arrive soon at the near future. And given that charisma is not a pre-requisite for classroom instructors, Artificial Intelligence programs could be more relatable, after all.

Applying Adaptive Learning Environments

The application of AI to Virtual Learning content is not just a cost-saving solution; it also opens up a whole new way of looking at learning itself.

People learn in different ways and at different places, so one of the major challenges in classrooms is maintaining a balance between engaging the quicker learners and accommodating the slower ones. In this type of situation, adaptive learning environments make way for a complete individualized pace.

This includes environments that can accommodate individual learning styles and can run in parallel to each other. Thus, creating a far more effective learning environment, and increasing the chances of a group of individuals grasping information accurately over a set period of time.

Apart from the quality of learning, AI also presents an extremely valuable solution for training in industries with a high rate of dynamism. Companies that need to update their course material on a continuous basis will benefit from adaptive learning environments once machines have the ability to exactly predict how course material needs to improve and change.

Intelligent learning environments can also analyze data across all personalized training instances, to recommend improvements and highlight inefficiencies that would not be possible otherwise. Of course, there is the benefit of using AI for translating content into other languages - this alone could save industries millions every year.

And once a machine has developed the ability to create new content, personalization of learning will exponentially improve. Adaptive learning technologies would give rise to completely personalized environments with content that not only changes but are actually created based on the individual needs of the learner. So, this technological advancement would vastly improve the quality of education that the learner receives in various ways.

EDUCATION PLATFORMS BASED ON ARTIFICIAL INTELLIGENCE TECHNOLOGY



Third Space Learning - it's a top AI school, that was created in cooperation with scientists from London University College. The system advises teachers how to advance their teaching techniques.

Little Dragon - Is a startup, that combines Artificial Intelligence and education and is trying to create a smart application, with the ability to analyse emotional reaction of users and adapt User Interface according to the reaction.

CTI - is a company that studies and **develops programs with AI** and works on application solutions in the educational system. They create users' content. The technology converts a textbook or training materials into smart-schoolbook, choosing only that information, which is necessary and generates tests to check the material.

Brainly - it's a social network, that allows students to cooperate. Students can ask questions and get answers in any field of knowledge or about their homework.

Carnegie Learning - is a piece of software, that uses **Artificial Intelligence technologies** along with cognitive science researches. The main goal of the system is to make education more personalized. The program covers mostly school pupils and first years at college. The software offers real-time education.

ThinkerMath - it's an application specially designed to help kids learn Math. The program uses different games and rewards to engage a child. The system also checks the knowledge level of a pupil and how he memorizes new information, after that he gets a trainer and an individual training plan.

RESEARCH METHODOLOGY

Both primary and secondary data was collected for the analysis. A questionnaire was distributed to 75 students and the secondary data was collected from journals, magazines and various websites.

REVIEW OF LITERATURE

Over the fifty years during which artificial intelligence (AI) has been a defined and active field, there have been several literature surveys [1] [2] [3] [4]. However the field is extraordinarily difficult to encapsulate either chronologically or thematically.

Evolution of artificial intelligence Lee Spector

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Available online 7 November 2006

The goal of creating non-biological intelligence has been with us for a long time, predating the nominal 1956 establishment of the field of artificial intelligence by centuries or, under some definitions, even by millennia. For much of this history it was reasonable to recast the goal of "creating" intelligence as that of "designing" intelligence.

For example, it would have been reasonable in the 17th century, as Leibnitz was writing about reasoning as a form of calculation, to think that the process of creating artificial intelligence would have to be something like the process

of creating a waterwheel or a pocket watch: first understand the principles, then use human intelligence to devise a design based on the principles, and finally build a system in accordance with the design.

At the dawn of the 19th century William Paley made such assumptions explicit, arguing that intelligent designers are necessary for the production of complex adaptive systems. And then, of course, Paley was soundly refuted by Charles Darwin in 1859. Darwin showed how complex and adaptive systems can arise naturally from a process of selection acting on random variation. That is, he showed that complex and adaptive design could be created without an intelligent designer. On the basis of evidence from paleontology, molecular biology, and evolutionary theory we

now understand that nearly all of the interesting features of biological agents, including intelligence, have arisen through roughly Darwinian evolutionary processes.

A recent survey in the United States found that 42% of respondents expressed a belief that “Life on Earth has existed in its present form since the beginning of time” [7], and these views are supported by powerful political forces including a stridently anti-science President. These shocking political realities are, however, beyond the scope of the present essay.

