



Did You Know?

20 Innovative Learning Methodologies Apart from Lecturing

*Next-Generation Learning Methods
for On campus,
Online and Blended Education*

DEVELOPS:

✓ Cognitive Skills

✓ Social Skills

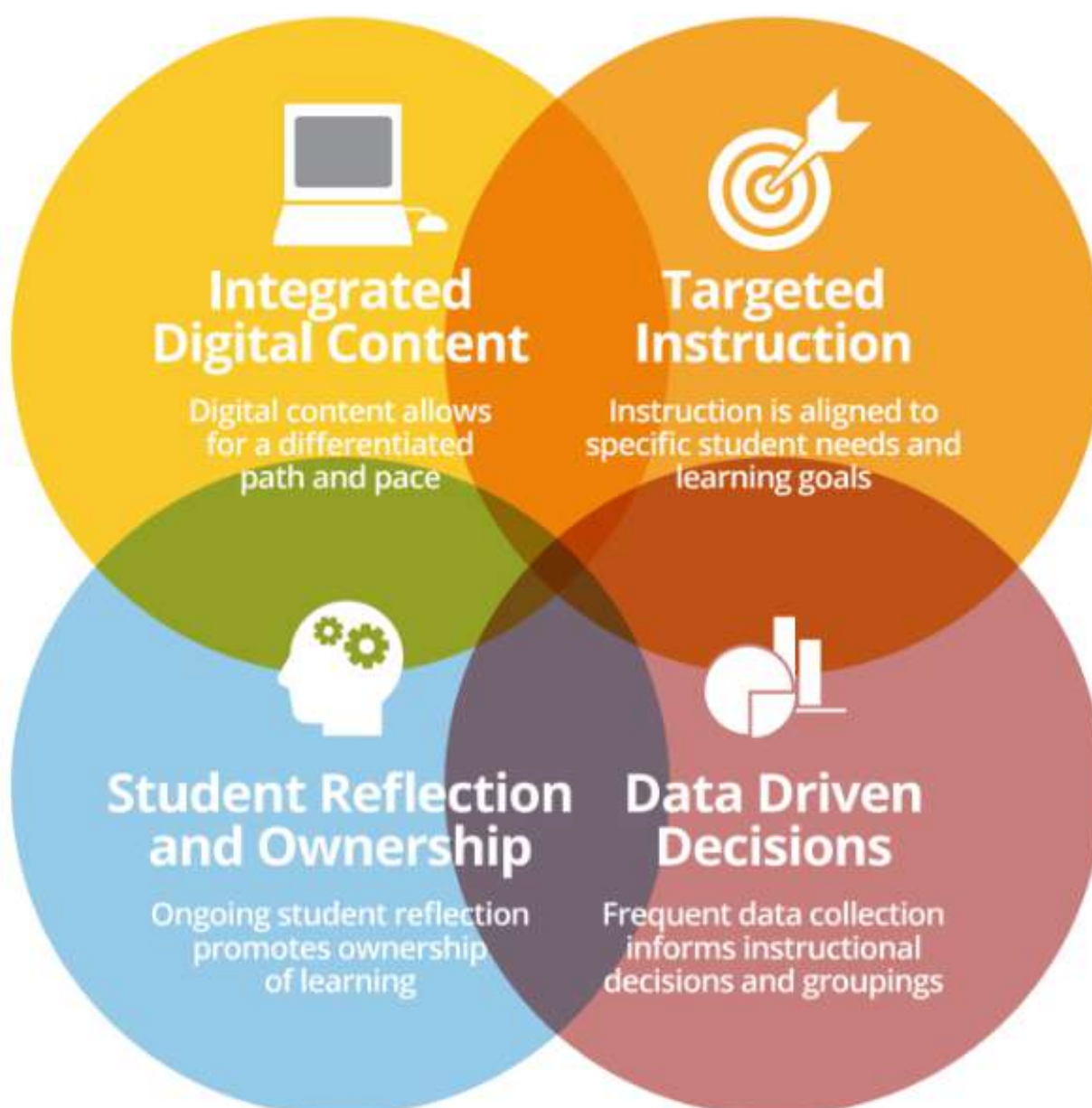
✓ Self Esteem

*#Reimagining Education And Accelerating
With Change.....*

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THE CORE FOUR ELEMENTS OF PERSONALIZED LEARNING



5E FRAME WORK - A Constructivist approach to child-centric learning and skill development

5E's [40 minutes Break up]

1. Engage [5 minutes]

- Before starting the period make an intention of what you expect each and every student to learn by the end of the period.
- Introduce the lesson/period/writing work with some informal talk or some casual value based or current affairs talk.
- See that you have grabbed the attention of the entire class before you start.
- Walk around, change seats or just make students feel that you are there for them.

2. Explore [5 minutes]

- Do not assume that the students know a particular concept because it was there in the previous class.
- Explore their knowledge by questioning them to find out and then bring them to a point where they are inquisitive to know more.
- Tell the students what they are supposed to know by the end of the period.

3. Explain [20 minutes]

- The most challenging part:

The child should remember for life – **How?**

While applying innovative methodologies – make use of **4C's**

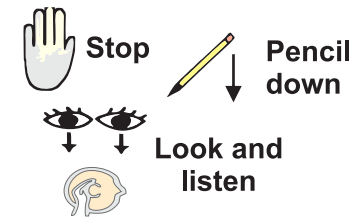
- Relate whatever is being taught to real life situations.

C- Critical Thinking

- Develop critical thinking in them for the required tasks.
- Encourage students to ask critical questions.

C – Communicate

- Be verbal, have a lot of interaction. Please do not carry the text book to the class. Go beyond the text. Make sure every child gets an opportunity to speak from the dias once a month.



Who?
What?
Where?
When?
Why?
How?



"Children must be taught HOW TO THINK, not what to think."

C – Collaborate

- Involve the students. Divide the class into small groups and make sure you seat them in groups with an appointed bench monitor/team leader.
- Give them shared responsibility and make them accountable for each other. Each member of a team is responsible, not only for learning what is taught, but also for helping his/her teammates learn.
- Give them the responsibility of presenting what they have learnt. You'll be surprised by their presentation.



