Educational Technology

Team Teaching:-

The Team Teaching idea originated in USA in 1954 and it found its way to develop courses. It a good innovation in teaching strategies. In simple words, team teaching strategies are simplest form where all teachers of a subject collectively teach a class in that subject. There are some definitions by educationists. Team teaching is also called collaborative teaching or co teaching strategy. It is used for different subjects especially in middle grades with the help of different teaching method. To provide supportive environment, there are teams of two or four teachers working collaboratively to prepare lesson plans.

Team Teaching Definitions

1. Spanish defines it as "Team teaching is a type of instructional organization involving teaching personnel and the students assigned to them in which two or more teachers are given responsibility, looking together, for all or a significant part of the instruction for some group students".
2. Another definition by educationist runs as follows, "In this teaching strategy two or more than two teachers involve to make a plan of any given subject, or subjects cooperatively, carry it out, and always evaluate its effect on the students periodically".
3. According to David Warwick "It is a form of organization in which individual teachers decide to pool resources, interest and expertise in order to device and implement a scheme of work suitable to the needs for their pupils and the facilities of their school".

Characteristics of Team Teaching

1. It is traditional teaching, if a film is shown to six sections, it is projected six times. This method would organize one or two shows and thus economize use of projector, bulbs, electricity and energy of the teachers.
2. We teach those topics of the syllabus the best which we known bets and for which we have a liking. This enthusiasm of the teacher be structured by say factual lessons in few large senior groups with adequate follow up in smaller groups.
3. The deployment of teachers is done according to areas and methods in which they feel most at home.
4. It means realistic field work of all kinds is undertaken on some afternoons and two or more members of the staff are involved in one project.
5. The plan of team teaching is flexible.
6. In team teaching the entire responsibility does not fall on one teacher only but it is shared by others too. This method is based on collective responsibility.
7. Various aspects of any topic if one subject is taught by two or more teachers turn by turn.
8. The needs of the pupils, the schools and existing resources are considered.
9. It is an instructional arrangement.
10. It calls for team spirit.
11. It is a sort of pooling of expertise and resources such as experience, interest, knowledge and skills of teachers.

Objectives of Team Teaching

- To improve quality of instruction.

- To exploit talents and expertise of teachers.
- To utilize resources of institutions.
- To understand importance of cooperation and group work among teachers.
- To develop the sense of shared responsibility.
- To increase flexibility in grouping and scheduling as the team teaching group students according to their interests and aptitudes in the subjects.

Principles of Team Teaching

1. Allocation of duties to teachers on the basis of their interests, qualifications and personality characteristics.
2. Having varying size of the group according to the purpose of the team teaching.
3. Allotment of time according to the importance of the subjects.
4. Providing appropriate learning environment by making arrangement of laboratory, good library, workshop etc.
5. Provided appropriate learning behaviour to each learner within the group.
6. Exercising constructive supervision on the activities of the group.
7. Keeping the level of team teaching appropriate to the level of the learner.

Types of Team Teaching

1) A team from a single department
2) A team from various departments of single institution
3) A team from a single department of various institutions.
4) Interactive team teaching
5) Rotational format team teaching
6) Participant-observer team teaching
7) Team coordination
8) Lead and support teaching
9) Parallel instruction
10) Traditional team teaching.

Procedure of Team Teaching

i. Planning = formulating objectives, writing these in behavioural terms, identifying the entering behaviour of the learners, deciding the details of the material to be taught, assessing duties to teachers, fixing up the level of instructions, selecting appropriate teaching aids, deciding ways and means to be adopted for evaluating the student performance.

ii. Organising = determining the level of instruction, selecting the appropriate communication strategy, presentation of lead lecture by a competent of team, providing motivation or reinforcement, supervision of students activity.

iii. Evaluating = asking oral questions, taking decision about the level of performance, diagnosing about difficulties of the learners and providing remedies, revising the

planning and organising phase of team teaching on the basis of evaluation of the students.

Advantages of team teaching

- ✓ Learn about teaching
- ✓ Improve their own teaching skills
- ✓ Opportunities to socialize the graduate students into the world of teaching
- ✓ Step out of their comfort zone
- ✓ Opportunities for creative assignments
- ✓ Become informed and encouraged in interdisciplinary research
- ✓ Avoid the lonely, repetitive and fragmented experience of solo teaching
- ✓ Gain new insights into their disciplines
- ✓ Build collegial relationships
- ✓ Foster respect
- ✓ Deepen students 'analytical abilities
- ✓ Build curricular coherence for .the students
- ✓ Create greater sense of academic community
- ✓ Provide explicit structure or academic and social engagement.
- ✓ Improve student-teacher relationship
- ✓ Improve student learning outcome
- ✓ Make class more interesting and challenging.

Disadvantage of team teaching

- ❖ Lack of sufficient time for collaborative work
- ❖ Lack of training in group dynamics exits
- ❖ Problems with overlapping roles exist
- ❖ One discipline dominates the process
- ❖ Inadequate logistics and insufficient funding are provided
- ❖ Individual autonomy is lost
- ❖ Instructors are not flexible in addressing students' learning styles
- ❖ Confusion about learning expectation exists
- ❖ Disparity on evaluation exists

Co-teaching =

Co-teaching is two or more people sharing responsibility for teaching some or all of the students assigned to a classroom. It involves the distribution of responsibility among people for planning, instruction, and evaluation for a classroom of students. Another way of saying this is that co-teaching is a fun way for students to learn from two or more people who may have different ways of thinking or teaching. Some people say that co-teaching is a creative way to connect with and support others to help all children learn. Others say that co-teaching is a way to make schools more effective. Co-teaching can be likened to a marriage. Partners must establish trust, develop and work on communication, share the chores, celebrate, work together creatively to overcome the inevitable challenges and problems, and anticipate conflict and handle it in a constructive way.

Characteristics of Co-teaching =

- Two or more professionals (peers with shared teaching responsibility)
- Jointly delivering instruction (general education provides the instructional framework, yet the instruction may be modified for students with disabilities or others who need accommodations)
- Diverse groups of students
- Shared classroom space.

The 3 C's of Co-teaching

• Co-Planning
• Co-Instructing
• Co-Assessing

Ideally, co- teachers co-create goals, co-instruct, collaborate on student assessment, class management, and jointly make decisions pertaining to their class

Essential Components of co-teaching

• Administrative Support
– Scheduling
– Class roles
– Common planning time
– Keeping both teachers in the classroom
– Professional development
– Purposeful matching of co-teachers (similar philosophies)

• Common Planning Time
– Sacred time
– Use time wisely
– Differentiation of instruction
– Use of effective instructional strategies
– Establishing roles
– Avoiding the paraprofessional trap Essential Components Cont.

• Class Management
– Share pet peeves
– Co-create rules and procedures
– Create a joint classroom (both names of the door/board)
– Desk/Space for each teacher
– Both teachers should play an active role in classroom management

• Effective Communication
– Discuss expectations
– Share Worksheet

• Similar Philosophies

• Compatibility

• Flexibility
– Willing to negotiate
– Varying the types of Co-teaching
– Driven by the lesson and accommodations needed

• Voluntary Participation
– To co-teach
– Your Co-teacher

Co-teaching Approaches

• Lead and Support - Requires little joint planning time
- ✓ Provides opportunity for SE teachers to learn about General Education Curriculum
- ✓ Particularly effective for teachers new to collaboration
- ✓ Can result in special educator as being relegated to role of an assistant
- ✓ One teacher has the primary responsibility for planning and teaching
- ✓ The other teacher moves around the classroom helping individuals and observing particular behaviours.

• Station Teaching –
- ✓ Each professional has separate responsibility for delivering instruction Lower teacher -student ratio
- ✓ Students with disabilities can be more easily integrated into small groups
- ✓ Noise level can be distracting
- ✓ Movement can be distracting

• Parallel Teaching –
- ✓ Lower teacher : student ratio
- ✓ Heterogeneous grouping
- ✓ Allows for more creativity in lesson delivery
- ✓ Teachers must both be comfortable in content and confident in teaching the content
- ✓ Should not be used for initial instruction

• Alternative Teaching –
- ✓ Helps with attention problem students
- ✓ Allows for re-teaching, tutoring, or enrichment
- ✓ Can be stigmatizing to group who is alternatively taught
- ✓ ESE teacher can be viewed as an assistant if he/she is always in alternative teaching role

• Team Teaching –
- ✓ Greatest amount of shared responsibility
- ✓ Allows for creativity in lesson delivery
- ✓ Prompts teachers to try innovative techniques neither professional would have tried alone
- ✓ Requires greatest amount of trust and commitment
- ✓ Most difficult to implement

Basis for Selecting a Co-Teaching Approach

• Student characteristics and needs.
• Teacher characteristics and needs.
• Curriculum, including content and instructional strategies.

