

Emerging Education Patterns

Dr. C. Chellappan

Former Dean of Anna University
Principal GKM College of Engineering & Technology
drcc@annauniv.edu, principal@gkmcet.net.in

1. Introduction - Education Need

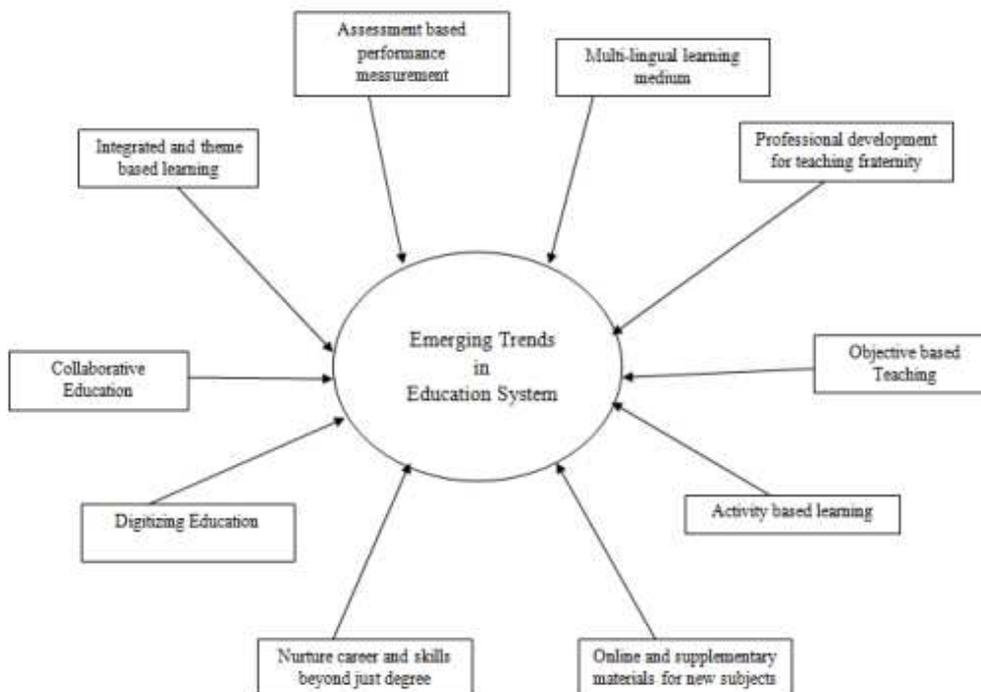
Education is one of the fundamental factors of development. Education plays a major role in enriching people's understanding of themselves and of the world. It raises people's productivity and creativity and promotes entrepreneurship and technological advances. Also, education plays a very crucial role in securing economic and social progress and improving income distribution. It also acts as an integrative force in society, imparting values that foster social position and national identity. The broad **aims of education**, according to National Curriculum Framework guidelines, 2005 [1] are:

- Independence of thought and action.
- Sensitivity to others' well being and feelings.
- Learning to respond to new situations in flexible and creative manner.
- Predisposition towards participation in democratic processes.
- Ability to work towards and contribute to economic processes and social change.

2. Education trends and changes

Gone are the days where only classroom teaching was the only medium to provide education to student fraternity. The world has changed so drastically that the changes have completed a full circle.

The student can be anywhere at his desired location and technology provides all the information needed in various formats to enrich knowledge over a particular topic. The educational systems for their share have also embraced technology and have leveraged its services in the best way possible to enhance the way the educational systems serve the student fraternity.



Traditional courses not the preference any more among student fraternity. Students seek new courses and options like radio jockeying, news anchoring, event management, content writing, and other courses which are the most sought after courses. Innovative mode of learning and coaching preferred like e-learning, distance learning, interactive CD ROM, and other modes of learning. Widening of courses and the changing trends in education sector provides broader choice for students to decide their career as per their core interest and aptitude. The figure shows the emerging educational trends

Each of these trends has a significant impact on the educational system and promotes a positive environment to enrich knowledge by leveraging the technology that is available in abundance.

Integrated and theme based learning

Integrated learning solutions seamlessly combine print and digital modes. The Solutions are teacher-friendly, assessment-enabled, and theme or activity-based as well. They enable contextual learning through multiple disciplines which clears the concepts of learners to a great extent.

The essential aspects of integrated learning are shown in fig 1

- Integrated learning solutions that seamlessly combine print and digital modes.
- Solutions to be teacher-friendly, assessment-enabled, and theme or activity-based as well.
- Enable contextual learning through multiple disciplines which clears the concepts of learners to a great extent.



