Impact of Interactive Teaching Methodologies on Teaching-Learning Process: A Review

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Abstract
Published research suggests that academic achievement can be predicted through the use of cognitive assessments, which includes the tests of working memory, pattern matching, and cognitive skills known as 'chunking'. This has led to the popularity of games and products such as the Brain Training series from Nintendo and Mind Fit programs from Cognifit. Sadly, all these games appear to do is to teach the player how to pass the cognitive test. Yet many institutions have introduced cognitive training games into their classroom in the belief that it will improve the students' cognitive skills, at the same time motivate their students and subsequently increase the academic achievement of their learners. As we know, practice makes perfect and by practising a cognitive test or any task, the participant will always improve within the limits of their ability and achieve higher scores. However, it is debatable if it is the cognitive games that lead to improved academic achievement, or if the environment provided by the game is simply motivating the student to practise these skills and pay attention in the classroom. Some would say it does not matter, as the end justifies the means. This paper describes some fundamental concepts for learning and reviews work by past researchers related to the implementation of interactive teaching techniques in classroom environment and related benefits as well as challenges.

Keywords
Classroom, interactive teaching, learning, technology, computer.

I. Introduction
Student motivation and engagement are an ongoing challenge for classroom instructors and the basis of various research endeavors in the field of education and training. A substantial body of literature indicates that the use of non-traditional interventions, such as games, simulations, multimedia instruction and interactive activities are valuable teaching methods. The arguments for using active learning in the classroom are clear. It is well documented that there is an optimal level of arousal for peak performance. The learner passively sitting in a lecture, with no stake or interest in the information, does not reach the level of stimulation required to promote effort. Moving around a room, participating in a contest, or simply talking to other students can raise the level of activity to a point where a student is more alert and attentive to the activities of the class. Active learning techniques divide the lecture so that less material falls prey to the serial position effect—dips in learning of material in the middle of a lecture. Using activities and games in class encourages active learning, as well as collaboration, and interactivity. Participation in an activity requires the use of content by the learner; thus ensuring students are working with the ideas that are being taught, and applying them.

(i). Factors for Learning
Researchers in cognitive neuroscience have found a blend of factors that can lead to learning new tasks and concepts successfully:

a. Frequency
Neural pathways need to build and grow strong by repeated exposure to the learning. In reading, studies have shown that the more a person reads, the better that person will read. Similarly, if you lift weights only occasionally, you will not build up your muscles. But if you lift regularly, you will accomplish your desired fitness level.

b. Intensity
Learning requires rigorous practice. A student will build neural support for the skill in a shorter period of time if she practices intensely. One somebody prepares for a marathon, his workouts becomes very intense in order to prepare his body for the approximately 26 mile run..

c. Cross Training
Teaching for memory requires strong networks that can connect to other networks. Therefore, different kinds of skills and different forms of memory should be used.

d. Adaptivity
Teaching for memory requires that the teacher monitor the student's progress and adjust the teaching/learning situation to meet her needs. In other words, the teacher must differentiate.

e. Motivation and Attention
These factors are what keep students interested in their learning. Various strategies will keep students on task. Frequency and intensity rely on these factors.

II. SOME SIGNIFICANT STUDIES
Being in the teaching profession, my approach in the classroom has always been on making the delivery of lecture contents as interesting as possible. I had always tried to demonstrate the concepts by quoting examples from our daily lives and in response I got very positive feedback from my students, who say it with confidence that they never forget the concepts learned in the class in my way of interaction. Further being a mother of two small kids studying in 7th and 4th grades, it was again a big challenge that how to teach these small kids who hardly has any sense of responsibility toward their studies, so that they don't feel the burden of study. This inspired me to research the topic of interactive learning in some more depth, so as to learn from the experiences of other persons in the teaching community regarding how to make classroom teaching more attractive and effective. In the matter given below I am going to discuss some important research papers, project reports etc., covering the topic of interactive learning with or without the use of technology.