• Pragmatic considerations

Advantages of Co-teaching

- The co-teaching model has a stronger effect on students' motivation to learn.
- Infusing the talents and strengths of two different teachers, school students are supplied with ample opportunities to refine their talents in a wide array of subjects.
- Where one teacher's subject knowledge lacks, another teacher's subject knowledge may shine.
- Two teachers in the classroom also equal two sets of eyes.
- By having dual responsibility over the classroom, two educators have the chance to identify those in need or those that need extra attention during class.
- A co-teaching model can help to save costs in the long run. While it may be pricey to keep two teachers on board throughout the academic year, the institution may save money from substitute teaching services and teaching assistant salaries.
- A co-teaching style also enables constructive feedback during parents' evenings. By having two different perspectives on one student's progression, parents get to view their child's development with open minds.
- It reduces the monotony of having one person doing all of the teaching.
- It creates fun and effective learning opportunities for students.

Disadvantage of Co-teaching

- Teachers who share a classroom must come to consensus on such philosophical questions as discipline, classroom organization, routines and procedures.
- Not all teachers are able to deal with adult conflict and management
- Collaboration and co-teaching takes more time
- Not all teachers are willing to take to talk about everything that happens in a classroom
- Sharing physical space can be threatening
- Many teachers would rather teach alone than deal with inconsistent discipline.

Blended Learning =

Blended learning is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. It requires the physical presence of both teacher and student, with some elements of student control over time, place, path, or pace. While students still attend "brick-and-mortar" schools with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery. Blended learning is also used in professional development and training settings.

Blended learning is highly context-dependent therefore a universal conception of it is hard to come by. Some reports have claimed that a lack of consensus on a hard definition of blended learning had led to difficulties in research on its effectiveness. A well-cited 2013 study broadly defined blended learning as a mixture of online and in-person delivery where the online portion effectively replaces some of the face-to-face contact time rather than supplementing it. This report also found that all of these evidence-based studies concluded that student achievement was higher in blended learning experiences when compared to either fully online or fully face-to-face learning experiences.

"Blended learning" is sometimes used in the same breath as "personalized learning" and differentiated instruction. The terms "blended learning", "hybrid learning", "technology-mediated instruction", "web-enhanced instruction", and "mixed-mode instruction" are often used interchangeably in research literature. Although the concepts behind blended learning first developed in the 1960s, the formal terminology to describe it did not take its current form until the late 1990s. In 2006, the term became more concrete with the publication of the first *Handbook of Blended Learning* by Bonk and Graham. Graham challenged the breadth and ambiguity of the term's definition, and defined "blended learning systems" as learning systems that "combine face-to-face instruction with computer mediated instruction". In a report titled "Defining Blended Learning", researcher Norm Friesen suggests that, in its current form, blended learning "designates the range of possibilities presented by combining Internet and digital media with established classroom forms that require the physical co-presence of teacher and students ".

Types of Blended Learning

1. Station Rotation Blended Learning
Station-Rotation blended learning is a: "…model (that) allows students to rotate through stations on a fixed schedule, where at least one of the stations is an online learning station. This model is most common in elementary schools because teachers are already familiar with rotating in centres and stations.

2. Lab Rotation Blended Learning
'The Lab Rotation' model of blended learning, similar to "Station Rotation,' works by "allowing students to rotate through stations on a fixed schedule…in a dedicated computer lab allowing for flexible scheduling arrangements with teachers…enabling schools to make use of existing computer labs."

3. Remote Blended Learning (also referred to as *Enriched Virtual*)
In Enriched Virtual blended learning, the student's focus is on completing online coursework while only meeting with the teacher intermittently/as-needed. This approach differs from the **Flipped Classroom** model in the balance of online to face-to-face instructional time. In an Enriched Virtual blended learning model, students wouldn't see/work with/learning from a teacher on a daily basis face-to-face but would in a 'flipped' setting.

4. Flex Blended Learning
The 'Flex' is included in types of Blended Learning and its model is one in which… "a course or subject in which online learning is the backbone of student learning, even if it directs students to offline activities at times. Students move on an individually customized, fluid schedule among learning modalities. The teacher of record is on-site, and students learn mostly on the brick-and-mortar campus, except for any homework assignments. The teacher of record or other adults provide face-to-face support on a flexible and adaptive as-needed basis through activities such as small-group instruction, group projects, and individual tutoring.

5. The 'Flipped Classroom' Blended Learning
Perhaps the most widely known version of blended learning, a 'Flipped Classroom' is one where students are introduced to content at home, and practice working through it at school supported by a teacher and/or peers. In this way, traditional roles for each space are 'flipped.'

6. Individual Rotation Blended Learning

The Individual Rotation model allows students to rotate through stations, but on individual schedules set by a teacher or software algorithm. Unlike other rotation models, students do not necessarily rotate to every station; they rotate only to the activities scheduled on their playlists."

7. Project-Based Blended Learning
Blended Project-Based Learning is a model in which the student uses both online learning—either in the form of courses or self-directed access—and face-to-face instruction and collaboration to design, iterate, and publish project-based learning assignments, products, and related artefacts.

8. Self-Directed Blended Learning
In Self-Directed blended learning, students use a combination of online and face-to-face learning to guide their own personalized inquiry, achieve formal learning goals, connect with mentors physically and digitally, etc. As the learning is self-directed, the roles of 'online learning' and physical teachers change, and there are no formal online courses to complete.

9. Inside-Out Blended Learning
In Inside-Out blended learning, experiences are planned to 'finish' or 'end up' beyond the physical classroom, but still require and benefit from the unique advantages of both physical and digital spaces. In both the Outside-In and Inside-Out models, the nature of the 'online learning' is less critical than the focus on platforms, spaces, people, and opportunity beyond the school walls. Because the learning pattern is 'outward,' Project-Based blended learning is an excellent example of the Inside-Out model. As with Outside-In blended learning, there is a need for expert guidance, learning feedback, content teaching, and psychological and moral support from face-to-face interactions on a daily basis.

10. Outside-In Blended Learning
In Outside-In blended learning, experiences are planned to 'start' in the non-academic physical and digital environments students use on a daily basis, but finish inside a classroom. While the pattern is Outside-In, unlike Remote blended learning there is still a need for guidance, teaching, and support from face-to-face interactions on a daily basis.

11. Supplemental Blended Learning
In this model, students complete either entirely online work to supplement their day-to-day face-to-face learning, or entirely face-to-face learning experiences to supplement the learning gained in online courses and activities.

12. Mastery-Based Blended Learning
Students rotate between online and face-to-face learning (activities, assessments, projects, etc.) based on the completion of mastery-based learning objectives. Assessment design is crucial in any mastery-based learning experience; the ability to use face-to-face and digital assessment tools is either powerful or 'complicated' depending on the mind-set of the learning designer.

Webinars: an easy route to blended learning =
To get started with blended learning, you can utilize webinars in the instructor-led portion of your course. To run a webinar, you'll need a webinar tool. There are many options available; you'll just need to find the one that suits your needs. Things to consider when choosing one

include the size of your audience, their requirements, and the learner experience. Some webinar tool options include:

- Zoom
- GoToWebinar
- Cisco WebEx
- Adobe Connect
- Google Hangouts
- Any Meeting

These tools integrate with your LMS to synchronize setup, registration, and attendance reporting. Make sure you record each session so that you can use these recordings at a later date. This is a superb way to generate reusable training content. These videos can then be added to eLearning courses and delivered to your learners.

Advantages of Blended Learning

1. Blended instruction is more effective than purely face-to-face or purely online classes.
2. BL methods can also result in high levels of student achievement more effective than face-to-face learning.
3. By using a combination of digital instruction and one-on-one face time, students can work on their own with new concepts which frees teachers up to circulate and support individual students who may need individualized attention.
4. Rather than playing to the lowest common denominator – as they would in a traditional classroom – teachers can now streamline their instruction to help all students reach their full potential.
5. BL facilitates a simultaneous independent and collaborative learning experience for university students.
6. The use of information and communication technologies has been found to improve student attitudes towards learning.
7. By incorporating IT into class projects, communication between lecturers and part-time students has improved, and students were able to better evaluate their understanding of course material via the use of computer-based qualitative and quantitative assessment modules.
8. BL also has the potential to reduce educational expenses, and lower costs by putting classrooms in the online space and it essentially replaces pricey textbooks with electronic devices.
9. BL gives the opportunity for data collection and customization of instruction and assessment as two major benefits of this approach. It includes software that automatically collects student data and measures academic progress, providing teachers, students and parents detailed students' data.
10. Schools with BL programs may also choose to reallocate resources to boost student achievement outcomes.
11. Students with special talents or interests outside of the available curricula use educational technology to advance their skills or exceed grade restrictions. Advantages of blended learning
12. BL allows for personalized education, replacing the model where a teacher stands in front of the classroom and everyone is expected to stay at the same pace. It allows students to work at their own pace, making sure they fully understand new concepts before moving on.