This essay addresses a more subtle form of pre-Darwinian thinking that occurs even among the scientifically literate, and indeed even among highly trained scientists conducting advanced AI research. Those who engage in this form of pre-Darwinian thinking accept the evidence for the evolution of terrestrial life but ignore or even explicitly deny the power of evolutionary processes to produce adaptive complexity in other contexts. Within the artificial intelligence research community those who engage in this form of thinking ignore or deny the power of evolutionary processes to create machine intelligence.

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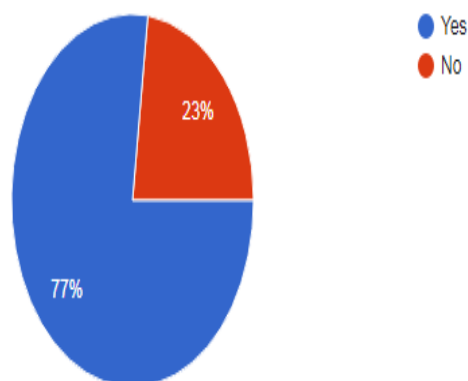
STUDENTS' PERCEPTION ON VIRTUAL MENTORING

DATA ANALYSIS AND INTERPRETATION

75 students were given a questionnaire based on their perception towards virtual mentoring and the following results were obtained.

Are you interested in Virtual Classes?.....

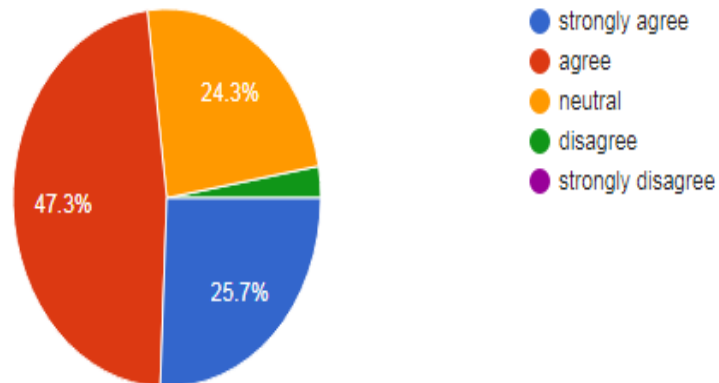
74 responses



Out of 74 respondents, 77% of them are interested in virtual mentoring, whereas, 23% of them are not.

Do you agree that e-learning will accommodate you with different learning styles and facilitate learning through a variety of activities?.....

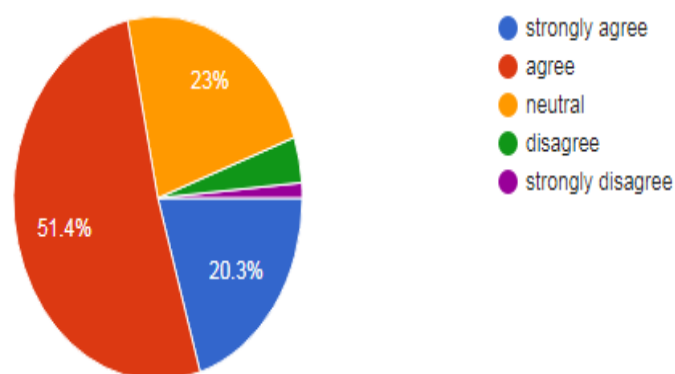
74 responses



Out of 74 respondents, 47.3% of them agree, 24.3% of them are neutral and 25.7% of them strongly agree that e-learning will accommodate them with different learning styles and facilitate learning through a variety of activities.

Do you agree that virtual learning will Develop your knowledge of the Internet and computers skills that will help you throughout your life and career?

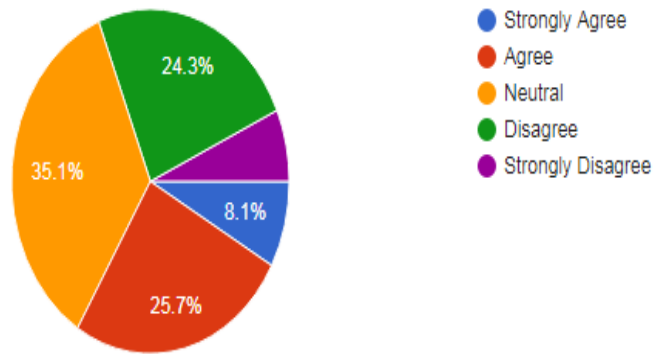
74 responses



Out of 74 respondents, 51.4% of them agree, 23% of them are neutral and 20.3% of them strongly agree that virtual learning will Develop their knowledge of the Internet and computers skills that will help them throughout their life and career.

If you are a Learner with low motivation or bad study habits, would you fall behind because of e-learning?.....