C – Creativity

- Don't discourage any question. Don't restrict their thinking by telling them they are wrong. Otherwise this suppresses their creative potentials.
- Let them come up with silly ideas or thoughts. Channelise these thoughts to creativity.
- Don't use the same strategy every day. Variety is the spice of life.
- The way we expect variety in life, the same holds true for the students. So, use a new strategy every day.
- Kindle the eagerness in students. Make them hope your period never ends.



4. Elaborate [5 minutes]

T – Think : Question the students to make them think. Start with close-ended questions [LOTS] and move to the open-ended questions [HOTS].

P – Pair : Pair up students for any task so that there is a spirit of collaborative competition amongst the pair.

S – Share : Let them share their views and ideas with the rest of the class.

Let peer learning take place. Encourage the bench monitors to summarize what they have learnt to the fellow bench mates and ensure that every child is involved and learns.

Values : Each period should end with informing the students the value they have learnt for that period. Recap the previous day's value learnt. Ask them how that value would help them in life.



5. Evaluate [5 minutes]

Student Understanding – A quick run through of the concepts & assess what they have learnt and how much by asking questions or written work. This will help you analyze if you have to repeat the topic.

Evaluate yourself – Assess yourself and be honest in assessment. Have you fulfilled all the objectives of teaching for the period and justified your role? Do not think what others will react to your self-assessment. It is only to make you realise your areas of concern.

“It's not what is poured into student that counts but what is plannted.”

Innovative Learning Methodologies

Introduction

Education is the light which gives right direction and facilitates learning, acquiring knowledge, skills, values and beliefs. If we fail to equip students with these various forms of teachings then there is a need to change our approach i.e. there is a need for a paradigm shift from traditional approaches to the research-based innovative teaching methodologies. We need to adopt the innovative teaching methodologies and make teaching as fun as a game that never ends.

Acquiring Education is not merely the right of every child but the duty of every Muslim, male or female (source: At-Tirmidhi Hadith collection)

What is Innovative teaching?

Technology has raised the bar of stimulus that generates interest. Our children being DIGITAL NATIVES require interaction, collaboration, reasoning and encouragement rather than instructions. As long as a teacher focuses on teaching, it is practically not possible for him/her to ensure that every child learns besides managing a classroom of various learning abilities becomes a challenge. It's time for the teachers to make Learners with stride and take a paradigm shift from TEACHING to LEARNING and start innovating. The innovative methods presented here shall help the teachers focus on every child and exhibit their prowess of empowering lives.

Role of Teacher:

Depending upon the method applied to meet the needs of the varying potential of students, a teacher here may don the caps of a Researcher, Facilitator, Mentor, Innovator, and Guide or sometimes become a co-Learner herself and explore/discover/learn/practice together. The teacher has to use a method which best suits their topic and subject method(s) within the 5E framework. Teachers may apply a part of one of these methods or a combination of multiple methods during the explanation or the elaboration phase and these are not exclusive methods. One can use more than one method.

One has to intelligently select the relevant learning experiences (via suitable media), adequate instructional models incorporating the best learning experiences, effective-teaching practices, and a supportive learning environment. Go through our comprehensive Innovative learning Methods being provided for evidence-based learning and continuous assessment.

1. Flipped classroom:

It is a method in which the classroom environment increases students' responsibility and all students are engaged in their learning. In this method Short videos are viewed (or activities through worksheets are performed) by students at home before the class. Class time is then utilized for discussions, exercises, clearing of doubts or projects.

Objective: To create interactive environment focusing on student-to-student interaction so as to strengthen their critical thinking.

Procedure:

Step1: Carefully select a video that is relevant to the topic. Alternatively, plan an activity or worksheet that is relevant.

Step 2: Ask the students to watch the video or perform the activity, at home.

Step 3: Now in the class ask them to write or speak about their interpretation of the video that reflects their understanding and learning. Give them an opportunity and encourage them to apply their knowledge and skills through interactive role plays and other classroom based learning activities.

Step 4: Teacher can clarify the doubts if any and mentor them in applying their learning.

2. Experiential learning:

It is a method that supports students in applying their knowledge and understanding to the real world situations. It deepens their knowledge and develop skills through practice and reflection.

Objective: To engage students in critical thinking, enhance problem solving and decision making skills

Procedure:

Step 1: Choose an activity that helps teach your lesson. It can be through role plays, field trips or group work.

Step 2: Experiences should be structured enough to enable students to take initiative and take decisions.

Step 3: Students should be actively engaged in posing questions, investigating, solving problems, being creative and constructing meaning.

Step 4: Relationships should be developed and nurtured: student-student, student-teacher, and student to the world at large.

Step 5: Enable students to learn from their mistakes/failures and share their learning/finding with others.

EXPERIENCE—REFLECT—APPLY

3. Inquiry based learning:

It is a method which places student's questions, ideas and observations at the centre of their learning experiences. It lets students' be curious just like they were as a toddler. To explore the world around.

Objective: To activate curiosity and involvement for better understanding.

Procedure:

Step 1: Ask the students to develop/frame question to be inquired.

Step 2: Guide them and model methods of researching reliably by showing them how to do it instead of doing it ourselves.

Step 3: Students should create and present what they have learnt.

Step 4: Ask students to reflect on what worked about the process and what didn't. This reflection is not the opinion about topic but about the process itself.

RESEARCH—WRITE—PRESENT—REFLECT

4. Differentiated Learning:

It is a method in which same material is taught to all the students of different abilities through variety of strategies in CONTENT, PROCESS, PRODUCT or LEARNING ENVIRONMENT.

For Content, Blooms Taxonomy may be applied wherein students of different abilities are given tasks at various levels of Remembering, Comprehension, Analyze/Apply, Differentiate, Evaluate and Create. Those who complete the initial stages of comprehension can be given tasks of higher order like analyze, evaluate or create something on their own. For Process, Learning Styles may be applied wherein lessons are customized to address Visual, Kinesthetic and Auditory learners. Teaching aids or group work/teacher support is further customized to address various levels of students' accomplishment.

For Product, Outcome of the learning may be addressed by giving them different work of assessment like project for some and oral/written or graphical work to others.