(i). 2006; S K Saha talked about design for effective teaching and learning in technical institutes. He said we talk of design

of a product for its strength, manufacture, assembly, recycling, product life cycles, etc. However, the methodologies used to teach these subjects are generally old-fashioned, for example, using a blackboard and one-way communication from a teacher to students. Only some cosmetic changes have happened in this process such as using an overhead or LCD projector. In fact, in many instances, the use of latter equipments increased the pace of the teacher, but made the lecture more difficult for the students to understood. Also, the scope of two-way communication was greatly reduced. Realizing the shortcomings of traditional teaching methodologies such as those using blackboard or the OHP or LCD, there have been tools and procedures evolved over the years. For example, with the networking and IT revolutions, e-learning has become a buzzword. But the implementation of these technologies requires extra infrastructure like, networked classrooms etc.

Sensing the problems with the introduction of technology based interactive teaching, the author proposed a new teaching methodology, where "fun" is the keyword. Since any human being likes to have a fun either through a game or performance or otherwise, they have been incorporated here through three games. They have the following advantages:

- Due to the fun elements in the teaching process, the subject becomes interesting; and
- Two-way communications are achieved.

The author in his early years of teaching career had found about 50-60% of the students in a typical class of 60-70 students responded that the course was not interesting. A close look into the responses revealed that these students were mostly those whose attendances were poor and spent relatively less time after their class hours than their counterparts. The author, however, wanted to increase the "interesting" comment to at least 90% or more in order to establish the fact that a teacher must be in a position to motivate the students to learn, be they initially sincere or not. Hence, he took it seriously and some of the fundamental thoughts which came into his mind, were,

- What are the things a human being likes to do most?
- What a student enjoys doing at this age?
- What I enjoyed doing at their age?
- What makes people laugh? etc.

Few answers to the above sole searching questions were: Playing or watching games and movies, and entertainment through acting, traveling, etc. After paying serious thought to all the options, author finally decided to work with the idea of designing three different games taken from the entertainment domain. Three games were chosen based their feasibility of implementation in a classroom teaching. They were:

1. Word Antakshari;
2. Dumb Charades; and
3. Jigsaw Puzzle.

Author quoted that, concepts similar to those conceived by him were also used in the kindergarten schools in India and abroad. In his paper, the concepts were extended to technical education.

a. Antakshari: Adoption of the Antakshari in its original form was difficult in the classroom, as all students were not able to sing. Besides, the songs using technical words were not known to exist. Hence, the name of the game was modified to "Word Antakshari," to emphasize on words than songs. For example, in the Design course, the author as a moderator says the word "Design." Then Team-1 has to say a word/phrase that starts with "n" but related to the course of Design. It gets about 20 seconds to recall the word. If Team-1 says "number of cycles," it gets 2 points. Otherwise,

the chance goes to Team-2 for the bonus point. All other rules remain same as in the original Antakhsari game. The teaching component here is that the students have to be well conversant with the subject if they have to quickly tell the words.

b. Dumb Charades: It is played between different teams. The rules of the game were explained as given below:

One of the two members in a team, say, Team-1, like a dumb person, acts without speaking to express a word or a phrase written on the chit taken from the moderator. About 30 seconds are given to think, and another 30-45 seconds to act;

If the other member of Team-1 guesses the word/phrase correctly, they get 2 points. Otherwise, the chance goes to Team-2 for the bonus;

In order to minimize the disturbances during the sit changing, Team-2 is asked to guess based on the acting of Team-1.

