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# Innovations in Current Teaching Methods: A Review Study

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**Abstract:** *In teaching process a handful of teachers and educational institutions are utilizing new paradigm of innovative and effective teaching methods that incorporate enhanced active participation, perception and cognitive development in students. Information and communication technology help in conversion of text-based learning contents to visual learning contents that make teaching most effective and efficient in as far as higher education is concerned. Learning by computational thinking is not merely coding but encompass students active participation in programmed environment wherein a series of skills must be used in a highly systematic manner to solve the split small parts of a problem using decomposition, pattern recognition, abstraction, algorithm design, and debugging eventually to describe a solution in a usable form. It develops creative human activity in formulating open- ended problems and solve it confidently and ask one- self if better solutions for the same can be searched out..*

**Keywords:** Innovation, Teaching methods, Learning management system, Blended learning, Crossover learning, Learning by doing scientific.

## I. INTRODUCTION

Education is a perennial tool for social change and transformation of human life globally. If an institution need to be accredited and ranked at the top, it must cater to new requirements of teaching and learning. Information and communication technology i.e, interactive technology along with traditional classroom method will keep students engaged, adapt to learning processes, develop to transmit creative ideas effectively, trigger rational inquiry of mind to enhance learning and learning environment in school, college, universities, etc.

## II. MATERIAL AND METHODS

Various research reviews, articles available in electronic databases and journals were scanned in writing this review paper. Some selected innovative, teaching methods were used that are described as proactive, explorative, integrative new strategies, resourceful, motivating and student- centric and enjoyable for learning outcomes.

## III. RESULT AND DISCUSSION

Learning by doing is facilitated by remote labs that are provided with robotic arms to operate it, equipment or apparatus and cameras to video graph progressive stages of experiments. Students involvement, motivation, habit of scientific enquiry skills, enhanced conceptual understanding in science and biology are achieved through use of authentic scientific tools and practices. Remote labs allow easy access to curriculum materials, user- friendly web interfaces that benefit both the teacher- learner pedagogic associations.

### 3.1 Crossover Learning Method

This is possible in museum, science- exhibition, science excursion, etc.; that are authentic and engage students learning opportunities for recording, linking, recalling, and sharing life experiences gained in many circumstances to solve problems. Digital technology one is mobile and non – digital technology may be used to collect pictures, photos, etc. During covid 19 students extensively used mobile to collect, share and disseminate learning materials. This innovative practice enhance at least small increament in quality of education, many questions asked by teachers in classroom are explored to find answers by students in informal situations of museum and field visits, respectively.

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### 3.2 Learning Management System Method

It is beneficial to learners and teachers in classroom management, higher education, etc. It delivers online contents in text, audio, video formats, provides asynchronous and synchronous online courses. Teachers can develop and deliver content according to students need, so that they participate in online - quizzes, subject topics, and based on attendance evaluation of students is done, (widely used to deliver course- work in school to popularize e- learning in schools). LMS provide a planned package to students, and interactive features like discussion, forums, video-conferencing, and threaded discussion with an objective directed to assess a specific learning process. Materials can be repeatedly referred at anytime, from everywhere. Material modified and up- graded can be accessed by students to achievein depth learning.

SCORUM (Shareable Content Object Reference Model) is a set of specification to encourage standardization of LMS. The sponsor and designer of advanced distance learning groups is united states department of Defence. Another application of LMS is to identify training and learning gaps, utilizing analytical data and reporting.

1. **Blended / Hybrid / Mixed / Melted / e- Learning Method:** It has combined essence of online, classroom and mobile learning respectively. A part of learning experience are online content delivery and instruction. It can be called a formal education program incorporating student control over- time, place, path, and/ or pace, that has revolutionised the way teachers- students perceive it.
2. **Embodied Learning Method:** Learning process can be reinforced by recorded personal physical and biological data, track body movements, tilting motion employing wearable sensors, visual systems, mobile devices respectively. Here entire body and mind with a real or simulated world approach can be applied to explore friction, acceleration, etc, and to simulate molecular structures that evoke learners feeling or mind (thoughts).
3. **Gamification of Learning Method:** Method is concerned with application of game elements in learning process for attending class, focussing on meaningful tasks and taking initiative to obtain desired outcomes in students behaviour. Videogames a) Structural not involving subject matter manipulation and (b) Altered subject content matter enhance enjoyment, engagement, interest, inspiration to continue playing is an innovative educational approach. Classic example is ‘Serious games’ containing ‘Serious story’ of impressive quality that influence thoughtful process of learners.
4. **Learning Through Argumentation:** Teacher initiate scientific arguments by students through discussions on maths and science topics (open ended approach), student freely aske questions involving contrasting ideas and refine their ideas when their turn comes, actively listen to others views. The overall students response is constructive. Teachers reply to open ended questions of learners by preparing models and scientific explanations in highly intellectual expert manner. Such teaching strategies are acquired through competitive professional development of teachers to meet current - future challenges of students to enhance understanding of subject.
5. **Learning by Computational Thinking Method:** It involves mastering a set of problem solving skills and techniques. It uses series of steps like breaking a large problem into smaller parts (decomposition), identify how these smaller problems are related to the ones that were solved earlier ( pattern recognition), excluding unwanted details ( abstraction), refining steps to come to a solution ( algorithm design) and finally further refining those steps to present a solution in a usable form. Engineers, mathematician, medical students, and science students in classroom use this systematic approach. This learning method moves from group work to individual study and back again to plenary session. Immediate practical problems can be solved using a number of skills related to computational thinking to approach the problem by self engaging in selecting useful decomposed parts whose pattern has been recognized. It is not learning to code but experimenting and iterating( tryout like previously developed initial idea and develop some more), testing and debugging means finding and solving problem as they work, reusing and reblending means constructing or structuring on existing concepts, abstracting and modularizing involves exploring link between the whole and parts, expressing is defined as identifying that working or dealing in this way is a creative activity, connecting is recognizing the strength of creativity for individual and for a group. At the end learner attains a high – level of confidence and authority to question about the world.

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**Following purposes of education can be attained by innovative teaching methods:**

1. Improves students critical thinking and creative abilities, engagement and motivation for individual-personalized and stepwise consolidated progressive learning that can be applied in all aspects of life to find solutions and forge ahead in life to be independent and sussecful.
2. Reduce device costs as more students and parents use learning apps.
3. Shift from traditional to online test.
4. Effective teachers give more time and resources to students.
5. Improve working and work environment of educators.
6. Continuously enhance competitiveness, skills, creativity, and profession development of teachers.

## IV. CONCLUSION

Innovations in teaching methods have a positive impact on attitude, engagement and motivation behaviour of students by improving deep understanding of educational content and promoting effective learning in a congenial environment. Advantages of innovative learning method inculcate and promote critical thinking and creativity at every attempt of learning. Students use interactive digital technologies to solve various life problems. A thoughtful teacher – guided support provides an opportunity for learners to build knowledge through proposing, criticising and defending ideas when their turn comes during a rich scientific argument so as to build deeper understanding of the natural world.

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