IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 29, Issue 4, Series 8 (April, 2024) 35-39
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Future Of Education - In The Coming Years

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Abstract
Persistent challenges to make education accessible to all by 2030 is a formidable task. To deliver on SDG 4 {Sustainable Development Goals} goals, continuous global commitment to ensure equitable education for all is the need of the hour against economic constraints, coupled with learning outcomes and alarming dropout rates echoing throughout marginalized regions. Against this back drop, much is to be seen how the low levels of information and communication technology skills could offer universal and continuous connectivity! Gro Harlem Brundtland's "Our Common Future: Report of the World Commission on Environment and Development: United Nations", became the starting point for all countries to formulate systems and procedures "Ensure inclusive and quality education for all and promote lifelong learning" was set as the target for 2030.
United Nations Population fund had observed that the demographic dividend, namely, world's population's age structure could considerably alter the growth potential, due to the working age population {15 to 64} being lesser than the non-working age share of the population {14 years and younger and 64 years and older}. India stands to gain as the Indian growth structure is bound to benefit, if we use this demographic dividend to our advantage, as our working age population would be 68% compared with USA, and China by 2030! This could happen only, if the quality of our educational systems changes for the better, namely, an education that could cater to future demands.
Schools would have to change. Administrative forms of accountability and bureaucratic command and control systems need to be totally done away with or, suitably modified to relate to present circumstances and needs. Currently, the curriculum and syllabi remain oriented towards the age groups rather than catering to the different types of students. Curriculum and syllabi need to be different for different types of learners – at the moment the advanced learners need to wait to complete the curriculum for the whole year; which is not going to be the future. Transformation is seen across all fields, as the world transforms rapidly with unimaginable technological advances in every sector, including education. Students would now be exposed to the virtual ways of thinking and learning, use of virtual systems, smart computers, interactive screens, digitised material -digital books, and other interactive devices.

Keywords: *Sustainable Development Goals {SDG}, Organization for Economic Cooperation and Development {OECD}, Tactile, Learning Methodologies*

Date of Submission: 14-04-2024 Date of Acceptance: 24-04-2024

I. Introduction

It was at an historic UN Summit in September 2015, the "2030 Agenda for Sustainable Development" was adopted, and on 1st January 2016, the 17 SDGs {Sustainable Development Goals}, came to be reckoned as having come into force by the UN. Gro Harlem Brundtland's "Our Common Future: Report of the World Commission on Environment and Development: United Nations", became the starting point for all countries to formulate systems and procedures. "Equity and Inclusion, Quality and Relevance" was the main theme to eliminate the domination of any language in the world, and to bring in equity and inclusion – with particular reference to the developing world – nations in Africa, and Asia Pacific regions. In general, Seventeen SDGs were identified, and amongst them stood, 'good health, quality education, clean water, clean energy and climate action'. "Sustainability" was defined as the ability to exist and develop without depleting natural resources for the future. The multifaceted SDG indicators require many new methodologies, definitions and calculation methods, and considerable changes to national systems in reporting data both nationally and internationally.

Futuristic Education

In an increasingly competitive, politically complex, universally volatile environment in which we all live in, it is not that easy to predict the type of education one needs to have. Futuristic jobs would call for an individual to cope with as many languages the computing world has to offer. Combining of human knowledge with that of computer intelligences, skills upgradation, life values and ethos, would be a never-ending profile an

individual has to possess. 34 OECD {Organization for Economic Cooperation and Development} countries therefore working on *"Education 2030"* seem to have their schools recognise fostering – 'ethics, character, citizenship, meet social and emotional problems with grace, instill empathy, compassion, responsibility and self-control' to meet the eventual! Schools would have to change. Till recently, schools were working on schedules given in the past; henceforth schools need to serve the requirements of the present and the future, the curriculum to be integrated with the needs of the future. Administrative forms of accountability and bureaucratic command and control systems need to be totally done away with or, suitably modified to relate to present circumstances and needs.