For Learning Environment, classroom management techniques is the key wherein multiple options to learning are given to students like individual reading vs participating in reading group so that every child is engaged in their own way. This leads to less discipline problems and greater understanding of the topic.

Objective: To address various abilities of students and best reach all of them to ensure every child succeeds.

Procedure:

Step 1: Design lesson plan rather period plan based on students learning styles.

Step 2: Create a supportive classroom environment

Step 3: Assess students' learning

Step 4: Group students with similar needs, abilities and skills.

Step 5: Continually assess and adjust the strategies in content, process, product or environment to suit students' needs.

5. Brainstorming:

This method is useful in generating ideas or finding solution to problems. It enables and motivates students to express their ideas and thoughts on a subject. It also enables them to respect other ideas and views.

Students actively participate in the discussions, give their views, express their ideas and think critically which improves their academic performance.

Objective: To enhance students' creativity, critical thinking and Collaborative work.

Procedure:

Step 1: Teacher should explain the procedure and act as a co-ordinator who manages the session without giving comments or suggestions.

Step 2: Frame the question to be brainstormed in a way which can generate maximum ideas. Teacher should also prepare a list of sub questions in case the students get side tracked.

Step 3: Write the question on the black board and ask students to record their ideas and give their inputs.

Step 4: Teacher should facilitate and encourage every child's participation no matter how critical or silly the idea or answer is.

Step 5: Teacher should then consolidate the answers and take the discussion to a logical end.

NOTE: This is also called as Generative Thinking Wherein multiple ideas are no sought. Teachers may then train student leaders to take up the challenge next time. Make sure that there are belittling or insulting arguments.

6. Guided Reading

Guided reading is an instructional practice or approach where teachers support a small group of students to read a text independently.

Objective: Guided reading helps students develop greater control over the reading process through the development of reading strategies which assist decoding and construct meaning. The teacher guides or 'scaffolds' their students as they read, talk and think their way through a text.

Procedure:

Step 1: Teachers select texts to match the needs of the group so that the students, with specific guidance, are supported to read sections or whole texts independently.

Step 2: Students are organised into groups based on similar reading ability and/or similar learning needs determined through analysis of assessment tools such as running records, reading conference notes and anecdotal records.

Step 3: Every student has a copy of the same text at an instructional level (one that can usually be read with 90–94% accuracy. All students work individually, reading quietly or silently.

Teacher's role during reading

During the reading stage, it is helpful for the teacher to keep anecdotal records on what strategies their students are using independently or with some assistance. Comments are usually linked to the learning focus but can also include an insightful moment or learning gap.

7. Discovery-based learning

Discovery learning refers to various instructional design models that engages students in learning through discovery. Students can discover new knowledge by exploring new avenues or solving the problems based on their previous learnings.

Objective: Aims to promote: (1) "deep" learning, (2) meta-cognitive skills (develop problem-solving skills, creativity, etc.), (3) student engagement.

Procedure:

Step 1: Teacher has to share a problem-solving situation with the learners.

Step 2: Playing a role of a facilitator she has to create a scaffold.

Step 3: Now that the learners draw on their own past experiences and existing knowledge to discover new facts, relationships and information.

8. Project Based Learning

PBL is a model and framework of teaching and learning in which students acquire content knowledge and skills in order to answer a driving question based on an authentic challenge, need, problem or concern. PBL is different from projects.

Objective: Project Based Learning aims to develop employability skills also known as 21st century skills such as critical thinking, communication, and creativity. PBL also involves an ongoing process of reflection.

Step 1: Project Based Learning can be done collaboratively and within groups allowing for students to voice and choice as well as inquiry. Start with the Essential Question. Facilitator has to share a real world problem to be solved. Design a Plan for the **Project**.

Step 2: Create a Schedule.

Step 3: Monitor the Students and the Progress of the **Project**.

Step 4: Assess the Outcome.

Step 5: Evaluate the Experience.

9. Co-operative learning in collaborative classroom:

In this method small teams of students with different ability level (above average, average, below average) use a variety of learning activities to improve their understanding. Each member of the team is responsible for helping his/her teammate to learn.

Objective: To improve interpersonal skills, social skills, problem solving ability, & critical thinking.

Procedure:

Step 1: Divide the class into small teams with different ability level (above average, average, below average).

Step 2: Group them in such a way that on each bench average, below average and above average student are seated.

Step 3: Establish team norms by asking students to discuss and develop team norms.

Step 4: Teacher decides how individual students and their groups will be made accountable for their learning.

Step 5: Grade group task and individual task separately.

Step 6: Assign roles like, organizer, summarizer, team facilitator, spokesperson, etc., so that they perform those roles while interacting or presenting their learning on classroom stage.

10. Activity based learning:

It is a method to teach through activity in which students participate actively and learn by doing. In this method, whatever is learned is retained for a longer time. It requires that learning should be based on doing some hands-on experiments and activities.

Objective: To develop self-learning, self-confidence and decision making skills.

Procedure:

Step 1: Introduce the topic to be learnt, students remain receptive and the teacher will talk.

Step 2: Teacher will facilitate and the students practice the activity individually, in pairs or small groups.

Step 3: Students present what they have learnt by doing the activity with the help of verbal as well as written work.

NOTE: Every subject and topic can apply this method. It is only limited by the imagination of the teacher. It can start from Nursery wherein a child plays with clay or toys and goes till Adult Education wherein they demonstrate learning through speech or experiment.

11. Theme-Based Learning:

In this method emphasis is given on choosing a specific theme for teaching one or many concepts. Thematic learning takes place when different disciplines are all centered towards one definite topic. It helps students make connections, transfer knowledge and apply it. For example a theme that celebrates bird could include investigation of birds in students environment, writing a paragraph about birds, yarning science of flight, solving math word problem on how far birds travel, making a bird poem, etc. It is effective because one part builds on another.

Objective: To help the students think deeply and draw conclusions on various concepts.

Procedure:

Step 1: Decide a theme - It can be decided by teacher or the students. It can be a smaller topic or an integrated large system.

Step 2: Integrate the theme with the topic/concept spread across various subject keeping skills and content knowledge in mind.

Step 3: Enable students to participate in group activities and group discussions this helps in exploration of the subject.

Step 4: Plan an assessment that reflects the theme across subjects and ensures students have acquired the knowledge and skills intended.