13. A classroom environment that incorporates BL naturally requires learners to demonstrate more autonomy, self-regulation, and independence in order to succeed.
14. This virtual learning environment helps connect professors with students without physically being present, thus making this a 'virtual café'.
15. The advantages of BL are dependent on the quality of the programs being implemented. Some indicators of excellent dependent programs are:
    *facilitating student learning,
    *communicating ideas effectively,
    *demonstrating an interest in learning,
    *organizing effectively,
    *showing respect for students,
    *and assessing progress fairly.

Disadvantages of blended learning

- Unless successfully planned and executed, BL could have disadvantages in technical aspects since it has a strong dependence on the technical resources or tools with which the BL experience is delivered. These tools need to be reliable, easy to use, and up to date, for them to have a meaningful impact on the learning experience.
- IT literacy can serve as a significant barrier for students attempting to get access to the course materials, making the availability of high-quality technical support paramount.
- Other aspects of BL that can be challenging is group work because of difficulties with management in an online setting.
- The use of lecture recording technologies can result in students falling behind on the materials. In a study performed across four different universities, it was found that only half of the students watched the lecture videos on a regular basis, and nearly 40% of students watched several weeks' worth of videos in one sitting.
- From an educator's perspective, most recently, it has been noted that providing effective feedback is more time consuming (and therefore more expensive) when electronic media are used, in comparison to traditional (e.g. paper-based) assessments. Disadvantages of blended learning
- Using e-learning platforms can be more time consuming than traditional methods and can also come with new costs as e-learning platforms.
- Another critical issue is access to network infrastructure. Although the digital divide is narrowing as the Internet becomes more pervasive, many students do not have access to the Internet, even in their classrooms. Any attempt to incorporate BL strategies into an organization's pedagogical strategy needs to account for this. This is why learning centres are built with good Wi-Fi connections to make sure this issue is addressed.

Learning Management System =

A learning management system (LMS) is a software application or web-based technology used to plan, implement and assess a specific learning process. It is used for eLearning practices and, in its most common form, consists of two elements: a server that performs the base functionality and a user interface that is operated by instructors, students and administrators.

Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation and assess student performance. A learning

management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing and discussion forums.

LMSs are frequently used by businesses of all sizes, national government agencies, local governments, traditional educational institutions and online/eLearning-based institutions. The systems can improve traditional educational methods, while also saving organizations time and money. An effective system will allow instructors and administrators to efficiently manage elements such as user registration, content, calendars, user access, communication, certifications and notifications.

Main features of Learning Management System

#1. Integrated virtual classroom in LMS - A familiar virtual learning environment enables learners to get straight into learning on each new e-course they sign up for.

#2. Technical support in LMS - When things go wrong it's important to know that technical assistance is just a few clicks away.

#3. Customizable and multi-lingual - The most valuable pieces of software are the ones that can be customized to work in just the way they're needed to.

#4. Course management in LMS - Course administration, order management, pre-registration and assigning courses can be done semi-automatically.

#5. Communication management in LMS - All course communications and notifications can be done from within the LMS system, no need to copy and paste contact data or switch between two digital services.

#6. Reports in LMS - Learner and tutor tracking makes it possible to keep on track of progress and ensure the service being offered is as valuable as possible.

#7. SCORM compatibility - The wide range of different course types and formats in the e-learning industry make it important to ensure compatibility.

#8. Data storage in LMS - E-courses and training resources can require a great deal of data. Keeping it all securely in one place will make administration easier to manage.

#9. Assessment creation and management - Assessments are a key part of any course. A tool that makes it easy to create and manage these assessments is well worth having on your side!

#10. Ecommerce in LMS - When payments can be made directly through the LMS it makes financial administration much more straight-forward.

Some common features found in a successful LMS include:

Responsive design - Users should be able to access the LMS from whatever type of device they choose, whether it's a desktop, laptop, tablet or smartphone.

User-friendly interface - The user interface (UI) should enable learners to easily navigate the LMS platform.

Reports and analytics - This includes eLearning assessment tools.

Course and catalogue management - The LMS holds all the eLearning courses and the related course content.

Content interoperability and integration - Content created and stored in an LMS must be packaged in accordance with interoperable standards, including SCORM and xAPI.

Support services - Different LMS vendors offer varying levels of support. Many provide online discussion boards. Additional support services, such as a dedicated toll-free service number, are available for an extra cost.

Certification and compliance support - This feature is essential to systems used for online compliance training and certifications.

Social learning capabilities - Many LMSes have started including social media tools within their platform.

Gamification - Some LMSes include game mechanics or built-in gamification features that allow instructors and admins to create courses with extra motivation and engagement.

Automation - Learning management systems should enable administrators to automate repeated and tedious tasks.

Localization - It is important for LMSes to include multilingual support features so the learning and training content can remain unaffected by language barriers.

Artificial intelligence (AI) - Finally, artificial intelligence can help an LMS create personalized learning experiences for users by providing course formats suited to their needs, and by suggesting topics the user may find interesting based on the courses they have already completed.

Types of learning management systems

The different types of LMS deployment options are:

- Cloud-based
- Self-hosted
- Desktop application
- Mobile application

Cloud-based LMSes are hosted on the cloud and often follow a software as a service (SaaS) business model. Cloud-based LMS vendors take care of maintaining the system and performing any technical updates or upgrades. Online users can access the system from anywhere, at any time, using a username and password.

Self-hosted LMSes require software to be downloaded by the user. The self-hosted platform provides greater creative control and customization, but users must maintain the system themselves and often must pay for updates.

Desktop application LMSes are installed on the user's desktop. However, the application may still be accessible on multiple devices.

Mobile application LMSes support mobile learning and are accessible wherever and whenever through mobile devices. This platform deployment type allows users to engage with and track their online learning initiatives on the go.

Advantages of Learning Management System

1. Organizes eLearning content in one location.
2. Provides unlimited access to eLearning materials.
3. Easily tracks learner progress and performance.
4. Reduces Learning and Development costs.
5. Reduces Learning and Development time.
6. Keeps organizations up-to-date with compliance regulations.
7. Quickly and conveniently expands eLearning courses.
8. Integrates social learning experiences

Disadvantages of Learning Management System

1. Tendency to focus on the technology and not the student
2. Staff, faculty and student learning curve – need for more training.
3. Can stifle creativity and innovation by limiting assessment and content delivery methods to a few types of activities etc.
4. Customer support can be challenging, especially for smaller institutions
5. System failure can wreak havoc
6. Challenging for an LMS to replicate the on-campus environment.
7. Can potentially create a problem of course ownership and responsibilities.
8. Infrastructure costs may outweigh return

Gamification =

Gamification is the use of game design and mechanics to enhance non-game contexts by increasing participation, engagement, loyalty and competition. These methods can include points, leader boards, direct competitions and stickers or badges, and can be found in industries as varied as personal healthcare, retail—and, of course, education.

We've seen gamification already in a variety of settings: completing a punch card to win a free sandwich, receiving a badge for being the first of friends to check in at a particular restaurant, or expanding our profiles on LinkedIn to bring the "completion bar" up to 100%. Gamification has even worked its way into the automotive industry with the innovative dashboard of the Ford Fusion hybrid.

Gamification in Education

Games, in any form, increase motivation through engagement. Nowhere else is this more important than education. Nothing demonstrates a general lack of student motivation quite like the striking high school dropout rates: approximately 1.2 million students fail to graduate each year (All4Ed, 2010). At the college level, a Harvard Graduate School of Education study "Pathways to Prosperity" reports that just 56% of students complete four-year degrees within six years. It's argued that this is due to current systemic flaws in the way we teach; schools are behind the times. Watch a single lecture on innovation trends in education, and the presenter likely notes the striking similarities of a modern-day classroom and one of centuries past. It's been proven that gamifying other services has resulted in retention and incentive. For example, website builder Dev Hub saw the remarkable increase of users who finished their sites shoot from 10 percent to 80 percent. So, in theory, it should work for schools as well.

How can I gamify education in my classroom?