Here also the author has acted as moderator. He had several words like "Factor of Safety," "Von-Mises Stress," "Fatigue failure," etc. from the Design course, and "Degree of freedom," "Frequency," etc. from the Mechanical Vibration course written on the chits. Students were asked to pick up one from several chits kept in an envelope. This game was one of the most entertaining where almost every student including the teacher laugh together, which has an indirect effect of bringing the students and teachers together for closer and healthier interactions. The game appears to be the most difficult one, as the students have to be very creative in finding out ways to act. On the other hand, the other team partner has to be quite familiar with the terminologies taught in that subject.

c. Jigsaw Puzzle: The jigsaw puzzles are very popular amongst the kids. This is a game where several pieces of a picture of an animal, historical place, famous people, etc., are to be assembled. The one who does it fastest wins. It is also a very good educational tool where the kids and children learn geography, animal shapes, atlas, etc. The same concept was extrapolated in technical education. Here, several equations were written and the diagrams were drawn on a transparency sheet, which was cut into pieces, and put inside an envelope. The rules of the game were as follows:

- A team, say, Team-1, picks up one envelope;
- In about 45 seconds, Team-1 must assemble the pieces on the glass of the OHP, to get 2 points;
- If Team-1 fails, the job can go to Team-2 for the bonus. However, if the teacher wants to avoid the sit changing time, the answer could be told;
- Team-2 is now given a new puzzle.

Author suggested that if the classrooms were not equipped with OHPs, the equations and diagrams could be written/drawn on plane sheets, which then can be pinned on a big cardboard placed against the blackboard. This game is also fairly difficult, as the students now have to remember the equations and diagrams in order to successfully complete it within the time limit.

Since the proposed methodology is still in the experimental phase, it was played only once during the semester. It was played somewhere during the middle of the semester to give the students break from their regular activities of either solving problems in the classroom or carrying out experiments in the laboratory. As per the feedbacks from the students of all the four courses, the games were new to them and they enjoyed very much. In fact, quite often the students wanted to repeat such games during the semester.

The games were tested in four different courses taught by the author in the Department of Mechanical Engineering of IIT Delhi and the feedbacks of the courses were reported to be very good.

In fact, in the mid-semester feedback of an UG course offered during Jan.-May, 2005, 83 out of 85 respondents considered the course as very interesting, whereas in a PG course offered during the same period, all out of 14 respondents considered the course as enjoyable. Author believed that, the sharp improvements were mainly due to the changes in the teaching style based on the philosophy behind the need to design effective teaching and learning techniques and subsequently the introduction of the concept of games in classrooms.

(ii). 2007; Rita Kumar and Robin Lightner investigated perceptions of interactive classroom teaching techniques for adult learning. In the first part of their study 62 college faculty members and 45 corporate trainers were surveyed about their teaching and training methods. The survey had two main objectives:

- to determine rates of classroom techniques used,
- and to determine influences on teaching styles.

Various statistical techniques like Likert Scale, ANOVA etc. were used to analyze the data collected for making useful inferences. Five faculty members volunteered to work with the researchers to develop new games that would replace traditional lectures in their courses. The games involved activities such as group crossword puzzles, word scrambles, and team concept matches. After conducting the game and assessing student learning, faculty completed interviews on their experiences.

Using an anonymous survey, students of participating faculty were asked if they learned anything, if the game was a waste of time, if the game accomplished its objectives, if the students enjoyed the game, and if students wished more faculty used games like this one. Students responded positively to the new active learning exercises that replaced traditional lecture in five classes, indicating that they learned a lot, it was not a waste of their time, that the activity was enjoyable, accomplished its goal, and they wished more faculty members used such activities.

One of our faculty interviewees expressed hesitation at incorporating active learning strategies and games, worrying that students expected to be taught or told and should "get their money's worth." However, in the survey, the students expressed a preference for less time spent lecturing than instructors report lecturing, so these instructors' concerns may have been unwarranted.

Trainers used a greater variety of teaching techniques in their presentations, such as visuals and interactive exercises including games, and spent less time on lecturing than their college faculty counterparts. Both groups identified their temperament as the main influence on their teaching style. Suggestions were made for strategies to successfully implement games in the college classroom, based on consideration of these benefits and costs and the survey results.

(iii). 2008; Diallo Sessoms reported that traditional teaching pedagogy was not based on an interactive model; therefore, it was possible that teachers would use technological tools to support traditional pedagogy rather than an interactive pedagogy. Author felt the problem was that teachers were not trained to think about teaching and learning as an interactive process that encourages the use of technology to create interactivity in the classroom. Traditional models of teaching require a teacher-centered approach; however, with new technology, there was support to transform the teacher centered approach to a student-centered approach. In the student-centered approach, interactive teaching and learning were supported by tools that actively engaged both teachers and students.

