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Modern Educational Requirements and Teaching Methods

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MODERN EDUCATION REQUIREMENTS AND TEACHING METHODS

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Abstract

In recent times sending students on to higher levels of education is a difficult task, and it is compounded by the fact that not all students want or are able to acquire higher levels of education. In this era of smart society , the scope of knowledge in the field of science and technology has dramatically increased, and human's ability to adapt to new knowledge in science and technology has also increased. To cope up with the modern world and the knowledge-driven era of technology, adopting modern ways are the only means to survive. The students should be introduced with modern teaching methods and are provided sufficient knowledge so that they can create opportunities for themselves and others. Teachers still use a conventional chalk-talk method in the classroom to teach students who can provide only basic knowledge of science and other subjects. If teachers teach with modern teaching methods instead of traditional impractical methods and present science lessons in a more proper scientific way, then many problems, including unemployment, can be overcome. It requires an instant review of the BST curriculum, and it is the reason why modern teaching methods are introduced.

1 INTRODUCTION

It is obvious that Internet of Things (IoT) is ruling current era, which is equipped with ubiquitous computing & networks of interconnected and Internet-enabled objects. With these phenomenal advancements of digital technologies and ubiquitous computing, it is becoming mandatory to train our society about emerging concepts of computer science and IT skills regardless of their core areas of specializations. Industry leaders such as: Cisco, Microsoft and many others have already added IoT, Cloud Computing & Virtualization in their current academic curricula to train the future engineers and IT experts.
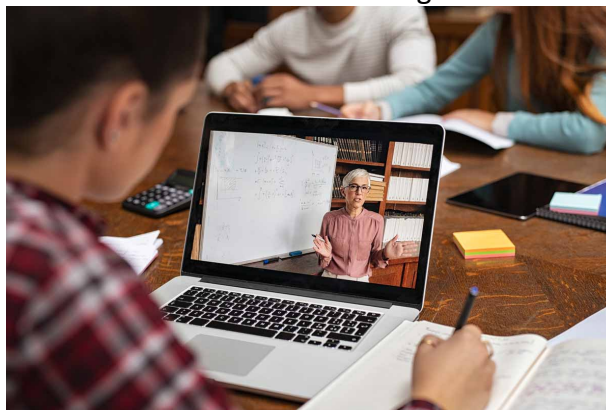
Educational institutes are teaching computer science concepts and also encourages critical thinking and innovation. The IEEE Computer Society elaborates how technology can be effectively utilized by teachers in the IoT era. Some articles introduce methods for integrating IoT into Science, Technology, Engineering, and Mathematics (STEM) education while simultaneously building educational environments that values problem solving and exploration. Additionally, the videos highlight how working with open-source IoT platforms can help foster creativity among the 21st-century learners.
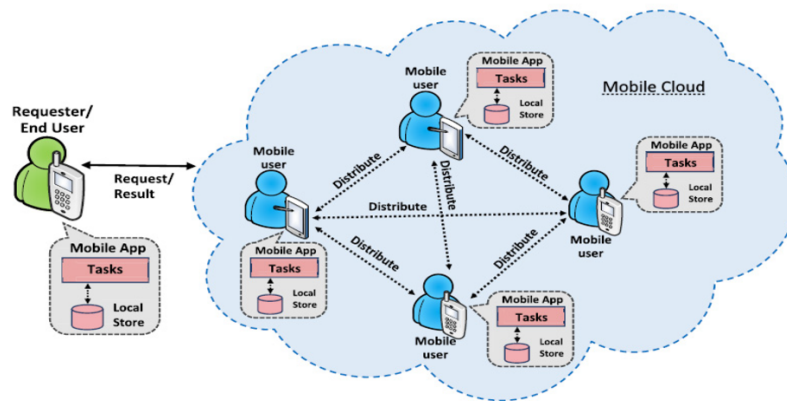
1.1 Use of IoT Platforms and Visual Programming Languages in Teaching

According to Gartner in the last year 6.4 billion connected devices were in use across the world, which is 30% more than the preceding year of 2015. Many prominent researchers have suggested following IoT tools and technologies for teaching in the classroom: Microcontroller development boards, Advanced embedded systems, Electronic white boards, Mobile phones, iPad, Laptops and Tablets, Automatic Electric lighting, Smart HVAC systems, RFID enabled Student ID cards, Wireless door locks, Security cameras and video conferencing, Biometric Attendance tracking, eBooks, Augmented Reality, Virtual Reality, Additive Manufacturing Devices to create 3D objects,MOOCs

Classrooms equipped with electronic interactive white boards allow richer and consistent experience for the learners and teachers during the whole course of study making it easier to share, add, edit contents with students while bringing online contents on the fly to support the discussions in classrooms. Students can use micro-controller development boards such as: Arduino, Raspberry Pi, and STM32 Nucleon as small IoT platforms. Another option is to use advanced embedded solutions, which combine micro-controllers with Field- Programmable Gate Arrays (FPGAs) The Blu5 SEcube security-oriented open platform is a good example, as it's a single-chip design that expertly integrates three main parts: a powerful microcontroller, a Common Criteria-certified smart card, and a flexible FPGA. Developers (and students) can fully control and customize Blu5 SEcube.
Visual Programming Languages (VPLs) are GUI based environments that use graphical elements for programming, and one of the most well-known is a Scratch. This programming language helped millions of trainers and learners to develop programming concepts and logical thinking. According to Gan's , Scratch can complement IoT platforms in education: "BBC micro: bit can be seen as a simple IoT computing platform, making it easy for students to create ubiquitous computing applications using a range of computer languages (such as Scratch), perfectly matching different age or group abilities".