Educators have tested this theory and seen positive results. There are a variety of ways to introduce your classroom to the gamification of education and we're providing you with just a few ideas. We hope to spark a discussion on gamifying education so that educators can discuss the topic more thoroughly and provide examples in which they have used gamification to make learning more engaging.

1. *Gamification in grading*

Students' letter grades are determined by the amount of points they have accumulated at the end of the course, in other words, by how much they have accomplished. Students are progressing towards levels of mastery, as one does in games. Each assignment and each test feels rewarding, rather than disheartening. Using experience points allows educators to align levels with skills and highlight the inherent value of education.

2. *Award students with badges*

For each assignment completed, award students with badges. Western Oklahoma State College is implementing this form of gamification into their technology classes. It is important to add value to the badges, like bonus points, skill levels, etc.

3. *Integrate educational video games into the curriculum*

The use of games allows students to fail, overcome, and persevere. Students are given a sense of agency—in games, they control the choices they make, and the more agency students have, the better students do. Instantaneous feedback and small rewards (or big ones, like winning) are external motivators that work.

4. *Stir up a little competition*

It is a "tournament" module. The tournaments incentivize students to learn the material and practice. After all, everyone wants to see his or her name on the leader board. The tool worked as a great equalizer among students. Introverts were able to demonstrate their knowledge of the material and participate without having to raise their hands. Most of all, "gamifying" the review of readings simply boosted the general energy of the class.

Other ideas

Implement a class-wide rewards system:

Encourage students by setting up a rewards system where students achieve something as a team. For example, set a goal of 80% of the class passing an exam. As a reward, give the entire class bonus points or even a party. That way, students are working to master the material together instead of competing, and the highest-achieving students will help those around them.

*Gamify homework to encourage informal learning***:**
Ultimately, educators hope that games translate learning into informal environments. There simply aren't enough hours in the day for an educator. Games allow the curiosity—and the learning—to continue after the bell rings.

Create a digital, customizable classroom management system built on role playing themes:
This one is a little more challenging. Those who resist gamification in education often cite its improper use of rewards as a motivator. Critics argue that relying on games can be detrimental to intrinsic motivation. Receiving a badge for a job well done is meaningless without an understanding of what specific skills this badge rewards. We agree; games can't be used to replace pedagogy, but can be used to enhance the overall learning experience.

The 10 Best Educational Apps that use Gamification for adults in 2019

1. TEDEd – gamified educational app to create actionable video lessons = TEDEd creates amazing, fun, entertaining educational videos for all ages to enjoy. In addition to their videos, they've created a web app that allows users to create video lessons that are actionable.
2. Khan Academy – gamified educational app to learn anything for free, forever = Khan Academy is an educational platform where students can learn math, science, computer programming, history, and more.
3. Coursera – gamified educational app to get Ivy-League education from your own home = Coursera is an online learning platform that provides universal access to the world's best education from top universities. Universities add their courses onto the platform and students can use Coursera to pay for and take a course.
4. Udemy – gamified educational app for user-generated learning = Udemy is an online platform that allows educators to upload courses and for students to purchase these courses and learn online. Anyone from anywhere in the world can upload a course: you can learn anything from coding, to languages, to fashion, and even parenting.
5. Tiny cards – gamified educational app for learning with flashcards = Tiny cards makes learning with boring old flash cards actually fun and enjoyable through the use of Gamification. Pick a subject: language, science, movies, and start to learn with flash cards.
6. Blinkist – gamified educational app for reading non-fiction books in just 15 minutes = Blinkist is for the professional on the go, the person that is super busy, but that desperately wants to carve out a little bit of time to learn something new. Blinkist summarizes over 2,000 non-fiction books to give you content that you can easily digest in 15 minutes.
7. Memrise – gamified educational app to learn a language through locals = Memrise is a gamified language learning app that utilizes a myriad of gamified techniques (including over 20,000 native speaking videos) to teach a new language. Players can learn English, French, Spanish, German, Japanese, Korean, and many more languages.
8. Solo Learn – gamified educational app to learn how to code = Solo Learn aims to gamify the way we learn how to code. As an educational app, Solo Learn naturally has lessons that teach players how to code, but that's just the beginning.
9. Yousician – gamified educational app for learning an instrument = Yousician is a Gamified educational app to learn a new language. When you're ready for your lesson, you turn on the app, select your instrument, and choose a lesson or song to play.

10. Duo lingo – gamified educational app for learning a new language = Duo lingo is a free language learning app on your mobile phone. There are a ton of languages to learn: Spanish, French, German, Chinese, Japanese, Korean, Italian, Portuguese, Dutch, Irish, and the list goes on and on.

Advantages

- Increases student engagement (Kapp, 2012)
- Improves knowledge absorption and retention - Students develop and practice problem solving strategies across different levels of play or contexts
- Provides immediate feedback to help players adjust to learning challenges - Applies and practices learning within a meaningful and authentic The Radix Endeavor – players explore biomes with unique plants and creatures to test scientific hypotheses and instruments
- Places students within systems where they can safely manipulate and explore functions
- Assists with transfer of learning to real world contexts and problems (Kapp, 2012)
- Promotes cooperation, teamwork, communities of learners and practice (Bellotti et al., 2010)

Disadvantages

- Requires access to computer and Internet – institutions may not have budget available to purchase computers and students of low income families may not have technology available to them in the home to support learning
- Distracts learners from learning objectives - Poor design in game leads to disengagement and confusion, teacher fails to implement gaming to effectively support curriculum and learning
- Leads to overstimulation or game play addiction - Students manage time poorly because they are determined to pass a certain level in an online game
- Replaces other learning activities such as hands on experiments and simulations
- Does not meet the learning needs of all students - auditory learners may struggle without spoken or audible instruction, learners that struggle with literacy or who are English language learners (ELL) may not be able to read and follow directions
- Blurs boundaries between virtuality and reality - students may not realize danger of chemicals or electrostatics because their only experience in using them has been in simulations online
- Absorb teaching resources or budget for other resources

Assistive Technology =

Assistive technology is technology used by individuals with disabilities in order to perform functions that might otherwise be difficult or impossible. Assistive technology can include mobility devices such as walkers and wheelchairs, as well as hardware, software, and peripherals that assist people with disabilities in accessing computers or other information technologies. For example, people with limited hand function may use a keyboard with large keys or a special mouse to operate a computer, people who are blind may use software that reads text on the screen in a computer-generated voice, people with low vision may use software that enlarges screen content, people who are deaf may use a TTY (text telephone), or people with speech impairments may use a device that speaks out loud as they enter text via a keyboard.

A formal, legal definition of assistive technology was first published in the Technology-Related Assistance for Individuals with Disabilities Act of 1988 (The Tech Act). This act was amended in 1994; in 1998, it was repealed and replaced with the Assistive Technology Act of 1998 ("AT Act"). Throughout this history, the original definition of assistive technology remained consistent.

A tremendous variety of assistive technology is available today, providing the opportunity for nearly all people to access information technology (IT). However, an individual's having proper assistive technology is no guarantee of having access. IT accessibility is dependent on accessible design. IT products must be designed and created in ways that allow all users to access them, including those who use assistive technologies. The United States Assistive Technology Act of 1998 defines assistive technology -- also called ***adaptive technology*** -- as any "product, device, or equipment, whether acquired commercially, modified or customized, that is used to maintain, increase, or improve the functional capabilities of individuals with disabilities."

Legislation and regulations for assistive technology =
The first law governing the provisioning of assistive technology devices to children in school was the Individuals with Disabilities Education Act (IDEA). Originally known as the Education for All Handicapped Children Act, it was reauthorized and updated in 1990. Law, as it pertains to assistive technology, requires that children who have individualized education programs be given accommodations by their school. Typically, this requires some type of assistive device.

The Americans with Disabilities Act requires employers to make jobs available to anyone who is capable of performing the core responsibilities of a job and to make reasonable accommodations to those who have disabilities. These accommodations may include assistive technology devices like refreshable Braille displays, screen magnification software and amplified telephone equipment.