NOTE: TEAM TEACHING may be applied here wherein two or more teachers from different subjects team up to combine their teaching periods in a block and teach together as per the theme.

12. Demonstration and guided practice:

It is an interactive learning method in which students and teachers collaboratively work to acquire mastery over a skill/activity/mathematic concept.

Phases in demonstration and guided practice:

- i) Modelling (I do)
- ii) Guided practice (we do together)
- iii) Collaborative peer practice (you do together)
- iv) Independent practice (you do independently)

i) Modelling-(I do)

In this phase the teacher teaches/performs by demonstration. Teachers demonstrates the skills to be learnt. It can be used in all subjects more particularly in Maths, Science, Arts and Crafts.

Objective: To acquire skills by imitation. Through guided practice, and collaboration.

Procedure:

Step 1: Before introducing the topic find out what the learner knows and arouse their interest in learning.

Step 2: Introduce the topic, demonstrate and explain each point in a way that each student understands.

Step 3: Let them do, call a student or the entire group and make them do the task. Explain the key points and summarize.

Step 4: Encourage questions for better understanding.

ii) Guided practice- (we do together)

During this phase teacher solves a problem on the board or completes an activity by following the steps as inputs by the students.

Objective: To help students build confidence in learning a particular concept/activity.

Procedure:

Step 1: Solve a problem or do an activity by taking inputs from the students.

Step 2: At times you have to prompt them to give their inputs.

Step 3: Teacher moves around in the class and sees how well the students have understood and provide individual remedial as needed.

Step 4: This is where feedback is essential give feedback to the students.

iii) Peer learning-(you do together)

In this phase the students learn from one another through direct interaction by sharing their ideas and participate in group activity in which they learn from one another.

Objective: To promote active learning by direct interaction among the students.

Procedure:

Step 1: Divide the class into small groups

Step 2: Introduce the topic /lesson

Step 3: Let the students discuss the topics among themselves, share their ideas and explain each other.

Step 4: After completing their discussion let the student share their ideas and summarize their learning with larger teams under teachers' supervision

NOTE: This phase can be used separately as an independent method for teaching any topic that requires collaboration or deeper understanding by doing it practically. And during this teacher has to supervise the group work and support them.

iv) Independent learning-(you do independently)

In this phase the students practice and do the task independently without teachers supervision`

Objective: To empower students to learn independently and improve their academic performance.

Procedure:

Step 1: Promote independent learning by encouraging self-learning and practice at school or home.

Step 2: Peer review and self-editing before the work is handed over.

Step 3: Submit the work to the teacher for final review and present in the classroom if required.

13. Story Boarding:

It is a method that help students to bring a story live by drawing it on a story board. They need to organize the story by listing its contents, keeping track of main ideas/events and supporting details in narrative by having them illustrate important scenes in a story or historical events/incidents.

Objective: To enhance students' creativity and improve comprehension skills.

Procedure:

Step 1: Ask the students to make a storyboard by taking a paper and drawing rectangles large enough for students to draw pictures with captions below.

Step 2: Ask students to draw main ideas of a story after hearing the story/lesson or while reading a story/lesson to themselves. Each drawing should have a short caption explaining what is happening in the picture.

Step 3: After completing storyboards, ask students to compare their storyboards with their partners/teams or groups and discuss what is similar/what is different in their storyboard and analyze the important ideas.

14. Humour an effective teaching tool:

It is an effective way to engage students and activate learning. Create a positive emotional experience that the students share with each other and the teacher. It can be used in textual (stories, jokes), pictorial (Cartoons, comics), action (Role Plays, Contests, Videos) or verbal (Acronyms, Word games) ways.

Objective: To strengthen student-teacher relationship, reduce stress make learning interesting and promote understanding.

Procedure:

Step 1: Keep a notice board in a corner of the classroom and post humorous quotes and encourage students to do the same.

Step 2: Begin the class with humour to create relaxed and positive learning environment. Start with a funny anecdote related to the subject matter.

Step 3: Illustrate important ideas in a funny way for example draw a cartoon with a speech balloon and write an important quote.

Step 4: Use humour to encourage deep thinking. Example: What if you were in the situation...

NOTE: Make sure the humour is in limit and is always positive or encouraging.

Sometimes, people make humour by teasing or insulting others which is a discrimination.

15. Z to A approach:

This method attempts to explain the application part of a particular concept first followed by its theory.

Objective: To create long lasting memory and correlation of concept.

Procedure:

Step 1: Demonstrate an object, experiment in the class or ask the students about a concept from the real world that they are familiar with like Discount in supermarket, Rear view mirror of the car, Flight of aircraft, etc.,

Step 2: Reason with students as to why and how it happens and let them apply their existing knowledge to explain.

Step 3: Write their replies as key words on the board to encourage more answers. Keep motivating them and give hints so that they inch in the right direction.

Step 4: Combine the answers of various students and slowly open up the topic as if the students have guessed it and discovered it themselves.

Step 5: Give a quick explanation to engrave it in their minds.

16. Role play and Scenario analysis based - teaching

This method creates a complete child centric environment wherein children becomes a part of the topic being taught and exhibit desired behavior. It promotes self-efficacy and willingness to take responsibility. It can be used to understand stories in languages, empathize situations in social studies and also solve problems or perform concepts in Maths and science. Act Discuss & reflect learn

Objective: To develop communication, social and emotional skills. And ultimately internalize the concept.

Procedure:

Step 1: Gather students to introduce the topic/story and encourage open discussion before the role play begins.

Step 2: Add details and make sure that everyone is clear about the story/topic.

Step 3: Identify all the characters and assign roles. Roles may not be limited to persons but personification of objects can be done to increase participants and generate interest.

Step 4: Each student can assume the role and act out the scenario.

Step 5: After the role play is finished discuss what they have learned so that they can learn from their experiences.

NOTE: In larger classrooms, make multiple teams and let them perform one after other. It excites COLLABORATIVE COMPETITION among teams and improves their level of performance. No more than four teams as it gets difficult to handle and consumes exorbitant time.