The emergence of new technology and research about how people think is changing the classroom. New tools are thought to empower educators to change the way teaching and learning occurs. As current social trends require citizens to be more analytical thinkers and to synthesize information, current teaching practices must develop these higher order thinking skills. This should start with a teacher's philosophy and pedagogy development during preparation for the profession.

Using technology in the classroom has existed with such devices as televisions and overhead projectors. These presentation systems offered new hope for delivering better instruction at the time of their introduction. The transformative nature of technology integration changes the process of teaching and learning to an interactive learning environment. The framework applied to the new form of teaching, known as interactive teaching and learning, represents the intersection of theory (constructivism), interactive hardware (interactive boards), and Web 2.0 tools such as Kids and Cookies.

a. Constructivism

Constructivism consists of learning or knowledge construction emphasizing learners as active participants in making sense of their environment and their experiences within that environment. Interactive boards highlight the fundamental notion of constructivism, which is "active participants". The interactive board facilitated the interactive learning environment by affording students the opportunity to engage with content in multiple ways. The visual nature of interactive boards allowed for students to develop the necessary schemata required for creating new learning. In combination, visualization, interactive boards, and interactive tools allow learners to create knowledge through a 21st century constructivist paradigm.

b. Interactive Teaching

Interactive teaching begins with a philosophy about teaching with technology and results in a new process of interactive teaching and learning. A combination of constructivism, interactive boards, and Web 2.0 tools is one model for thinking about new ways of teaching. Both the learner and teacher are active in the process of learning as described by the experience of Web 2.0 pedagogy. Additionally, the tools that facilitated this transformation were interactive by nature and must be studied as part of a systemic body of knowledge. One complaint about current teaching is that it is lecture based (didactic), thus it created a teacher centered learning environment. Interactive Teaching is not void of lecture; rather, lecture is used in combination with active demonstrations.

A chemistry teacher using an interactive board might teach a lesson about balancing equations by manipulating elements with his/her finger to demonstrate the concept visually. In an integrated approach, discourse is used to describe the process. Interactive teaching also involves the teacher integrating multiple forms of media within a lesson to encourage cognitive participation. An elementary teacher might teach students how to construct creative sentences using text to describe a digital image; then students are asked to manipulate text using the interactive board to create appropriate sentences.

c. Interactive Learning

Traditionally, students sit and absorb knowledge from teacher's lecture and notes on the board. Interactive learning means that students are active participants in the learning process. In a learning environment that integrates the interactive board,

students are focused on stimulus presented by the teacher on the interactive board and the student, either verbally or physically, interacts with the interactive board. In the definitions of Interactive Teaching, an example was given about students "dragging" words to compose a sentence that described a digital image. This is a form of interactive learning because students interact with the content through a combination of the abstract and the concrete. This type of student-centered learning follows the principles of constructivist learning, a building block of an interactive learning environment. Students are encouraged to control their learning and to construct meaning.

d. Interactive Boards + Web 2.0 Tools

Virtual Manipulatives: The National Library of Virtual Manipulatives (NLVM) is a Web-based collection of interactive tools for k-12 math instruction. The purpose of the tools is to engage students with math concepts based on a constructivist model. The tools allow students to visualize math relationships and applications. Virtual manipulatives give teachers alternative ways to introduce content as well as an interactive way to practice. Further, virtual manipulatives encourage independent practice because the tools are open source and available online.
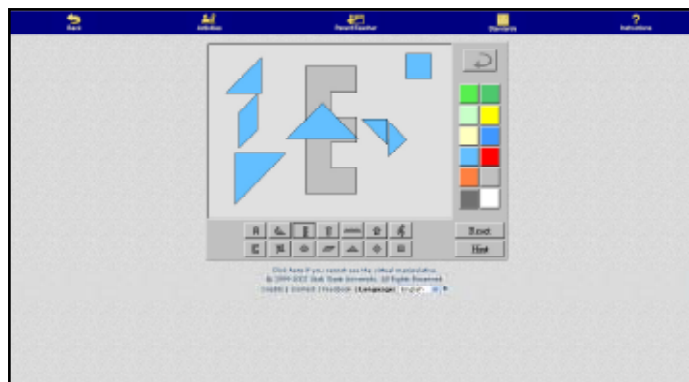