Types of Assistive Technology

The following technologies help people use computers to access the web:

- **Screen readers:** Software used by blind or visually impaired people to read the content of the computer screen. Examples include JAWS for Windows, NVDA, or Voiceover for Mac.
- **Screen magnification software:** Allow users to control the size of text and or graphics on the screen. Unlike using a zoom feature, these applications allow the user to have the ability to see the enlarged text in relation to the rest of the screen. This is done by emulating a handheld magnifier over the screen.
- **Text readers:** Software used by people with various forms of learning disabilities that affect their ability to read text. This software will read text with a synthesized voice and may have a highlighter to emphasize the word being spoken. These applications do not read things such as menus or types of elements - they only read the text.
- **Speech input software:** Provides people with difficulty in typing an alternate way to type text and also control the computer. Users can give the system some limited commands to perform mouse actions. Users can tell the system to click a link or a button or use a menu item. Examples would be Dragon Naturally Speaking for Windows or Mac. Please note both Windows and Mac have some speech recognition utilities, but they cannot be used to browse the web.
- **Alternative input devices:** Some users may not be able to use a mouse or keyboard to work on a computer. These people can use various forms of devices, such as:

- **Head pointers:** A stick or object mounted directly on the user's head that can be used to push keys on the keyboard. This device is used by individuals who have no use of their hands.
- **Motion tracking or eye tracking:** This can include devices that watch a target or even the eyes of the user to interpret where the user wants to place the mouse pointer and moves it for the user.
- **Single switch entry devices:** These kinds of devices can be used with other alternative input devices or by themselves. These are typically used with on-screen keyboards. The on-screen keyboard has a cursor move across the keys, and when the key the user wants is in focus, the user will click the switch. This can also work on a webpage: the cursor can move through the webpage, and if the user wants to click on a link or button when that link or button is in focus, the user can activate the switch.
- **Talking Calculators:** Both the visually impaired and learning disabled can greatly benefit from these simple device, which relays mathematics via audio.
- **Digital Pens:** Different digital pens each feature different perks, but ones equipped with audio recording and the ability to convert handwriting seem to be particularly valuable.
- **Alternative keyboards:** The learning disabled with specific visual, spatial and/or other requirements have plenty of viable options available.
- **Videotaped social skills**
- **Alternative mikes:** Joy sticks, touch pads, roller balls

Use and application of Assistive Technology in Education =

CATEGORY/ AREA OF FUNCTION	ASSISTIVE TECHNOLOGY APPLICATIONS	NEED AND RELEVANCE IN CLASSROOM LEARNING
Reading	Electronic books, Book adapted for page turning, Single word scanners, Predictable texts, Tabs, Talking electronic devices/software, Speech Software	For students having difficulty in reading and understanding written text and in paying attention to the reading assigned.
Writing	Pen/Pencil grips, Templates, Word processors, Word card/book/wall, software, Spelling/Grammar checker, Adapted papers	For students having problem in writing or composition
Math	Calculators, Talking Clocks, Enlarged Worksheets, Voice Output Measuring Devices, Scientific Calculators	For students having computational problems and confusions, and finding it difficult to perform well in Math lessons
Vision	Eye glasses, Magnifier, Screen Magnification, Screen Reader, Braille Large Print Books, CCTV, Audio Lesson Tapes	For students who have difficulty in seeing or lack complete vision
Hearing	Hearing Aids, Pen and paper, Signalling Devices, Closed Captioning	For students who have difficulty in hearing or are absolute hearing impaired
Computer Access	Word prediction, Alternative Keyboards, Pointing Option, Switches, Voice recognition software	For students finding it difficult to access the computer in its standard form and have difficulty in

		performing academic tasks
Augmentative/ Alternative Communication	Communication Board, Device with speech synthesis for typing, Eye gaze board/ frame, Voice output device	For students having problems in comprehension of language, and lacking the ability to express it, or are unclear in speech and demonstrate delayed expressive language

Advantages of Assistive Technology

a) Have greater control over their own lives;
b) Participate in, and contribute more fully, in activities in their homes, schools, and work environments, and in their communities;
c) Interact to a greater extent with people who do not have disabilities; and
d) Otherwise benefit from opportunities that are taken for granted by people who do not have disabilities.

Disadvantages

1. Privacy = some of the assistive technology degrades the privacy of the individual. It allows the helper/ nurses to constantly get personal information about the individual with disability.
2. Human Contact = although one of the goal of assistive technology is to help in participation in the community and interact with people who do not have disability, it can have the opposite effect. Human contact towards the individual might decrease as there will be less need of direct physical assistance. This could lead to the person being more socially isolated, which can be bad for his emotional health.
3. Regression = as a result of assistive technology, people with disability become able to do some task. An individual might rely excessively on the technology and do not attempt to learn ways to cope with their disabilities. A disabled person can actually regress when they rely too much on the assistive technology and do not put effort by themselves.
4. Complexity = some cases of assistive technologies are very complex and hard to use. It affects the individual psychologically and increases the frustration further more.

E – Learning =

E-learning or "electronic learning" is an umbrella term that describes education using electronic devices and digital media. It encompasses everything from traditional classrooms that incorporate basic technology to online universities.
E-learning in a traditional setting may include educational films and PowerPoint presentations. These types of media can provide students with content that is more dynamic and engaging than textbooks and a whiteboard. Edutainment, or content that is designed to be educational and entertaining, may be used to keep students' attention while providing knowledge about a particular topic. A documentary film, for example, may be both engaging and informative.

While some classrooms incorporate digital technology, others are designed around it. A Classroom Performance System (CPS), for example, provides a completely digital learning environment. It includes a projector for displaying videos and web content and a digital chalkboard for the instructor. Students can complete quizzes and tests using digital response pads rather than handing in papers. The paperless environment provides an efficient way for students to learn and ensures teachers always have the latest instructional materials.
Online education is another common form of e-learning. Many colleges and universities now allow students to submit assignments and complete tests online. Some educational institutions are 100% online, meaning students never have to attend class inside a physical classroom. In order to maintain a sense of community, online universities often provide and even require students to participate in online discussions using Moodle or another virtual learning environment.

Online classes are typically administered by an accredited professor who may give live or recorded lectures that students can watch online. The professor also grades students' assignments and is available to answer individual questions. In most cases, credits earned online are equivalent to those earned in a traditional classroom setting.

The history of e-learning
The term “e-learning” has only been in existence since 1999 when the word was first utilized at a CBT systems seminar. Other words also began to spring up in search of an accurate description such as “online learning” and “virtual learning”. However, the principles behind e-learning have been well documented throughout history, and there is even evidence which suggests that early forms of e-learning existed as far back as the 19th century.

An e-learning history timeline =
Long before the internet was launched, distance courses were being offered to provide students with education on particular subjects or skills. In the 1840′s Isaac Pitman taught his pupils shorthand via correspondence. This form of symbolic writing was designed to improve writing speed and was popular amongst secretaries, journalists, and other individuals who did a great deal of note taking or writing. Pitman, who was a qualified teacher, was sent completed assignments by mail and he would then send his students more work to be finished using the same system.

In 1924, the first testing machine was invented. This device allowed students to test themselves. Then, in 1954, BF Skinner, a Harvard Professor, invented the “teaching machine”, which enabled schools to administer programmed instruction to their students. **It wasn’t until 1960 however that the first computer based training program was introduced** to the world. This computer-based training program (or CBT program) was known as PLATO-Programmed Logic for Automated Teaching Operations. It was originally designed for students attending the University of Illinois, but ended up being used in schools throughout the area.

The first online learning systems were really only set up to deliver information to students but as we entered the 70s online learning started to become more interactive. In Britain, the Open University was keen to take advantage of e-learning. Their system of education has always

been primarily focused on learning at a distance. In the past, course materials were delivered by post and correspondence with tutors was via mail. With the internet, the Open University began to offer a wider range of interactive educational experiences as well as faster correspondence with students via email etc.

Online learning today

With the introduction of the computer and internet in the late 20th century, e-learning tools and delivery methods expanded. The first MAC in the 1980′s enabled individuals to have computers in their homes, making it easier for them to learn about particular subjects and develop certain skill sets. Then, in the following decade, virtual learning environments began to truly thrive, with people gaining access to a wealth of online information and e-learning opportunities.

By the early 90s, several schools had been set up that delivered courses online only**,** making the most of the internet and bringing education to people who wouldn't previously have been able to attend a college due to geographical or time constraints. Technological advancements also helped educational establishments reduce the costs of distance learning, a saving that would also be passed on to the students – helping bring education to a wider audience.

In the 2000′s, businesses began using e-learning to train their employees. New and experienced workers alike now had the opportunity to improve upon their industry knowledge base and expand their skill sets. At home, individuals were granted access to programs that offered them the ability to earn online degrees and enrich their lives through expanded knowledge.