Fig. 1. Essential aspects of integrated learning

Integrated learning is more focused towards promoting interdisciplinary learning which aims to provide multi-dimensional learning and develop multi-skilled individuals. This way of integrated learning should again be based on a theme which is motivated at diversifying the skill set of student by providing them opportunities to explore multiple domains. This in turn sparks the students to be skilled as cross domain professionals who understand the inter-domain relationship aspects and thus enriching the skills of students across multiple domains. At the same time it is highly significant that the theme behind the integrated programmes is clearly defined after understanding the intra domain and inter-domain relationships clearly.

Assessment based performance measurement

Assessments are a potential tool to evaluate learner's performance as well as the effectiveness of teaching strategies. Huge focus is on measuring student outcomes and performance both online and offline. Most of the time the assessments are misinterpreted to the exams, tests and assignments that are given to the students to evaluate their understanding of the subjects, But in reality, the real assessment stretches beyond the above artifacts. These exams and tests which are conducted on a periodic basis are just a part of overall assessment. The overall assessment covers various other aspects like how a student utilizes the resources such as text books, digital libraries, online materials, online videos NPTEL etc available to him, what are the contents that the student has learnt beyond his syllabus, how the student is able to apply what he has studied to real time environment etc. The assessments should cover all these facets such that it just does not evaluate the student based on the marks secured, it also carries **weightings for evaluating the usage of various resources available** and also evaluating how much knowledge has been gained as content beyond syllabus.

Similarly, the assessments should also be carried across to evaluate the present level of the teaching faculty and provide suitable suggestions such that the gap is narrowed by suggesting suitable online courses that the faculty fraternity can take up to enrich their knowledge in that course or subject.

Multi lingual learning medium

It is a known fact that the medium of teaching has a significant bearing on the understanding of the subject being taught. Also, it is proven that use of mother tongue language as a medium of instruction enables faster and better understanding of concepts. With the diversified educational system that is prevailing these days, students travel across far distance to get quality education. The same content is made available across multiple languages for the ease of understanding of the diversified student fraternity. The Fig.2.shows the medium of instruction may be English, but the translation to national language Hindi and regional language Tamil will also be made available. This is one significant attempt that has been tried out not for just enriching the knowledge of student, but also enhances the reputation of the educational institution at a national or global level.



Fig. 2. Multilingual learning modes

Professional development for teaching fraternity

There is a strong belief that a student is as good as his teacher as “the influence of a good teacher can never be erased”. . With ever growing technology, it has become mandatory that even the teaching fraternity along with the students has to keep pace with the evolving technology and update their skills and knowledge level. The educational institutions should periodically review the curriculum and syllabus which matches with the current industrial demands. Also, the current skill set, teaching methodologies and knowledge level of the teaching faculty should be evaluated and the gap analysis should be performed periodically and various faculty development programs conducted to enrich the skill set of their faculty.

Game/Activity based learning

Gone are the days when teaching using black board was a primary mode of making students understand the concepts pertaining to a subject. Even projector based presentations have started to diminish gradually. Modern way of teaching and learning is centered around making the student learn the subject or content based on various activities that can be performed inside the class room. The activities can be game based, scientific puzzles, quiz, group discussions, enacting a scenario and the list grows.

- Young learners have a keen interest in games.
- This approach is perfect for adults to garner the attention of the children towards studies.
- Apart from making the learners understand the concepts, game-based learning also helps in enhancing the learners' self-morale, confidence.

A self-learned individual is the most sought person in current industrial trend.

Collaborative Education

Collaborative education is an upcoming concept in educational systems [1]. The focus of this collaborative education is to join hands with other educational institutions in an attempt to share, enhance, enrich and expand the knowledge space by sharing the resources across the partnering institutions for the benefit of students across both the partnering institutions. The collaborative education is paving this path of bringing various specialized institutions in a link according to the need of students. It includes inter-institutional arrangements where two or more institutions agree to offer jointly a study

programme in terms of study credits and credit-transfers, so that students pursuing their studies in one institution have their credits recognized by the other, and accepted for transfer in order to continue their studies. It may also be termed as twinning programmes. The concept of collaborative education can be of different types :Institution-Institution Collaboration, Institution-School Collaboration, Institution-Community Collaboration., Institution-NGO Collaboration, Institution-State Collaboration, Institution-State-NGO Collaboration, Institution-Industry Collaboration and various other forms. The concept of collaborative education helps in bringing the institutions closer which leads for understanding each-others functions and works and reforming their ideas. Many institutions are collaborating with other universities, schools, NGOs and government agencies for adding value to their educational practices.