Fig. 1: An example of an educational Web 2.0 concept

In Figure 1, the illustration displays an example of an educational Web 2.0 concept. Used on an interactive board with an internet connection, this activity becomes an event to allow students to apply and develop critical thinking skills in an interactive learning environment. A student starts by transforming and manipulating the geometric shapes to fit in the letter E template. The class collaborates with the student using the interactive board to provide strategies for solving the puzzle. An extension of this activity is assigned as an interactive homework assignment to complete other puzzles. This is an example of using the interactive board in conjunction with a Web 2.0 tool. The student investigates, manipulates, and presents using a virtual environment.

Kids and Cookies: A second example can be seen through a more complex mathematical example in Figure 2, which is an interactive fraction game created at the University of Virginia. Kids and Cookies is an interactive game designed for elementary students. The game is an interactive way of introducing number concepts. Users simulate sharing cookies while investigating the concepts of rational numbers and division. As with the virtual manipulatives, this tools is open source and available online.

Fig. 2: A social game that encourages critical thinking and mathematical understanding.

When the game starts, students select the number of friends and the type of cookies to share with those friends. The student also chooses how many cookies will be shared among the
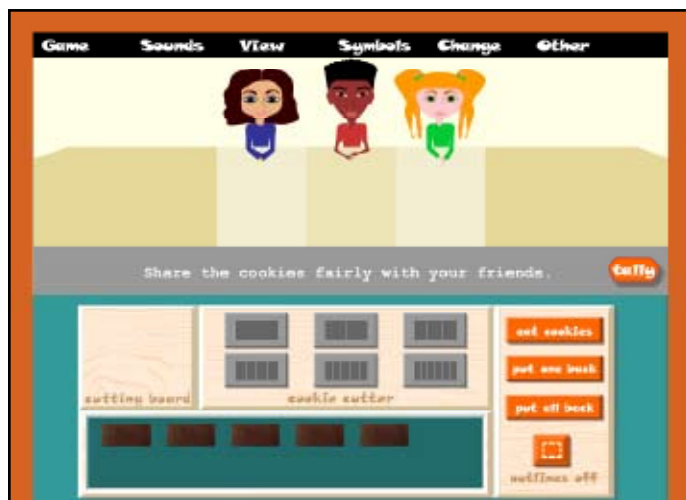

Fig. 3: Using the "cookie cutter" to divide the cookies among the friends.

chosen friends. After the selection, in Figure 3, the student must divide the cookies equally among the friends. Used by the teacher, this is an interactive way to introduce and teach the concept of fractions. The interactive board provides dynamic visualization of content as well as the ability to physically manipulate content. Again, teachers assign extension activities to supplement classroom lessons with independent work at home. During class, the interactive board and the Internet create an interactive learning environment. Because the activity has Web-based interaction, students can use the Web as a tool to learn with.

In the end author concluded that innovation has provided new capabilities that can transform the process of teaching and learning. Transforming the process of teaching and learning will mean that teachers create fundamentally different learning environments that promote interactivity. New ways of teaching will be accomplished through enhancing the skills of veteran teachers but also through future teachers. Pre-service teachers need time to sift through the capabilities of interactive technology and to understand which of those capabilities can influence teaching and learning practices. Time allows pre-service teachers to develop ways of integrating

interactivity as a fundamental part of their teaching. While training and supporting veteran teachers can have a positive impact on the classroom, processing concepts of technology integration to create interactive learning environments as a preservice teacher will provide a unique advantage. That advantage is related to the terms "digital native" and "digital immigrant". Currently, these terms are used to describe those who have grown up with technology and those who did not grow up with technology.