Characteristics of E-learning –

- Empowered by digital technology – E learning is pedagogy empowered by digital technology.
- Computer enhanced learning – E-learning is a term which is used to refer computer enhanced learning
- Technology enhanced learning – E-learning includes all types of technology enhanced learning (TEL), where technology is used to support the learning process.
- Online learning – Use of E-learning is generally confined to "online learning" carried out through the internet or web based technology, with face to face interaction.
- More than CBL and CAI – E-learning conveys broader meaning than the term Computer Based Learning and Computer Assisted Instructions.
- More than Online learning – E-learning is broader in its meaning that they conveyed through the simple terms like online learning or online education.
- Not synonymous to audio-visual and multimedia learning – E-learning should not be considered as synonymous to audio visual learning, multimedia learning, distance education or distance learning. Although the audio-visual and multi-media technology and distance education programmes are based on the internet and web services provided through the computers, yet these are not identical but complementary.
- Confined to web based and internet based learning – The use of the term E-learning should be confined to the type of learning carried out, supported or facilitated through web enhanced instructions and the internet based communications like Email, audio and video conferencing, mail list live chats and telephony.
- Exclusion of non-internet and non-web technology – All types of non-internet and non-web technology are not included on E-learning. Kumar and John write that though computer is used for instruction and learning the non-web technology thus not

come under technology. The entire computer based instructions, computer managed instructions, integrated learning system, interactive video, virtual reality, artificial intelligence which are not delivered through the internet but are still used for learning and instruction cannot be included in E-learning. However these techniques, when delivered via internet for learning and instruction, become E-learning.

Importance of E-learning in today's education

E-Learning is learning anything with the help of electronic media, usually through the internet. Having garnered a lot of popularity in the recent times, e-learning is slowly becoming a vital element of education today. Be it on online learning platforms or in the form of e-books, you can easily see its presence in some way or the other.

Through the method of e-learning, learning becomes a lot easier. Nowadays, the best online learning platforms enable eLearning so that students can get the maximum out of their lessons. It could be in the form of content videos, interactive e-books, unlimited practice questions, etc.

1. Provides high retention power

Those who learn use e-learning platforms retain their lessons more than those who don't. Through the method of e-learning, learners have no pressure on them and this helps them remember what they studied. Technology is something that a lot of learners love to use when they study as it provides them with the choice to study as per their comfort.

As e-learning tools take the help of visuals to impart learning, learners remember their lessons more as compared to a traditional classroom environment. The visuals help in visualizing different concepts in a much more interesting way.

2. Availability of a vast information pool

E-learning enables the learners to access a vast information pool anytime and anywhere. In addition to that, learners get deep insights on the subjects at hand that they would have not gained otherwise by studying in traditional classrooms.

3. Provides a digital learning environment

Important mediums such as computer-based learning, virtual classrooms, web-based learning, and mobile-based learning form part of e-content for school education. It enables both the teacher and student to teach and learn in a digital learning environment.

4. Other benefits

The other benefits of e-learning are: –

- Irrespective of the geographical location of the learners, e-learning offers access to the best content to them.
- Enables learners to become self-learners.
- Given the speed with which a learner learns with e-learning tools, the learner gets more time to pursue their hobbies or talents.
- Cuts down the pressure and stress of exam, helping the students to mentally prepare for their exams.
- Encourages students to initiate learning.
- Simplifies the entire learning process and makes it more effective and engaging.

The best online learning platforms bring different concepts to life which makes lessons more relatable and concepts easier to understand. Hence, it is safe to say that e-learning has a lot of importance in today's education.

Types of E-learning

These are the 10 different types of e-learning:

- Computer Managed Learning (CML)
- Computer Assisted Instruction (CAI)
- Synchronous Online Learning
- Asynchronous Online Learning
- Fixed E-Learning
- Adaptive E-Learning
- Linear E-Learning
- Interactive Online Learning
- Individual Online Learning
- Collaborative Online Learning

Alternatively, some educational scientists have chosen to classify e-learning types more simply. They identify just two primary types of e-learning:
Computer-based e-learning and
Internet-based e-learning.

This method of classification could be seen as more accurate because it differentiates e-learning from online learning, the two of which are often incorrectly used interchangeably. Some forms of e-learning such as CML and CAL are not required to take place online, but they are considered types of e-learning nonetheless.

1. **Computer Managed Learning (CML) =** In the case of computer-managed learning (CML), also known as Computer Managed Instruction (CMI), computers are used to manage and assess learning processes. Computer managed learning systems operate through information databases.

2. **Computer Assisted Instruction (CAI) =** Computer Assisted Instruction (CAI), also sometimes referred to as computer-assisted learning (CAL), is another type of e-learning which uses computers together with traditional teaching. Computer-assisted training methods use a combination of multimedia such as text, graphics, sound, and video in order to enhance learning.

3. **Synchronous Online Learning =** Synchronous online learning enables groups of students to participate in a learning activity together at the same time, from any place in the world. Real-time synchronous online learning often involves online chats and videoconferencing, as these tools allow training participants and instructors to ask and answer questions instantly while being able to communicate with the other participants.

4. **Asynchronous Online Learning =** In the case of asynchronous online learning, groups of students study independently at different times and locations from each other, without real-time communication taking place. Asynchronous e-learning methods are often considered to be more student-centered than their synchronous counterparts, as they give students more flexibility.

5. **Fixed E-Learning =** Fixed e-learning is a fancy name for something you are likely already familiar with. “Fixed” in this context means that the content used during the learning process does not change from its original state and all the participating

students receive the same information as all the others. The materials are predetermined by the teachers and don't adapt to the student's preferences.

6. **Adaptive E-Learning =** Adaptive e-learning is a new and innovative type of e-learning, which makes it possible to adapt and redesign learning materials for each individual learner. Taking a number of parameters such as student performance, goals, abilities, skills, and characteristics into consideration, adaptive e-learning tools allow education to become more individualized and student-centered than ever before.

7. **Linear E-Learning** = When referring to human-computer interaction, linear communication means that information passes from sender to receiver, without exception. In the case of e-learning, this becomes a very limiting factor, as it does not allow two-way communication between teachers and students. This type of e-learning does have its place in education, although it's becoming less relevant with time. Sending training materials to students through television and radio programs are classic examples of linear e-learning.

8. **Interactive Online Learning=** Interactive e-learning allows senders to become receivers and vise versa, effectively enabling a two-way communication channel between the parties involved. From the messages sent and received, the teachers and students can make changes to their teaching and learning methods. For this reason, interactive e-learning is considerably more popular than linear.

9. **Individual Online Learning** = Individual learning in this context refers to the number of students participating in achieving the learning goals, rather than the student-centeredness of the material. This type of learning has been the norm in traditional classrooms for thousands of years.

10. **Collaborative Online Learning =** Collaborative e-learning is a modern type of learning method, through which multiple students learn and achieve their learning objectives together as a group. Students have to work together and practice teamwork in order to achieve their common learning objectives.

Advantages of E-Learning

- **Individualised Instructions =** E-learning provides individualised instructions suiting to the need, abilities, learning styles and interests of the learner.
- **Easy access =** the learner get access to learning by breaking all barriers of time, place and distance.
- **Disadvantageous children =** It is available for those with poor health or disadvantageous conditions that can inhibit them from undergoing any institutionalized education.
- **Qualitative =** E-learning has a unique feature of arranging an access to unlimited number of students the same quality of the content that a full time student has.
- **Effective media =** E learning can prove an effective media and tool for facing the problems of lack of trained teachers, shortage of schools and needed facilities for

providing quality education to the number of students residing in far and wide corners of the country.

- **Different learning styles =** E-learning can cater to different learning styles and promote collaboration among students from different localities, culture, regions, states and countries.
- **Flexibility =** The flexibility of learning in terms of delivery media like CD, DVD, Laptops, mobile phones, type of courses and access may prove very beneficial for the learners.
- **Play way spirit and learning by doing =** Learning experiences via simulated and gaming techniques may also provide the advantages of getting richer experiences on the useful pedagogical footings of play way spirit and learning by doing.
- **Interesting and motivating =** E-learning may make the students more interested and motivated towards learning as they may get a wide variety of learning experiences by having an excess to multimedia.
- **On-line, off-line and live interaction =** this opportunities between the students and teachers and among the students themselves may make the task of E-learning a joy and best alternative to the lively face to face interaction and real time sharing of the experiences in a traditional classroom settings.
- **Self-learning and self- improvement =** E-learning leads to self-learning. It can be utilized for improving technical and vocational skills.
- **Evaluation and feedback =** E-learning can also provide opportunities for testing and evaluating the learning outcomes of the learners through teachers, peers and auto instructional devices and software available with the reading material online or through the internet and mobile phone facilities.