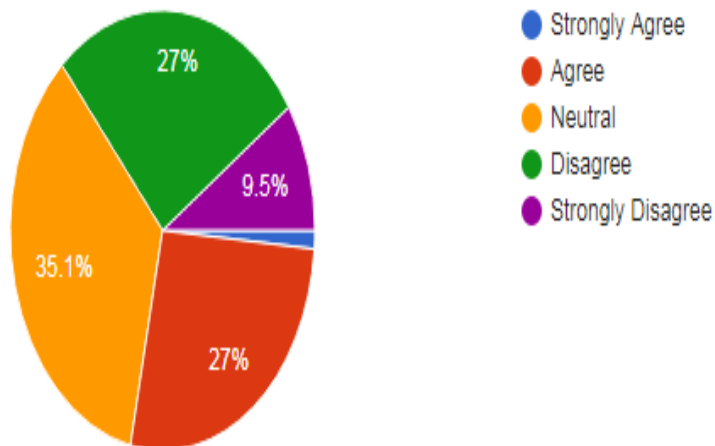
74 responses



Out of 74 respondents, 25.7% of them agree, 35.1% of them are neutral, 24.3% of them disagree and 8.1% of them strongly agree that if they are a Learner with low motivation or bad study habits, they would you fall behind because of e-learning.

Artificial intelligence can replace your teachers.....

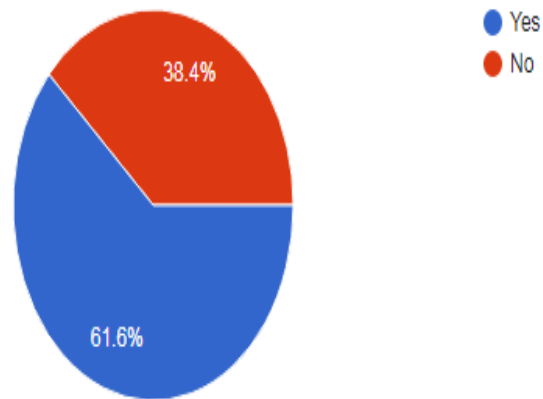
74 responses



Out of 74 respondents, 27% of them agree, 35.1% of them are neutral, 27% of them disagree and 9.5% of them strongly disagree that Artificial intelligence can replace their teachers.

There will be reduction in the practical knowledge of the courses with the introduction of virtual classes.....

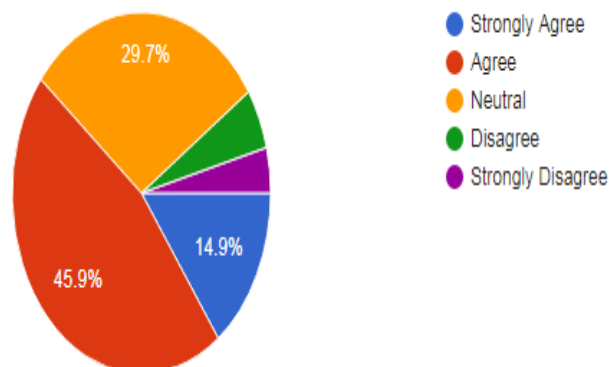
73 responses



Out of 73 respondents, 61.6% of them say that there will be reduction in the practical knowledge of the courses with the introduction of virtual classes, and 38.4 % of the say there will not be reduction in the practical knowledge of the courses with the introduction of virtual classes.

With Artificial intelligence, the emotional aspect in education will come down.....

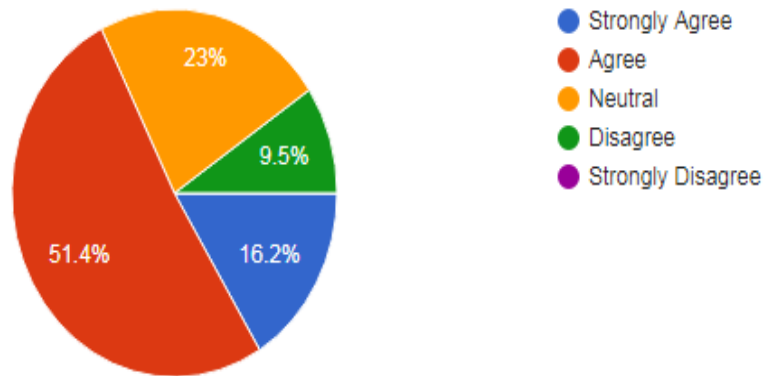
74 responses



Out of 74 respondents, 45.9% of them agree, 29.7% of them are neutral, 14.9% of them strongly agree that, with Artificial intelligence, the emotional aspect in education will come down.

Hands-on or lab work is difficult to simulate in a virtual classroom.....