Currently, the curriculum and syllabi remain oriented towards the age groups rather than catering to the different types of students. Mundane curriculum/syllabi need to be followed even by the most advanced learners. The future is mostly going to be demanding. Curriculum and syllabi need to be different for different types of learners – at the moment the advanced learners need to wait to complete the curriculum for the whole year; which is not going to be the future. Let the advanced learners go ahead regardless of the time slots currently in vogue. Education about building instruction from student passions and capacities, helping students to personalise their learning and assessment in ways that foster engagement and talents, and it's about encouraging students to be ingenious. School systems must recognise that individuals learn differently, and differently at different stages of their lives. Freedom to learn according to one's interest and passion is what is needed in the educational system, rather than stifling the advanced learners.

Oxford University have decided after much investigations to increase infrastructure to cater to further requirements needed to meet the digital world, employ digital education to address inequalities in the TLP {Teaching Learning Processes}, make Oxford's rich educational services reach wider audiences and encourage experimentation and introduce innovations so that the teaching and curriculum can adapt to changing circumstances and needs. Gradual increase in the On-line courses to have a wider global reach. The University has also decided to adapt to digitally inclusive teaching to help some of their 25% students with disabilities.

The Current Scenario in Vogue

Schools of the past/present were mostly based on manual methods of teaching. A representative chart shows the various methods of teaching in vogue, basically the current practices followed.

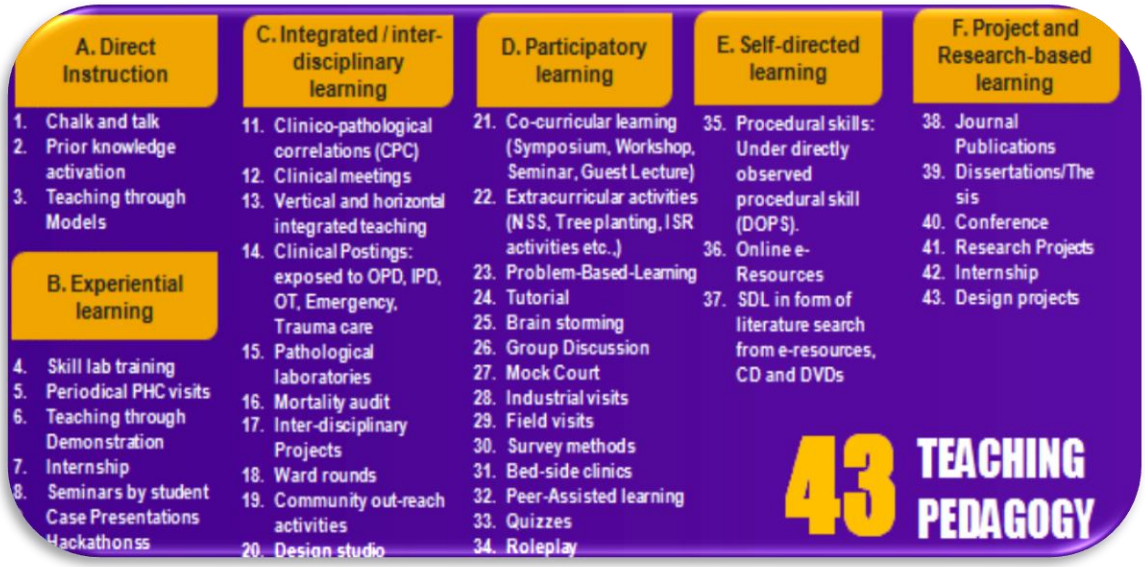

Fig. 1 43 Teaching Pedagogy Followed in Current Day Practices Across Various Programmes {Courtesy: Dr. M.G.R. Educational & Research Institute}

From Fig.1 we see a listing of forty-three pedagogical methods being employed and most of them involving manual procedures in the Teaching Learning Processes being imparted. Currently most of the classrooms globally are equipped with Personal Computers, Overhead Projectors, LED Boards, Laptops, iPads, and Cinematographic Projectors. Invariably, use of the Chalk and Talk method is practiced even now, right across universally.