2. COMPETITION BETWEEN TECHNOLOGY & EDUCATION

If we look at current era of technology and popularity of automation with the introduction of industrial 4.0 there are great opportunities that at first level routine jobs scenarios will be toppled by the steady rise of the robots and human interaction, which will eventually result in increased productivity of industry. If we fairly look at current situation, major part of our global education system is being led by economists rather than educators. The authors explained components of Artificial Intelligence based Education system which can be combined to develop an impartial smart real-world testing and evaluation platform for the students. They completed two things.
I. Mapping the catalogue of AIEd tools, which will eventually help for massive challenge by supporting the next phase of education system reform.
II. set out the ways in which AIEd can be deployed to help for understanding and realizing this reform agenda.

3. LEARNING OUTCOMES BASED TEACHING

While adding modern educational techniques and new technological gadgets the importance of learning outcomes should not be ignored. There are chances that learning outcomes might slightly be changed but the overall learning goals would not be affected.
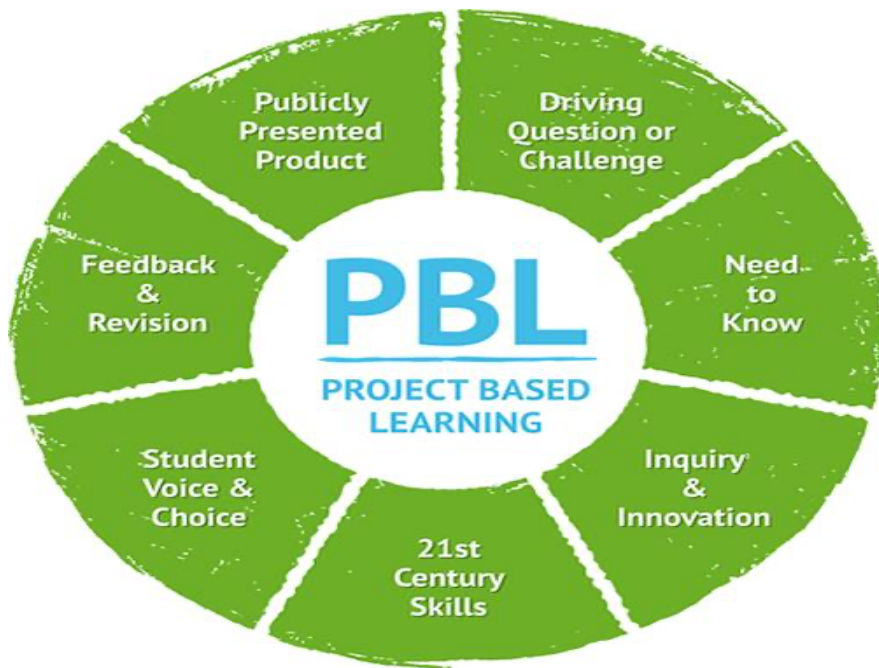
3.1 Course Learning Outcomes

At the end of this course, the students will have the capabilities to:
• Know switching concepts & switching technologies
• Understand types of routing and routing protocols
• Design, calculate, and apply subnets masks and IP addresses
• Design, configure, and troubleshoot a medium sized network by implementing switching and routing
technologies.
• Upgrade some hardware of communication devices (Switch, Router)

4. FUTURE LEARNING TRENDS WITH TECHNOLOGY

It highlights different aspects along which teaching and education will evolve.

4.1 Long-term evolution (in half decade or more duration):
Cultural evolution towards innovative education: Universities will be required to inculcate education and skills which promote self-employment, start-ups, curiosity and hands-on experience.
More in-depth practical knowledge: Higher Education institutes will have to customize their training methodology to become student centric as opposed to traditional teacher centric approach that will allow project oriented teaching to enhance the psycho-motor skills of the students, while challenging the logical thinking abilities of the pupils.

4.2 Medium-term evolution (3 years to a period of half decade)
Education with measurable learning goals: Newer techniques to examine and assess the learning quotient will be emphasized.

4.3 Short-term evolution (In a couple of years)

Online interactive teaching methodologies: Collaborative teaching and learning where teachers and students concentrate to find answers of practical problems some of which will require specialized skills and technological advances that the pupil must learn in order to succeed.
Incremental difficulty level enhancement: Students will begin with easier concepts and tasks while progressing with their learning abilities, more complex problems will be offered to them to challenge them to apply their knowledge yet requiring further research of unknown concepts.
Grand Challenge Problems: Eventually, the students will have to apply their understanding of fundamental concepts, interpolate their skills and evolve their understanding to devise novel approaches in solving problems that were otherwise considered unsolvable by traditional approaches.

5 TECHNOLOGY TRENDS (IN A COUPLE OF YEARS)

Dynamically self-tuning learning technologies: Modular Hardware and Application Software will adapt itself according to the learning progress and teaching goals set by the instructor.

Portable learning technologies: New cloud-based smart platforms and services will be introduced in educational sector that will allow students to use their own mobile devices such as laptops, tablets, Smart- phones etc.

6 CONCLUSION

Today, we have various ways to teach skills that students will need in a global IoT world, which has totally changed our perception for different services, but we don't always implement them effectively in the classroom. Moreover, AI based data analysis and adaptation strategies will be required to provide student centric progress driven contents that enhance level of understanding while boosting the receptivity of the students through multimedia contents.

References

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