17. Student-led Teaching:

In this method student becomes the teacher and explains a given concept to the entire class individually, in pair or a small team. This will enable them to understand and retain what they have learnt for a longer time. It can be followed up after a cooperative learning or activity based learning session. It gives the teacher clear idea of students understanding and allows her to fill the gaps in learning.

Objective: To improve verbal communication and better understanding of concepts.

Procedure:

Step 1: Introduce a topic and allow the students to go through the topic and gather information about the topic. Act as a facilitator and move around the class to help them while they comprehend the topic through reading, discussions or conceptualization.

Step 2: Ask them question about the topic, what they think about it and how they can explain it.

Step 3: Give them time to elaborate it in their own way. Don't correct or support them.

Step 4: Ask them questions, examples and explanation.

Step 5: Once they have completed teaching fill in the gaps of students learning.

18. Mnemonics

Mnemonics are effective tools to learn & retain information. Teachers can develop mnemonic strategies and train students to develop their own.

Objective: To enhance student's memory and improve creativity.

Step 1: Discuss the topic to be learnt and pre-select a mnemonic strategy either designed by teacher or the student. Examples of some strategies

Key word: is a familiar word that sounds similar to the word or idea being taught. Peg

word: peg words are rhyming words. For example one-bun

Letter: it includes acronyms, acronym can be used by students to recall by forming words by taking first letters of what is to be learnt.

Step 2: Students should go through the steps of mnemonics until they can do it independently.

Step 3: Allow students to practice mnemonics orally

Step 4: Give them feedback.

1. Name Mnemonics

ROY G. BIV = colors of the spectrum (**R**ed, **O**range, **Y**ellow, **G**reen, **B**lue, **I**ndigo, **V**iolet.)

2. Expression or Word Mnemonic

The 7 coordinating conjunctions are **F**or, **A**nd, **N**or, **B**ut, **O**r, **Y**et, **S**o = **FANBOYS**.

19: Mind Mapping:

Mind map is a graphical way to represent ideas and concepts. It is a visual thinking tool that helps structuring information, it helps to analyze, comprehend, recall and generate new ideas. It is a revolutionary approach for both teaching and learning.

Objective: To enhance creativity, logical thinking, radial thinking and assimilation.

Procedure:

Step 1: Identify Key words from a text, theory, concept or topic to be learned.

Step 2: Draw a central idea on a landscape page.

Step 3: Create branches that are colorful, curved and reducing from start to end.

Step 4: Write key words in logical connectivity on top of each branch. Only one word per branch.

Step 5: Create sub branches as per the idea and key words.

Step 6: Draw images, pictures or shapes near the branch or the word to make it more colorful, attractive and presentable.

NOTE: Students capture this whole mind map as an image and remember all the keywords in the form of a logical story. Encourage them to think radially as the brain is structured and functions similarly by creating connections between neurons.

20. Hybrid learning

A good working definition is that hybrid learning is synchronous learning that teaches both in-person and online learners simultaneously.

Objective: To make learning more accessible to the differently-abled, but it also allows educators to reach remote areas, helps students stay connected during long absences, and familiarizes both educators and learners with the latest communication technologies.



A Complete Guide to Online Learning

Resilient response to Pandemic

- With schools remaining closed for an extended duration came the reality of online teaching and learning. The entire educational system from teaching, learning and evaluation has undergone a radical 360° change.
- Thanks to the Information and Communication Technology (ICT) that has helped us seamlessly navigate through time and space, metaphorically compressing them.
- The entire education community resiliently responded to the shocks and aftershocks of the pandemic. We all made massive efforts in a short time to respond to the shocks to education system. This remind us that the change is possible.
- The changes coronavirus have caused might be here to stay. It is certain that online education will eventually become an integral component of the school education resulting in the blended i.e., both offline and online models to go hand in hand together.

Emerging Innovations in Education

As a blessing in disguise this crisis has stimulated innovation within the education sector. But from a teacher's point the challenge is a very little technical know-how. Teachers who are intimidated by technology now have to take the bull by its horns. That is for many of us who are proficient at planning and teaching in the traditional teacher fronted-classroom requires some re-learning in order to bridge the Digital divide. Teacher readiness for online teaching is critical as we all are at varying levels in this journey.

As we have experienced the unprecedented ongoing changes in education and probably more to unravel in the near future because it is imperative to happen as many are planning to make e-learning as a part of their 'new normal' after experiencing the benefits first-hand. Many are thinking not to confine students to the brick and mortar classrooms when they have accessibility and has learnt to be autonomous.

Mentorship –The all-round support and guidance that we provide in this book is based on research and years of experience in teaching and learning—lessons learned in more 'normal' times but are still applicable now.

- Our findings point at the design of learning experiences with the combination of three types of presence (social, cognitive and facilitatory) and the need for adaptive assessment to the new learning requirements.
- It is very crucial for every teacher to be equipped with the assessment and pedagogical skills to meet students at their level and to implement the accelerated curricula and differentiated learning strategies likely to emerge in the return to school.

Benefits of digitization of Education-Research suggests that learning via digital resources has proved to be fun and shown to increase retention of information, better comprehension in less time, meaning the online-learning has proved to be effective for these techno-wizard millennia's. On an average, students retain 25-60% more material when learning online compared to only 8-10% in a classroom. Also students can learn at their own pace, going back and re-reading, skipping, or accelerating through concepts as they choose and are benefitted by both synchronous and asynchronous forms of teaching and learning.

In What Aspects Do You Think Online Learning Design and Delivery Is Different than Face-to-Face Teaching and Learning?

With the standpoint of contextualizing learning there are three key differences between face-to-face and online learning. They include: (1) space and presence, (2) self-presentation, and (3) interaction.

Space and presence-In respect of space and presence the online learning has a vantage over the face-to-face classrooms. The teaching and learning can be both synchronous temporally (audio or video conferencing) and asynchronous (mail, text messaging, text-based conferencing or pre-recorded audio or video sharing) in an online learning model.

The asynchronous tools allows students more flexibility in thinking and response time as well as time to craft one's persona.

Self-presentation through collaborative learning

---This is the most under-appreciated aspect of offline educational scenarios too. To let the learners develop both social and cognitive skills even at a distance, they must have means to establish both formal and informal contacts with each other.

---From a teacher's perspective, this means to stimulate collaboration through group assignments or projects, perhaps also by introducing peer-teaching or peer-assessment.