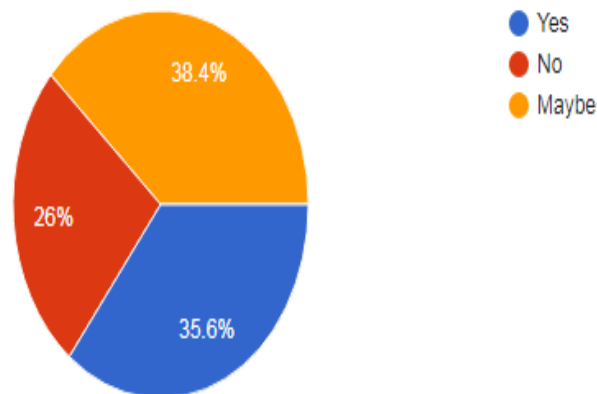
74 responses



Out of 74 respondents, 51.4% of them agree, 23% of them are neutral, 9.5% of them disagree and 16.2% of them strongly agree that Hands-on or lab work is difficult to simulate in a virtual classroom.

Would you feel isolated from the instructor and classmates in a virtual classroom?.....

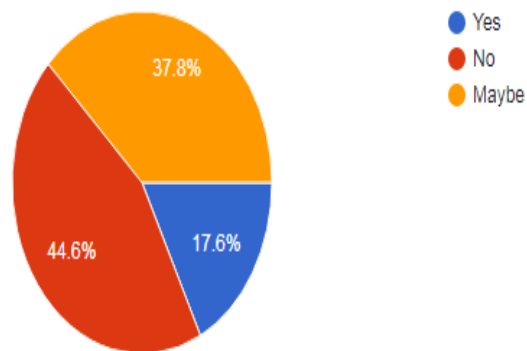
73 responses



Out of 74 respondents, 35.6% of them say yes, 26% of them say no and 38.4% of them say that may be they would feel isolated from the instructor and classmates in a virtual class.

Would you prefer your education system to get into a completely virtual system?.....

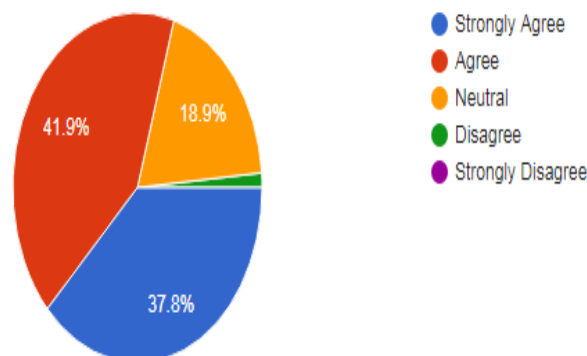
74 responses



Out of 74 respondents, 44.6% of them don't want their education system to completely get into a virtual system, whereas, 17.6% of them want it to be so and 37.8% of them are not sure and may be they would prefer it.

It be OK if the educational system adapts both Classroom and Virtual teaching?.....

74 responses



Out of 74 respondents, 41.9% of them agree, 37.8% of them strongly agree and 18.9% of them are neutral in saying that it would be ok for the education system to adapt both classroom and virtual teaching.

FINDINGS

From the study made on Artificial Intelligence and its role in education, it was found out that many companies and institutions like, Brainly, Thinker Math, CTI, Third space Learning, Little Dragon and many others coming up with various new technologies in order to make e-learning a successful one. There is also a wider scope for improvement in the same field.

From the survey conducted on students' perception towards virtual mentoring, it is evident that on the whole there is an inclination towards virtual mentoring for the students. They have a positive opinion that inclusion

of virtual mentoring along with the regular classes will be of great help. But, they are reluctant towards the education system completely getting into e-learning.

Students feel that the emotional aspect connected with education would decline gradually with the introduction of virtual classes and they also have a notion that lab work and other practical classes will not be possible in the case of virtual classes. Feeling isolated from the classroom set-up or the instructor is not so much among the students.

SUGGESTIONS

Still more improvements can be made in adopting artificial intelligence into education system, in order to give a real classroom sense to the students. There is a lot of scope for research and development with regard to the conducting of practical classes.

Education institutions can take up virtual mentoring as part of their curriculum-not completely-, since students are interested in it.

CONCLUSION - AI and the future of education

In *Intelligence Unleashed*, a paper published by learning company Pearson, the authors suggest the concept of “lifelong learning companions.” These software agents that can exist in the cloud and be accessible from multiple devices, gathering data about children and assisting them as they grow and develop their knowledge. We still have ways to go before learning companions become a reality. But the fast pace at which AI is gaining traction in education heralds a promising future.

However, beyond the passing of knowledge, teaching is a complex social interaction. This means teachers can rest assured — for the moment at least — that robots won’t be replacing them. They will instead assist teachers in becoming better at their job.

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