Online courses and supplementary materials in new subjects

With the educational institutions turning their focus towards collaborative education, there has been advent of several new courses which are multi-disciplinary and inter-disciplinary in nature. The faculties handling these courses not always make it to the class rooms but they connect to the student fraternity via online course discharge which includes online lectures, technical blogs, online repository and links for study materials. Apart from video lectures, the supplementary materials such as experiments, practical sessions, demonstrations etc, are made available online. This way the materials pertaining to these subjects are made accessible to the student anywhere with the available network connectivity.

Objective based teaching

Industrial and Information technology revolution have triggered a lot of changes in the expectations of employers. It is also to be noted that the expectations of these employers do not remain constant forever and it changes with the growing disruptive technological front. Preserving ethical and Cultural value in the fast changing technology is a challenge to maximize cultural, social and ethical values. In order to make the students employable in this demanding situation and at the same time to strengthen moral/ethical values, the educational institutions at various levels should make every possible attempt to clearly identify the objectives according to the industrial/ethical/social harmony demand and align the syllabus such that it caters to the industrial /ethical/social needs.

This object based alignment will not be sufficient if implemented only at college level who serves as an interface between the student and industry. The objectives should be clearly demarked starting from the primary school level to higher education.

Focus on nurturing career and skills beyond degree

The supply chain for an educational institution especially at college level ends when their student who are their brand ambassadors get employed in reputed organizations. With this in mind the educational institutions have turned their focus towards nurturing the skills of the students apart from imparting quality education.

- Focus on career skills, not just degrees.
- Traditional degrees like a bachelors or masters not sufficient any more for successful career.
- Focus on specific skill for a specific job profile

The degree obtained at the completion of the course is no longer the only criteria for getting employed. Various facets such as communication skills, soft skills, personality traits etc, constitute in addition to the academic scores which makes a student employable. This makes the educational institutions doubly responsible for understanding the industrial demands and identifying the skill gaps that exists among the students and organize and provide various courses and guidance programs that address this gap and make the students more employment ready thereby ensuring a successful start to their careers.

Digitizing Education

Internet and its usage through various devices have redefined learning ability. It has enabled a person to learn from anywhere and at any time. With the emergence of various modes in which information sharing and communication can happen seamlessly, it becomes highly significant that the teaching and learning mode is not only reliant on printed mode such as books, magazines, journals, notes and so on. Various other modes such as online materials, group discussions, technology forums, online videos etc, can serve as dependable and good source of information from which knowledge can be tapped.

The Digital Literacy Mission was announced as part of the Union Budget 2016 to cover 60 million rural households within

the next three years. 'Digital Highways' that are being created as part of the Digital India Mission will play an important role in "connecting India and Bharat". Also, the Government of Tamil Nadu have allocated large funds for education and skill development under the title Vision 2023 [2] as shown in fig.3. It can be clearly seen that the move to digitize education and make it available across various modes is already up and running.

Govt. of Tamil Nadu – Vision 2023

Box No. 12.1 Education and Skill Development - Vision 2023

Aims to establish robust human resources by adopting

following measures:

- Providing universal access, equity, quality at primary, upper primary, secondary and higher secondary level.
- Increasing the enrolment in higher education (including vocational education) to over 50%.
- With focus on employability in manufacturing and service sector, train and skill 20 million people - people entering job market 15 million, and people already part of working population 5 million.

As part of the skill developed programme the key intervention are:

- Large scale skill development programme to impart basic training to unskilled labour primarily agriculture workforce (bottom of the pyramid).
- Employability programme for skilled level (middle layer in the pyramid) to deliver industry relevant skills key growth sectors.
- Setting up of centre of excellence in the area of automotive technology, solar and clean energy technology, biotechnology, agricultural practices, water resources management, construction management, lifestyle diseases, aerospace, basic science, nano-technology and social sciences.
- Focus on "train the trainers" programmes in different sector by setting up specialized training institutes.

Upgrading middle and high schools	Rs. 5,000 Crore
Skill Development for vocational training to 20 million people	Rs. 11,000 crore
Setting up of Centres of Excellence across 11 identified areas	Rs. 3,000 Crore
Total	Rs. 19,000 Crore

Source: Vision 2023, Government of Tamil Nadu.