(iv). 2009; Bernard John Poole and John Evans in their book titled "Education for Information Age" reviewed research and other published reports that examined the effectiveness of computer-based teaching and learning. The objective was to justify the expense in time and money incurred by educational institutions in the acquisition of instructional technologies and requisite user skills. They reported that teachers who have successfully incorporated the computer and related technologies into the teaching and learning process have come to the conclusion that it can add significant value to teaching and learning when it is integrated thoughtfully by the teachers, with strong commitment and support from school administrators at all levels. Absent this thoughtful integration and strong commitment and support from administration, investment in computer-based technologies for teaching and learning will yield little or no return.

The goal of their book was to help teachers integrate computer-based technology into the educational curriculum in such a way that it improves learning. They reported that the significant investment of time and effort, not to mention money, in pursuit of this goal was a relatively recent phenomenon in schools. As per their knowledge computers first started appearing in K-12 classrooms in the late 1970s. Since then, huge sums of money have been spent to provide schools with computers and computer-related equipment. Teachers worldwide, but especially in the wealthier nations, were trained in the use of instructional technologies for teaching and learning. Such an investment presupposes a consensus that the myriad applications of this technology currently flooding the educational marketplace were an improvement on tried and true teaching methodologies. Was this the case? They said literature quotes Joseph Weizenbaum, Professor of Computer Science at the Massachusetts Institute of Technology, who cautions: "Everyone agrees that in principle computers are powerful, but too often teachers ... find they are following a common scenario: First you get the hardware, then you get the software, then you train the teachers, and only then do you start trying to work out what you are going to do with it all."

In the last they concluded that ideas take on life when they are realized through action. As Levitt points out, "Ideas are useless unless used". So we should resolve to be innovative as well as creative. Better yet, we should resolve to help others be innovative by our example, by our encouragement, and by our willingness to give our time and energy to promote the integration of technology across the curriculum at all levels of teaching and learning in our schools.

(v). 2009; Paul Pivec as a game developer for many years, and an academic of late, found the use of such terms as 'Serious Games' and 'Game-Based Learning' to be overused and often in the wrong context. In his opinion these terms were often employed as a justification to introduce digital games into the classroom or to sell a product that has little entertainment value. He believed that digital games do have a place in the classroom, but as a tool to be utilized by creative teachers and not to replace teachers as suggested by some (Bushnell, 2009; Prenksy, 2004).

Microsoft's Bill Gates has been credited as stating, **"Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is the most important."** This suggests that 'Game-Based Teaching' using a role-play or meta-game surrounding a game, would provide the desired learning outcomes. Through this article he seeks to explore the theory of Game-Based Teaching in contrast to Game-Based Learning, and discusses the context in which computer games are used in academia.

According to the author academics have long been promoting a change in education to include technology-rich programmes in the teaching curriculum (Papert, 1996; Rushkoff, 1996; Smith, Curtin and Newman, 1997), but they suggest that many teachers are feeling technically inadequate when teaching what they suggest are digitally literate students. These students have been called 'the computer generation' and referred to as 'screenagers'.

Author quoted some studies, where it was believed that these children look upon school as an interruption in their computer usage time (Prensky, 2001; Squire, 2003), and that teaching institutions must use electronic media to re-package their course content to reach today's 'digitally literate' students. Much of this belief has been spawned from the notion that today's children are 'digital natives', having grown up in a digital world. They apparently think differently because they have adapted to their digital environment (Prensky, 2001; Gee, 2003; Squire, 2003; Oblinger, 2004; Shaffer, 2006 and many others). However, many of us that support the application of technology as a learning tool and also Game- Based Learning (GBL), refute the belief that learners are different because they have grown up in today's digital world.