Advantages of Modern Teaching Methods

There are several advantages in the modern methods of teaching practices. This type of teaching is more activity based and interactive. Moving away from the mundane chalk and talk and other methods in vogue, modern teaching promotes essential soft skills away from the focuses, currently on technical skills. Further, modern methods are more easily adaptable as they are flexible for different learning and different needs of the student diasporas. Learners can learn as when they like, at their own pace, particularly for those with disabilities.

Modern day teaching has changed considerably in the recent past. Gone are the days of the chalk and talk methods, going on to the LED screen and listen, watch and learn. Learning in the future is going to be entirely different. India is now on the thresholds of resurrection – equitable access to education, improving digital literacy, sustainability amidst economic volatility! To address these, we need to develop our today's student diaspora to acquire 'global mindsets' and 'multidisciplinary skill sets', to respond and adopt to the changing nature of our world. As automation and Artificial Intelligence {AI} will most likely increasingly transform the workplace, new skills are needed for the new workforce, the current student community.

Transformation is seen across all fields, as the world transforms rapidly with unimaginable technological advances in every sector, including education. Futuristic systems are applicable to schooling, where schools gradually convert themselves to prepare students for the future. Students would now be exposed to the virtual ways of thinking and learning, use of virtual systems, smart computers, interactive screens, digitised material - digital books, and other interactive devices. Active Learning would be either through discussions, debates or project oriented to solve real-world problems devoid of reference books. Soft skills would be in the field of critical thinking, in teamwork and to discover whatever they feel is helpful. Individualized learning at their own space and timing, flexible learning for different learning styles and capacities to enable students with disabilities to cope with the learning modules. Students get more interested because it is on their own volition that they learn and get extremely interested in unearthing things that they need to know; they begin to explore and discover things on their own and get seriously involved in the learning process, as they learn while doing and not watching or listening. In general, all border on any one of the following methods – "collaborative, constructivist, reflective, integrative, or inquiry-based teaching".

Learning Methodologies

There are innumerable ways to learn. Some of them are,

- Crossover Learning – visit to a location, like a library, museum, display centres, and school meetings on topics of interest and then later such places kindle a special interest to study further about some of the things seen or witnessed
- Argumentative Methods - when sets of students argue over a particular topic in the way there is some technical reasoning, they love to take turns and listen and respond constructively, and in the process learn
- Incidental Learning – unplanned, accidental earning processess on seeing and learning. No set rules, regulations, schools or teachers or curriculum. This is a self taught system trigered by visual recognition
- Collaborative Learning - includes any project or activity that learners work together on. A lesson plan based on collaborative learning helps build valuable soft skills like teamwork, delegation, time management, collaboration, decision-making, and social skills. Through collaborative activities, learners also start to work on their self-awareness, as they need to evaluate their strengths and weaknesses. Cooperative Learning is similar to collaborative learning for students of small groups, assigning each member a specific role and task to carry out. In cooperative learning, students have a common goal to reach
- Thinking-Based Learning - be combined with all teaching styles as it is a "complementary" type of learning. A thinking-based activity is like delving into "challenging" the truth of a given fact
- Tactile or kinaesthetic or perceptible learning - where learning is necessarily through demonstrations and hands-on activities. Teacher demonstrates an experiment or practice and the learners practice them simultaneously in their homes – active learning, Suited for on-line programmes
- Problem-Based Learning - it differs in that the problem is given previously unlike the project based one
- Context based learning – conventional learning methods, location, books, instruments and displays are all prefixed and decided .Computational Thinking – breaking down into smaller parts, developing and reasoning to reach some solution, improving thinking skills in a logical way
- Game-Based Learning - uses games as part of the instruction process
- Inquiry-Based Learning - is a popular learning approach in modern education. Usually, the teacher asks an open-ended question or assigns a project, and learners do their own research to complete the project or form a theory. Inquiry-based learning develops essentially analytical and reasoning skills and curiosity. This approach is effective in enhancing communication and presentation skills
- Visual Auditory and Kinaesthetic Learning - involves three types of learners: visual, auditory, and kinaesthetic. Visual learners absorb information better when they review their subject material {textbooks, presentations,

infographics, diagrams, charts}, or when Auditory learners hear it {podcasts, videos, discussions}, and Kinaesthetic learners as they act out the content

- Project-Based Learning - is when the teacher assigns a practical or theoretical project, either for an individual or a group of leaners, to solve real-life. It enhances creativity and problem-solving and forces students to think practically
- Learning from previous experiences
- Learning By Doing – Science and Practicals {with remote labs} This method is adopted while using scientific instruments and or practices with remote laboratory equipments. A remote laboratory ,with robotic arms , cameras, web interfaces etc.