Disadvantages of E-learning

- **Requires knowledge and skills =** Lack of knowledge and skills on this account may prove futile in taking advantages from the valuable services of E-learning.
- **Lack of equipment =** Most of our institutions are not at all ready, willing and equipped for making use of E-Learning in the proper interest of the teachers and students.
- **Costly =** E-Learning is more costly than traditional education. E-Learning tools are very expensive. Their repair is also very expensive.
- **Feeling of isolation =** The feeling of isolation experienced by the users of E-learning is one of the main defects visible in any system of distance learning including E-learning. There is no face to face interaction and humanistic touch profoundly available in the traditional classroom setup.
- **Lack of provision for Teacher Training Programme =** There is lack of provision of equipping the teachers in their pre-service or in-service programmes for getting acquainted with the knowledge and skills required on their part for the use of E-learning at their work places.
- **Negative attitude =** an overall attitude of the learners, teachers, parents, educational authorities and society is usually found negative towards the processes and products of E-learning.
- **Adverse effect on health =** E-learning adversely effects the eyesight and some other parts of body. The learners become physically inactive.
- **Lack of co-curricular activities =** these activities are neglected in E-learning.

- **Technical defect =** When technical defects occur, E-learning stops. As a result, continuity of learning is broken and there is no progress in E-learning.

Mobile Learning =

M-Learning or "Mobile Learning" is a form of learning through mobile devices. It is a flexible form of learning as you do not need to be at a predetermined location at a predefined time. You can take up learning at your own convenience even while you are on the go using portable devices like Mobile, Mp3 players or tablets. Like any other forms of learning m-learning also offers collaboration among students and instructors and instant tips and feedback can be shared.

M-learning is the next big revolution in mobile technology. E-Learning is a passe and M-Learning is the beckoning future. The capabilities of mobile devices are gradually increasing which is facilitating further development in M-Learning technology. When the concept of M-Learning evolved a decade ago, no one imagined that it will undergo such phenomenal development. Thanks to the rapid growth in mobile technology and evolution of mobile phones into Smart phones.

History of Mobile Learning

Alan Kay is the name behind the introduction of the M-Learning concept in the 1970s. He got into Palo Alto Research Centre of the Xerox Corporation and teamed up with a few other workers to bring 'Dynabook' to life. Dynabook was a handy personal computer that was meant to teach children through an improved digital approach. However, this device failed to impress because of a lack of technological backing in that era.

It wasn't until 1994 that IBM Simon, the first smartphone ever, was introduced by Mitsubishi Electric Corp; this device was quite similar to Dynabook. Promoted as a handy personal communicator, this smartphone heralded an absolutely new era during which hundreds of similar devices were introduced by various manufacturers. From then on, nobody ever stopped producing 'smartphones'.

To simplify the introduction to M-Learning, it has been divided into three phases. These include:

Phase 1

This phase revolves around the use of mobile devices, such as smartphones, tablet computers, and laptops. Here, educators work to plan lessons that can be easily delivered and accessed through digital gadgets. Even when they can't work with all sorts of devices, they can focus on at least one device with specialized applications that support M-Learning. They should be highlighted and communicated to the learners, too.

Phase 2

Phase 2 is focused on learning in settings different from a typical classroom. This can include things like field trips, visits to museums and places alike. Today digital gadgets support strong Internet connection and this is what educators can take advantage of during such visits in order to communicate with their students without using teaching materials like black/whiteboards or even desktop computers.

Phase 3

The third and the last phase focuses on the mobility of learners. Today, mLearning has become a globalized learning approach. It has gained popularity in regions across the world including Asia, Europe, Australia, Africa, New Zealand, North America, and Scandinavia which have already attained remarkable achievements in this area.

Elements of M-Learning

M-Learning involves 5 important elements.

Learner– Students or learners are always the top priority. No matter what the mode of learning is, its goals cannot be met without the growth of learners. Today, mobile learning strategies are expected to be interesting, engaging and flexible, so that the learners are given the best possible chance of obtaining academic success.

Some of the key benefits that M-learning can provide are: Gives learners access to study material at any time, students are empowered to learn at their own pace, delivers content-rich information, to student's finger tips, enhances the learning experience, through improved engagement and interaction, dramatically improves communication between students, staff and faculties.

Teacher– Learning is about the transfer of knowledge, from one person to another. M-learning enhances an educator's ability to do this, through the use of innovative learning mediums and methods. M-learning provides a platform, through which lessons may be conducted via video, online content, or in interactive group chats. The best part about this is that students have access, from any device, and anytime.

Content– Gone are the days of chalk boards and overhead projectors. Today, in addition to providing information, M-learning allows for content to be delivered in a fun and interactive method that greatly improves that engagement of students. Interactive games, quizzes, videos, and one-to-many sharing functionality, are just some of the possibilities that M-learning facilitates.

Environment– Student engagement and academic success are directly tied to the learning environment. A mobile learning strategy provides educators with an opportunity to design the environment in a way that creates a positive learning experience. In addition to providing students with access to course content through any device, M-learning organizes information in logical ways, and creates a virtual environment where students can interact with each other and their teachers, to ask questions, share ideas, and seek feedback.

Assessment– The M-learning platform also enables teachers to publish grades and provide their students with more detailed feedback regarding assessable tasks, than would otherwise be possible. An example of this can include things like juxtaposing a screen shot from a specific page of a course textbook, with an incorrect answer to an exam question.

Features of mobile learning

1. Micro learning

Micro learning is made for mobile. It's a method of teaching that distils information into topical, easy-to-digest, bite-sized chunks. Accessing it on a mobile device means effective learning can take place anywhere at any time.

2. Spaced Repetition

Distributed practice is the process of repeating learning over increasing intervals. It's important not to repeat it too soon or too late – a scientific schedule should be used. It's a

great dedicated feature to have with mobile learning because small, mobile-friendly lessons can easily be repeated.

3. Peer Learning

Most eLearning comes from third-parties and is often hard for learners to engage with. Peer Learning sees colleagues teaching colleagues. Getting your best and brightest to quickly create micro lessons that are dripping with expertise will be highly engaging for learners who can better relate to both the teacher and the context.

4. Just-in-Time Training

When learning takes place on a mobile device, it can be performed anywhere. This makes it great for learning on demand – or JIT Training. Learners can dial-up a lesson minutes before going into an important meeting making it a great feature of mobile learning.

5. Gamification

Learning works best when it doesn't feel like learning. Transforming lessons into games is a great way to improve engagement and retention. Offering real prizes only makes matters more effective.

Mobile learning can be done anywhere at any time.

6. Push Notifications

Reminding people to perform their training or telling them about a new course can be a real pain point for L&D professionals. Push Notifications appear on learners' own devices' notification screens where they are most likely to see them and react to them. It's a useful mobile learning feature to have.

7. Mobile-focused authoring tool

A great deal of eLearning is authored in separate software and by different people compared to a company's own LMS. However, by using a mobile learning system that has an integrated authoring tool, it's simple to create interactive lessons simply by uploading questions and answers to existing templates.

8. Social Learning

People access social media on their mobile devices all the time, so it makes sense to add the option for learners to engage with teachers and respond to comment on lessons in an effort to improve them and make them more effective. Both the feedback and ideas generated are great features of mobile learning.

9. Responsive learning

The rise of mobile and the smaller screen means all software should be designed mobile first. A responsive mobile LMS will work better within a larger computer's web browser than having a large-screen content being squashed onto a mobile-sized screen.

10. Learn anywhere

Company computers represent mental barriers to absorbing new ideas. Workers are more comfortable with their own devices and they can easily perform training in their downtime or when commuting.

Types of Mobile Learning

1. Super Clickers allowing for multiple choice as well as free response questions during class.
2. Tools for student to submit communication and collaboration during classes.
3. Portals to the world outside of the class.
4. Mobile platforms form delivering content.
5. Tools for collecting and analysing data.

What Makes M Learning Better than Conventional Classrooms?

M Learning is better than conventional schooling in different ways.

While there are several notable features of mobile learning, one feature that tops all the rest is the added convenience for M Learners. This way, you get to learn without having to change your schedule or compromising other important activities, irrespective of where you are and what you do.

What's more, M Learning supports instant sharing and transferring learning content; this also allows to use an instant feedback system. Feedback is important because it encourages effective learning by giving a prompt assessment.

From a learning perspective, different studies show that M Learning is far more effective than conventional learning approaches. This is mainly because of things like convenience, peace of mind, and feedback that it offers to the learners. Actually, the M Learning process is proven to raise exam scores by about 50 to 70% while cutting dropouts in technical fields by 22%.

Apart from the above-given reasons why M Learning stands out, another important feature attached to this approach is the use of gadgets for education. In today's world, everyone is more likely to read and learn using digital devices rather than reading paper books. This is exactly what mobile learning takes into account.