---To help students collaborate make it easy for them to talk to each other, share experiences, tips, etc., by creating at least one channel or chat room private to the students with minimal involvement of a teacher. This helps them become better at regulating their own learning activities.

Collaboration platforms that support live-video communication

- Dingtalk – Communication platform that supports video conferencing, task and calendar management, attendance tracking and instant messaging.
- Lark – Collaboration suite of interconnected tools, including chat, calendar, creation and cloud storage Lark, a Singapore-based collaboration suite initially developed by
- Byte Dance as an internal tool to meet its own exponential growth, began offering teachers and students unlimited video conferencing time, auto-translation capabilities, real-time co-editing of project work, and smart calendar scheduling, amongst other features. To do so quickly and in a time of crisis
- Hangouts Meet – Video calls integrated with other Google's G-Suite tools.

Team- Chat, meet, call and collaboration features integrated with Microsoft office software.

Skype - Video and audio calls with talk, chat and collaboration features.

We Chat Work - Messaging, content sharing and video/audio-conferencing tool with the possibility of including max. 300 participants, available in English.

Zoom - Cloud platform for video and audio conferencing, collaboration, chat and

Enhancing Social skills online

On the premise that learning is social that is, we learn from others and with others even if are at a distance. In this regard, the way a teacher can be present online is not just talking to the camera during videoconference sessions but providing timely and accurate feedback, both on questions and as evaluations.

· It can be through personal chats during and after a session using from a wide-range of tools called the LMS (Learning Management System). Assigning group projects and interactively mentoring the learners throughout their journey using the LMS. We have provided an exhaustive list of the Learning Analytics(LMS).

Digital learning management systems

- Century Tech –Personal learning pathways with micro-lessons to address gaps in knowledge, challenge students and promote long-term memory retention.
- Class Dojo –Connects teachers with students and parents to build classroom communities.
- Edmodo –Tools and resources to manage classrooms and engage students remotely, offering a variety of languages.
- Edraak –Arabic language online education with resources for school learners and teachers.
- Ek Step –Open learning platform with a collection of learning resources to support literacy and numeracy.
- Google Classroom – Helps classes connect remotely, communicate and stay-organized.
- Moodle –Community-driven and globally-supported open learning platform.
- Nafham –Arabic language online learning platform hosting educational video lessons that correspond with Egyptian and Syrian curricula.
- Paper Airplanes –Matches individuals with personal tutors for 12-16 week sessions conducted via video conferencing platforms, available in English.
- Schoology –Tools to support instruction, learning, grading, collaboration and assessment.
- Seesaw –Enables the creation of collaborative and sharable digital learning portfolios and learning resources.
- Skooler –Tools to turn Microsoft Office software into an education platform.

Systems built for use on basic mobile phones

Cell-ED –Learner-centered, skills-based learning platform with offline options.

Eneza Education- Revision and learning materials for basic feature phones.

Funzi – Mobile learning service that supports teaching and training for large groups.

KaiOS – Software that gives smartphone capabilities to inexpensive mobile phones and helps open portals to learning opportunities.

Ubongo – Uses entertainment, mass media, and the connectivity of mobile devices to deliver localized learning to African families at low cost and scale, available in English.

Ustad Mobile –Access and share educational content offline.

Systems with strong offline functionality

Kolibri – Learning application to support universal education, available in more than 20 languages.

Rumie – Education tools and content to enable lifelong learning for underserved communities.

Ustad Mobile – Access and share educational content offline.

What Are Some Effective Ways of Monitoring Students' Engagement and Learning during Online Courses? How Can They Inform Assessment?

- One way is controlling the data on students' activities in the Learning Management System (LMS) used—the so-called learning analytics. Key indicators can be downloading a text, posting to a forum, accessing the course at least once a week, etc.
- It is important to monitor learner progress. Simple learning analytics data/traces (log ins, number and frequency of online contributions, etc.) can be very helpful in alerting you to students who are in danger of dropping out, getting lost, etc.
- If an instructor is designing sequences of tasks for students to engage in (individually, in groups or teams, etc.) then that, by its nature, provides you with another window into student engagement.
- An instructor can also ask learners to comment on course and task designs, resources available, quality of infrastructure and tools; this helps the instructor to fine-tune what is being offering, and it helps the learners get better at judging what they need.
- It also strengthens the relationship between teacher and students. Look at some of the core ideas in the 'students as partners' area for further inspiration. There are numerous LMS available and we have listed them above.
- Indeed, log files in learning management systems can be useful in determining course access rates, frequency and duration of interaction with particular content and course tools and assignment submissions.
- When a student is inactive, or lagging behind, an instructor can send an email or make a phone call to open communications about time management, misunderstandings and comprehension of course content and processes.

Techno-Pedagogical framework

- Online teaching and learning involves a diverse array of tools, resources, pedagogical approaches, roles, organizational arrangements and forms of interaction, monitoring and support—with many possible combinations of substitution and integration.
- An Intelligent pedagogy is an approach to teaching and learning in which technology is used to enhance the learning experiences. Examples include using the media tools such as Co Spaces Edu, Google Expeditions, Lark etc., to design and assess the learning.
- Augmented reality or AR is a visual and sometimes interactive experience in a real-world environment where the objects in the real-world are “augmented” by computer-generated perceptual information. These virtual enhancements in the real world can appear as something visual and auditory. The incorporation of AR into your classroom or lessons will kick the learning curve high.
- There are several user-friendly tools to incorporate augmented reality with tutorials for the beginners to start making their own simulated learning experiences. All of these apps come with the tutorials to help you prepare your own creatively blend the physical and the digital worlds, create AR scan codes. These resources are a perfect fit to your classroom:

1. HP Reveal

The idea of HP Reveal (previously “Aurasma”) is simple: you make any image (a photo, graphics, text document, ...) scannable with a smartphone or tablet (iOS or Android), and associate an action to take when the image is scanned. An action can be: display a movie, show an extra explanation, refer to a website, etc. This way, you enrich simple paper posters, images, QR-codes, and many more for people who use the Reveal app to look at them.

2. Co Space edu

This app is a content creation app for students. With CoSpaces, students can build their own 3D objects and animate them with code. Students can explore any creations with the VR and AR view modes.