Some Methods of Modern Pedagogical Systems to Assess Efficiency of Teaching Learning Processes

"Embodied Learning **-** In embodied learning, is a combination of augmented and virtual reality, so that the mind and body work together in that physical feedback and actions reinforce the learning process. Wearable sensors collect the physical and biological data, while the visual systems track the movement, mobile devices responding to the movements and motions, engages learners in the feeling as they learn.

Adaptive Teaching **–** Learning material being the same, the students belong to various types**.** The teacher and learner are at an end to understand the program. Here perhaps, Articial Intelligence could work. In this case the data regarding the previous and current learning helps to create a path through the educational content. Tools for monitoring one's progress make the learning process easy.. However, since most educational presentations and materials are the same for all, some computer-guided support naturally helps. Adaptive teaching can either be applied to classroom activities or in on-line courses where learners control their own pace of study.

Analyses of Student Behaviours - Automated methods of eye tracking and facial recognition can help to analyze how students learn, and respond differently to their emotional and cognitive states. Cognitive teaching through the computer and the normal teacher's response to student's response, could be the ideal method that can be adopted in such cases.

Stealth Assessment - Automatic data collection in the background can also help in the assessment of the student's learning processes. This method of embedding assessment in to a simulated learning environment is now being adopted by certain schools in topics of science, history and computer education. This procedure of stealth assessment could provide the teacher with continual data on how a student's learning capacity could be judged".

II. Conclusions

Globally all governments are currently involved in setting the terms for sustainability development goals of their respective countries, setting their SDGs. It has been observed that SDG 4 {Education- "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"}; education happens to be the key for all other sustainability goals to succeed. Education plays a vital and primary role in balancing the socio-economic fabric of any country. Futuristic learning primarily deals with demands of a high potential human energy combined with advances in technology. Economic constraints along with dropout rates persist in highlighting the need to have continued global commitment to assure inclusive and equitable global education for all. Current low levels of information and communications skills pose a major threat to achieve universal connectivity. Quality education can break the people from the clutches of poverty!

As the world faces a plethora of problems concerned with shortage of water, good health and sanitation, clean energy and current low educational levels of the people, besides many others, there is a growing demand for global problem solvers, thereby making education a central player to generate a large number of people possessing global mindsets and skill sets. As technology advances, students need to be equipped with high demand skills to thrive in the new world. As societal change accelerates, the idea of lifelong learning is gaining attention the world over, with needed tools for upskilling and advancement appearing. Countries need to get prepared for the demographic dividend, as the percentage of people in the age group 15-64 diminishes the world over; while India stands pretty with a figure of 68% by 2030 – at the same time cater to the requirement of able workers to meet the world's labour market!

Another significant change that is expected to happen in the education sector is to change from the more familiar classroom education systems to a system when they need to solve real-world problems and not memorizing facts and terms without context as is the case now. Classrooms need to change. Learning methodologies need to change. Augmented and visual reality systems would gradually replace the normal classrooms, being supported by computer applications and wearable sensors. Gradually moving away from the narrow concept of education that focuses on technical skills, *soft skills* would now be oriented towards critical thinking, problem-solving, teamwork, and many more character traits and competencies, which gets naturally into the system, helping students to discover their strengths and weaknesses. Artificial Intelligence is expected to play a decisive role in the Internet of Things!

Acknowledgement

The author would like to acknowledge the support of Er. A.C.S. Arunkumar, President, Dr. M.G.R. Educational & Research Institute, Chennai, towards the development of this paper.

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