Learning through digital gadgets lets learners have more space for exploring and asking questions. This method is much cheaper than conventional classroom learning setups as educators and learners don't have to pay for venues, electricity bills, and other relevant expenses, let alone the environmental impact of reduced paper consumption.

Advantages of Mobile Learning

1. Convenience and Relevance = The 'mobile' aspect of M Learning allows learners to instantly get access to relevant content. Learning can be accessed on the go, anywhere and at any time, exactly when it is needed.

2. Good use of spare time = Mobile devices enable learners to make good use of their spare time. They can choose to take an advantage of using their spare time to learn, may be while travelling, or between meetings etc.

3. Flexibility = M Learning seamlessly integrates learning into learner's routine life, which results in successful course completion and retention of knowledge.

4. Encourages collaborative Learning = M Learning allows learners to get in touch with their mentors, or peers, to discuss or get ideas on the move. It maintains connectivity and supports knowledge sharing via SMS texting, Discussion forums etc.

5. Offers Bite-sized digestible learning = Because of its small screen size, M Learning offers only bite sized learning, minimizing the amount of information provided to a learner at any given point of time. This helps in avoiding cognitive overload and increases learning.

6. Improves Decision Making = Quick access to small chunks of learning and a chance to get connected to experts, prior to maybe important meetings, or before beginning tasks, can help learners to improve their decision making.

7. Enhances Learning = Learners get motivated to take the courses, if they are allowed to learn whenever they want, and at their personal convenience, in other words, learner-driven learning in a suitable format can enhance learning.

8. Wider Access = Adapting to the training needs of the organizations, it allows several learners at different locations, to learn using the same learning material.

9. No access barriers = M Learning allows learners to use their own mobile devices that they have already been using, to access trainings. BYOD or Bring Your Own Device is the trend adopted by many companies, who have implemented M Learning, to overcome any access barriers.

10. Cost-effectively built = You can quickly develop your mobile learning courses, leveraging your existing eLearning content, in a cost effective manner and push out to learners through their handheld devices.

Disadvantage of Mobile Learning

i. Cost: A mobile device with limited functionality capabilities may not be suitable for m-learning. Hence, a student has no option but to get one with the required level of functionality so as to access the online courses. This mobile device may be relatively expensive.

ii. Size inconvenience: The mobile device normally has a small screen size where the student is forced to strain their eyes as they access the online resources. The information provided may also be incomplete due to the limited size of the device.

iii. Limited storage: Memory storage that is available in mobile devices may not be enough to store numerous offline content and other downloaded resources.

iv. Unexpected distractions: These distractions may be in the form of a simple SMS, notification or call as someone accesses online content.

v. Short battery life: Most devices discharge quickly especially when there are a number of active apps within the device. This could be a major problem for learning across lengthy periods of time.

vi. Limited connectivity: Limited bandwidth may make it difficult to access online content.

vii. Technological problems: Mobile learning can be challenging if there's no device standardization. Teachers may face the problem of keeping all their students on the same level since smartphones and tablets have access to different operating systems and hardware. The students may not be able to engage in online discussions or even access the coursework.

Massive Open Learning Course (MOOC) =

A **massive open online course** (**MOOC**) is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials, such as filmed lectures, readings, and problem sets, many MOOCs provide interactive courses with user forums or social media discussions to support community interactions among students, professors, and teaching assistants (TAs), as well as immediate feedback to quick quizzes and assignments. MOOCs are a recent and widely researched development in distance education, first introduced in 2008 and emerged as a popular mode of learning in 2012.

MOOC stands for massive open online course:

- **Massive** because enrolments are unlimited and can run into hundreds of thousands.
- **Open** because anyone can enrol — that is, there is no admission process.
- **Online** because they are delivered via the internet.
- **Course** because their goal is to teach a specific subject.

MOOCs typically comprise video lessons, readings, assessments, and discussion forums.

History

The first MOOCs emerged from the open educational resources (OER) movement, which was sparked by MIT Open Course Ware project. The OER movement was motivated from work by researchers who pointed out that class size and learning outcomes had no established connection, with Daniel Barwick's work being the most often-cited example.

Within the OER movement the Wikiversity was founded in 2006 and the first open course on the platform was organised in 2007. The term *MOOC* was coined in 2008 by Dave Cormier of the University of Prince Edward Island in response to a course called *Connectivism and Connective Knowledge* (also known as *CCK08*). CCK08, which was led by George Siemens of Athabasca University and Stephen Downes of the National Research Council, consisted of 25 tuition-paying students in Extended Education at the University of Manitoba, as well as over 2200 online students from the general public who paid nothing.

Reasons to explore MOOCs

i. Supplements other learning methods = Even though most MOOCs do not provide academic credit or result in a degree, some of the biggest beneficiaries of MOOCs are students formally enrolled in an academic program. MOOCs provide a free way for students to obtain additional academic assistance that wouldn’t otherwise be available.

ii. Provides lifelong learning opportunities = One of the biggest ways to make learning fun is to learn something because you want to – and MOOCs are the perfect way to learn on your terms. The fact that anyone can stop taking a MOOC without worrying about hurting their academic record or losing out on tuition takes away a lot of the pressure that can make learning less fun.

iii. MOOCs are free = Learning has traditionally cost both money and time. With MOOCs, it now just costs time. The fact that there is no tuition or fees for MOOCs (as long as the student isn't getting academic credit or a certificate of completion).

iv. Provides recognized certifications = Many highly skilled jobs have mandatory requirements, such as a specific degree or certificate. Before MOOCs, individuals could only prove their knowledge with an academic degree or certificate. MOOCs can provide an alternate method to proving skills and understanding of a variety of topics without forcing individuals to commit to a full degree or expensive credential.

v. MOOCs offer a wide range of subjects = Very few academic institutions can provide the same plethora of academic and technical subjects that MOOCs offer.

Characteristics of MOOCs

1. Using Web Formats

MOOCs heavily rely on different web formats. Consequently, the large majority of courses consist of pre-recorded videos that are streamed by users. MOOCs can also use live-streams to create a virtual classroom environment. Occasionally, teachers also organize live sessions with their students using tools like Hangouts or Upstream. This is a unique opportunity for students to get in touch with the trainer directly and ask questions.

2. Collaborative Learning

One key aspect of MOOCs is their collaborative component. During a MOOC, everything possible is done to recreate the in-class experience, including the use of collaborative tools. Rather than a vertical distribution of knowledge, MOOCs allow for the emergence of learning communities where the input of each participant enriches the course.

3. Assessing Knowledge

In addition to content designed to convey knowledge, MOOCs offer tools to assess the transfer and retention of this knowledge. These modules help make courses more dynamic and interactive and generally take the form of multiple-choice exams, programmed tests, or essay questions that are corrected automatically, by teachers or by classmates. Additionally, MOOCs can offer certificates to those who have completed the course.

4. Time Limits

The final characteristic of MOOCs is the notion of time limitations. MOOCs have specified start and end dates. Course content (documents, videos, exercises, etc.) is delivered sequentially, each week. For the learner, coursework is spread over time. Temporally structuring course content helps make it seem like a series of mini events and allows for the creation of an efficient communication strategy including teasers, email updates, etc.

The Advantages of MOOCs:

1. Courses are offered for free
2. Access to courses offered by professors at the top schools
3. Courses are available to a vast and diverse audience across the globe
4. Learners' performance can be monitored easily using the data captured during the start of courses
5. Both professors and learners get world-wide exposure, thus improving pedagogical techniques and knowledge sharing
6. Can be used as a tool in a blended learning program, where students can access more information than what is provided in the class

The Disadvantages of MOOCs:

1. Can't provide for personalized courseware and attention from a tutor
2. It is difficult to keep track of students' assignments and involvement
3. Learners with disabilities and a poor Internet connection can't use MOOCs
4. Language can be a barrier while offering MOOCs
5. MOOCs can't be used as a credit-earning course at universities
6. They are not an educational panacea
7. They are not yet evolved enough to provide thorough peer assessment methodology, robust business revenue models, stabilized retention rates, successful pedagogical design, or resolution for cheating and plagiarism.
8. There are frequent concerns with the actual platforms on which the MOOCs are delivered on experiencing technical difficulties.
9. Assessment tends to consist of multiple choice questions
10. Those enrolled rarely or never have the opportunity to write a research paper
11. It is difficult for participants to build relationship with prof
12. It often replicates the sage on the stage scenario as MOOCs often lack effective instructional design
13. The authors also emphasize that Instructional design best practices need to be followed.