Fig.3. Govt. of Tamil Nadu – Vision 2023

3. Conclusion

As quoted famously by George Bernard Shaw “Progress is impossible without change, and those who cannot change their minds cannot change anything” [3], the education system has evolved and has adjusted its sails in accordance with growing technology.

The alignment of key activities of the educational system should focus towards imparting concept clarity, innovative thinking and higher order skills via multi-lingual learning and improving learning capability and skill development by creating a democratic physical learning space to enable group based learning. Skill development programs should focus on life skill education which covers personality development, enhancing confidence and self motivation among student fraternity. Many technical development programs at various levels of education system should be organized with an effort to bridge the skill gap for job profiles across industries. The quality of education especially across science and mathematics should be very high such that the student is acquainted with the ability to think logically, formulate and handle abstractions.

At the same time the education system should ensure that the student is equipped with social, moral and ethical responsibilities by organizing relevant sessions. With all these aspects discussed, the focus of educational institutions should now be directed towards implementing these ideas successfully to ensure the students attain intelligence and have the right skill set to embark on a successful career ahead. Our education system needs to continue to provide high quality researchers, engineers and physicians to the industry to provide safety-first smarter life experience to customers irrespective of fluctuating domestic/global political/economical issues.

References

1. <https://sol.du.ac.in/mod/book/view.php?id=1275&chapterid=970>
2. <http://www.tn.gov.in/dear/Education.pdf>
3. https://www.brainyquote.com/quotes/george_bernard_shaw_386923

Quotes

1. Intelligence is the ability to adapt to change. – Stephen Hawking
2. To improve is to change; to be perfect is to change often. - Winston Churchill
3. Change your opinions, keep to your principles; change your leaves, keep intact your roots. - Victor Hugo
4. Education is the most powerful weapon which you can use to change the world. - Nelson Mandela
5. The only person who is educated is the one who has learned how to learn and change. - Carl Rogers
6. You are always a student, never a master. You have to keep moving forward. – Conrad Hall



About the author: Dr C Chellappan ME, Ph.D has worked as professor for more than 37 years with strong technical, academic, managerial, industrial, and research experience as well as expertise in implementation and management of IT systems for educational and organizational requirements. He has served as IT consultant in the USA for more than 2 years in CDMA Technology. He has published more than 160 research papers at national, internal level journals and conferences and visited various countries like China, Singapore, Australia, USA, Canada. He is member of MISTE, CSI, ACM.

His research interest includes cyber security, agent technology, wireless networks. He was the project coordinator for collaborative directed basic research project on ‘Smart and Secure Environment’ sponsored by National Technical Research Organization, Govt. of India, New Delhi. He was also the project team member of Indo-Australian Joint Research Project on ‘Protecting Critical Infrastructure from Denial of Service Attacks: Tools, Technology and Policy’ sponsored by Department of Science and Technology, Govt. of India.

He has also been associated at various levels with several bodies like Technical Expert member in Govt. departments, inspection committee member of AICTE, NBA, UPSC selection committee, Chairman/member of Computer Science syllabus committee (XI and XII std), Tamil Nadu State Board of Higher Secondary Education.

Dr. C. Chellappan is currently the Principal of G.K.M. College of Engineering and Technology, Chennai and he has held several administrative portfolios at Anna University viz. Dean-CEG, Director – Ramanujan Computing Centre, etc.

We, the people that were born between 1940-1980 are the blessed ones. Our life is a living proof

- While playing and riding bicycles, we never wore helmets.
- After school, we played until dusk. We never watched TV.
- We played with real friends, not internet friends.
- If we ever felt thirsty, we drank tap water not bottled water.
- We never got ill although we used to share the same glass of juice with four friends.
- We never gained weight although we used to eat a lot of rice everyday.
- Nothing happened to our feet despite roaming bare-feet.
- Our mother and father never used any supplements to keep us healthy.
- We used to create our own toys and play with them.
- Our parents were not rich. They gave us love, not worldly materials.
- We never had cell phones, DVDs, play station, XBox, video games, personal computers, internet chat - but we had real friends.
- We visited our friend's home uninvited and enjoyed food with them.
- Unlike your world we had Relatives who lived close by so family time and ties were enjoyed together.
- We may have been in black and white photos but you can find colourful memories in those photos.
- We are a unique and the most understanding generation, because *we are the last generation who listened to their parents*.

**We are a LIMITED edition! So you better, Enjoy us; Learn from us; Treasure us;
before we disappear from Earth and your lives..... Love everything and everyone**