Yet, there are many other publications and researched theories that support technology and its place in the academic curriculum. Take for example the 'Hole in the Wall' project (Mitra and Rana, 2001). In this project computers were set up across India in locations that had never seen any type of technology before. No training or tuition was provided, yet children living there were surfing the internet within hours, downloading movies, using drawing software, playing video games, and even taught themselves how to cut, paste, and save their files. They collaborated with each other and worked in groups, they formed social groupings, and became highly motivated to continue to use this new available technology, all without supervision. They displayed all of the attributes that Prensky, Oblinger (and others) suggested were only present in children that they refer to as 'digital natives'.

So are today's students any different from previous generations and do they utilize technology in different ways than those of the teachers who are teaching them? Perhaps it is the technology itself and the way it is used that simply appeals to creative learners, and the digital native theory is simply a marketing ploy created and disseminated without any empirical evidence to support it.

Author concluded that, the improvement of test scores through the use of computer games as drill and practice techniques does not exploit the potential for education that is provided by the game-playing environment. It has not yet been proven through rigorous empirical research whether cognitive training games increase any abilities or knowledge other than that needed to play a particular game or pass a particular test. Furthermore, critics argue that games do not foster learning, cognitive skills nor knowledge acquisition, and it is purely the context in which they are used that stimulates any learning to take place.

Undoubtedly, the game environment provides the motivation

necessary for persistent re-engagement by the player and hence achieves the 'practice makes perfect' scenario. However, most game players do not play educational games, as they do not believe they learn from such games and do not find the game play in these games to be compelling. Many of today's students currently in higher education have been successfully conditioned into thinking that games are only for wasting time – a by-product of our own making as concerned parents. Yet a well constructed role-play game can do more than simply drill and practice, it can assist with the attainment of much needed competencies in many disciplines.

Computer games have now been accepted as a tool within academia and even industry training. The US military have been using games and role-play scenarios for over a decade, and many of the world's largest corporations utilize scenarios within computer games to successfully train their staff on everything from safety to conflict resolution.

In interdisciplinary learning domains where skills such as critical thinking, debating and decision making, and the ability to work, communicate and achieve set goals in teams, are in the foreground, Game-Based Learning concepts enveloped within a well structured collaborative role-play scenario will accelerate the attainment of the learning outcomes (Pivec and Pivec, 2009b). This is called Game-Based Teaching.

(vi) 2012; Galina Zilgalve and Irina Sennikova in their study observed that teachers practiced interactive teaching methods comprising of technology based(web based, multimedia) and based upon Interaction between student and teachers (Case studies, Group works, Business Simulation, Role plays etc.) and concluded that interactive techniques are commonly used, regardless the field of study and observed that interactive methods that develop creativity were group work, simulations, role plays and case studies. They identified major obstacles in interactive teaching as classroom design, lack of teachers expertise and ability to engage students, lack of appropriate material and techniques and outdated structure of course, that limits the time available for creative activities. Based upon their study they suggested the ways to improve as self development create creative environment and encourage creative teaching.

III. Conclusions

Based upon the research undertook by various researchers on the topic of interactive teaching methodologies it can be concluded that, active involvement of both the instructor and students is imperative for effective teaching learning process. There can't be a substitute for a teacher in the process of classroom teaching, but innovative methods must be designed and implemented making use of the electronic, computer science and communication technology for making the lecturing more interactive. It must be acknowledged that the kids of modern age are way more adaptive to the use of screen based gadgets (smart phones, tablets, video games etc.) than their parent's era. This natural talent of modern students must be exploited constructively by engaging them in technology based learning environment. Irrespective of the response and performance of the students in any subject, teachers must take the moral responsibility to engage them actively through any means, so as to increase the percentage of students who find the classroom teaching interesting. Endeavour of a teacher must be to reach out to all the students in a class to know the temperament of individual students, so that he can apply any suitable interactive technique to teach them effectively. Game based learning must be

encouraged for kids in the elementary classes, so that they love to spend more time on their studies. Game based learning has the benefits of rewarding the students while learning as well making them practice their assignments for longer time period, which indirectly helps them in memorizing the concepts.

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