The app enables students to project their virtual creations onto any surface in the real world in AR. You can even hold the creations in your hands with the MERGE Cube.

3. Wonderscope

Wonderscope is a storytelling app that uses augmented reality to transform ordinary places into realtime stories. Students also learn to read with the app. They ask questions to the characters in the story and listen to the characters' answers.

4. Lavar

With this augmented reality software, you can enhance flyers, postcards, packaging or any other item with interactive content, including video messages, Web and social links, photo slideshows, music clips and much more! Imagine what this app can do with your traditional paper worksheets...

5. Shapes 3D

Use this AR app for math, or more specifically, to teach geometry. Create prisms, pyramids, solids of revolution and Platonic solids. Start easy with simple figures and gradually explore the most complex ones.

This AR tool wants to enhance the teacher's capabilities and provide possibilities to show things that cannot be shown with physical tools or within the classroom.

6. Google Expeditions

Google Expeditions offers a mix between AR and VR and allows a teacher to guide students through 360° scenes and 3D objects, pointing out interesting sites and artifacts along the way. They have lots of augmented reality courses. Download the free app “Expeditions” and let your students explore history, science, arts, and the natural world. This augmented reality app is available for IOS and Android.

7. Metaverse

With the Metaverse app, students can play mobile games in augmented reality, go geocaching have location-based experiences, make puzzles, choose their own adventure and go on scavenger hunts. With the Metaverse studio, you can create your own interactive stories and breakout games for your students. Get a free account and discover how amazing this app is!

8. AR Makr

AR Makr is a creative toolbox for augmented reality. With this app, students can sketch, scan, and snap the environment around them. Let them transform creations from 2D to 3D virtual objects. When you've created a 3D AR object, you can place your creations anywhere in your environment. Students can also record, save, and share scenes with their teacher.

- BookWidgets enables teachers to create fun and interactive lessons for tablets, smartphones, and computers. This is created and managed by Google for Education. Visit the URL to experience it:

<https://www.bookwidgets.com/blog/2018/12/10-fun-augmented-reality-apps-for-teachers-to-use-in-the-classroom>

Student-Centred Lesson Designing

A good quality design must include 'clearly defined learning objectives, carefully structured content, productive student- engagement, controlled workloads for faculty and students, integrated media, relevant student activities, and assessment strongly tied to the desired learning outcomes'.

- For a successful online learning it has to be a student-centered design, i.e. carefully thinking about what students will actually have to do to learn which aims at developing the essential competences.

- This entails conducting a proper task analysis, i.e. thinking to the practicalities about their learning. Of course, among what students should do, we can include listening to the instruction, reading a text or watching a video from the repositories and/or a pre-recorded video.

- It must allow self-paced learning and reflection for the learners. The role of a teacher must be more focused on facilitation and on the student support.
- It is evident that online teaching and learning is inclined more from materials (readings, videos, exercises, etc.) than direct personal interactions. So, we have identified and listed the highly advanced tools for creating your own materials using AR (Augmented Reality, the cutting-edge technology) and to find the resources from the available repository.
- Learners can review the learning resources and improve activities multiple times, and teachers can monitor their progress following all the process through LMS. It is more flexible.

Tools for teachers to create the digital learning content

Thinglink –Tools to create interactive images, videos and other multimedia resources.

Buncee –Supports the creation and sharing visual representations of learning content, including media-rich lessons, reports, newsletters and presentations.

EdPuzzle –Video lesson creation software.

Kaltura –Video management and creation tools with integration options for various learning management systems.

Nearpod – Software to create lessons with informative and interactive assessment activities.

Pear Deck –Facilitates the design of engaging instructional content with various integration features.

Squigl –Content creation platform that transforms speech or text into animated videos.

Trello - A visual collaboration tool used by teachers and professors for easier coursework planning, faculty collaboration, and classroom organization.

Systems with strong offline functionality

Kolibri - Learning application to support universal education, available in more than 20 languages.

Rumie –Education tools and content to enable lifelong learning for underserved communities.

Ustad Mobile –Access and share educational content offline.

Massive Open Online Course (MOOC) Platforms

Alison –Online courses from experts, available in English.

Canvas Network – Course catalogue accessible for free for teachers in order to support lifelong learning and professional development.

Coursera –Online courses taught by instructors from well-recognized universities and companies.

European Schoolnet Academy –Free online professional development courses for teachers in English and other European languages.

EdX –Online courses from leading educational institutions.

Future Learn –Online courses to help learners study, build professional skills and connect with experts.

TED-Ed Earth School - Online Lessons about nature made available continuously during a 5 week period between Earth Day (April 22nd) and World Environment Day (June 5th).

BBC Bitesize to help with your homework, revision and learning. Find *free* videos, step-by-step guides, activities and quizzes by level and subject.

Self-directed learning content

ABRA - Selection of 33 game-like activities in English to promote reading comprehension and writing skills of early readers.

British Council - English language learning resources, including games, reading, writing and listening exercises.

Code It - Helps children learn basic programming concepts through online courses, live webinars and other kid-friendly material.

Code. org - Wide range of coding resources categorized by subject for K12 students offered for free by a non-profit.

Duolingo - Application to support language learning.

Edraak - A variety of resources for K-12 education in Arabic, targeting students, parents and teachers.

Facebook Get Digital - Lesson plans, conversation starters, activities, videos and other resources for students to stay connected

Feed the Monster – Android application in multiple languages to help teach children the fundamentals of reading, available in 48 languages.

Khan Academy - Free online lessons and practice in math, sciences and humanities, as well as free tools for parents and teachers to track student progress. Available in 40+ languages, and aligned to national curriculum for over 10 countries.

KitKit School - Tablet-based learning suite with a comprehensive curriculum spanning early childhood through early primary levels.

Lab X Change - Curated and user-created digital learning content delivered on an online platform that enables educational and research experiences.

Madrassa- Resources and online lessons for STEM subjects in Arabic

Mindspark - Adaptive online tutoring system that helps students practice and learn mathematics.

One Course - Child-focused application to deliver reading, writing and numeracy education.

Profuturo - Resources in different subject areas for students in English and other languages.

Polyup - Learning content to build math and gaining computational thinking skills for students in primary and early secondary school.

Quizlet - Learning flashcards and games to support learning in multiple subjects, available in 15 languages.

Smart History - Art history site with resources created by historians and academic contributors.

YouTube - Huge repository of educational videos and learning channels.

Mobile reading applications

Global Digital Library - Digital storybooks and other reading materials easily accessible from mobile phones or computers. Available in 43 languages.

Interactive Learning Program - Mobile app in Arabic to advance reading, writing and numeracy skills created by the United Nations Relief and Works Agency.

Reads - Digital stories with illustrations in multiple languages.

Room to Red - Resources to develop the literacy skills of children and youth with specialized content to support girls.

Story Weaver - Digital repository of multilingual stories for children.

World Reader - Digital books and stories accessible from mobile devices and functionality to support reading instruction. Available in 52 languages.

Tools for teachers to create of digital learning content

Thinglink - Tools to create interactive images, videos and other multimedia resources.

Buncee - Supports the creation and sharing visual representations of learning content, including media-rich lessons, reports, newsletters and presentations.

Ed Puzzle - Video lesson creation software.

Kaltura - Video management and creation tools with integration options for various learning management systems.

Near Pod - Software to create lessons with informative and interactive assessment activities.

Pear Deck - Facilitates the design of engaging instructional content with various integration features.

Squigl - Content creation platform that transforms speech or text into animated videos.

Trello - A visual collaboration tool used by teachers and professors for easier coursework planning, faculty collaboration, and classroom organization.

External repositories of distance learning solutions

Brookings - A catalogue of nearly 3,000 learning innovations. Not all of them are distance learning solutions, but many of them offer digital education content.

Common Sense Education - Tips and tools to support school closures and transitions to online and at-home learning.

Common Wealth of Learning - List of resources for policymakers, school and college administrators, teachers, parents and learners that will assist with student learning during the closure of educational institutions.

Ed Surge - Community-driven list of edtech products, including many distance learning resources for students, teachers and schools, covering primary to post-secondary education levels.

GDL Radio: a collection of radio and audio instruction resources.

Global Business Coalition for Education - List of e-learning platforms, information sharing platform and communication platforms.

Keep Learning Going - Extensive collection free tools, Strategies tips and best practices for teaching online from a coalition of USA - Bases Education organization, Includes descriptions of over 600 + Digital learning solutions. Koulu. Me - A collection of apps and pedagogical solutions curated by Finnish edtech companies of facilitate distance for pre - primary to upper secondary learners.

26 Tools to Create Online Assessment

- The use of ICT can add value to the assessment process, both for teachers and students. Its use facilitates more continuous monitoring of learning experiences and processes.
- The management of personalized qualitative feedback, automatic feedback for receiving immediate responses, the use of diversified instruments and strategies of assessment (self, peer and group assessment), collecting data generated by the system and informing about the learning process is very useful for teachers and students, as learning analytics strategy, to support and scaffold learning at any time.
- During remote learning, teachers will have to evaluate students for more than educational proficiency. The best online assessment tools for teachers to let them interact with students on a personal level are:

1. Poll Everywhere-If you prefer asynchronous and self-paced quizzes, consider turning your live activity into a Survey.
2. Moodle- Moodle is a open source platform. *It* offers many different systles of asesment, from quizzes to workshops to lessons.
3. Socrative| Student Response system: It is an cloud based student response system that allows teachers to easily create polls, quizzes and other educational exercises for their class and monitor their students' response and progress.
4. LearningPod: Open *Assessments!* *Learningpod* is an online library of practice and *assessment* questions.
5. Google forms: Allows you to innovatively create or use *Google Form* for student surveys, quizzes, and *assessments*.
6. Kahoot-Game based assessment tool
7. Answer Garden Real-time polling and brainstorming tool
8. Back Channel Chat Teacher-moderated Twitter-type assessment tool for education
9. Chatzy Lets students chime in with questions or opinions during a lecture
10. Coggle Mind-mapping tool that lets you get a handle on student thinking
11. eSurvey Creator Make student surveys and questionnaires fast
12. Flipgrid – Let students make quick videos that respond to teacher prompts
13. Formative Give live assignments, grade them, and give immediate feedback
14. Lino A sticky-note-based virtual blackboard that lets students chime in
15. Naiku Make quizzes that students can take on mobile devices
16. Pear Deck Create interactive presentations students can take part in via smartphones
17. Plickers Collect formative assessment data in real time with no need for student devices

18. The Queue free educational chat tool that's similar to Twitter and facilitates remote class discussion
19. Quizalize Create homework and Quizzes quickly, with a fast-grading feature
20. Quizlet Develop tests quizzes, flashcards, and study games for mobile
21. Remind Send quick texts to students and parents to check for understanding
22. Sparkpost Adobe app that lets teachers create exit tickets with visuals and graphics
23. Survey plannet create quick surveys to get a grasp on student knwoledge
24. Type form Create polls with graphical elements
25. Voice Thread Create discussions around documnets, video and other materials
26. Zoho Survey - Make Mobile - Ready Student surverys and get real - time results

Classroom Learning Resources

Teaching Aid is an object such as a picture, map or device such as a dvd or computer used by a teacher to enhance or enliven classroom instruction. It is the material used by a teacher to supplement classroom instruction and to stimulate the interest of students.

Therefore, the teaching aids are the tools that facilitate the objective of assisting teachers in differentiating instruction. Using aids such as graphs, charts, flashcards, videos, provides learners with visual stimulation and the opportunity to access the content from a different vantage point. This gives each learner an opportunity to interact with the content in a way which allows them to comprehend more easily.

Why use teaching aids?

- Teaching aids are an integral component in any classroom. As we all know that today's age is the age of science and technology. The teaching-learning programmes have also been affected by it.
- As we move toward a more digital society, kids are being exposed to technology and digital devices at a younger age. Video games, iPods and other electronic gadgets are now being used by these digital-age children for entertainment, so when they come to school they have little patience for lecture style teaching.
- Students are seeking constant excitement and simply have no tolerance for boredom. So, the use of Teaching aids improve the quality of understanding and learning in today's classroom and also provide students with the sense of excitement they desire.
- The myriad benefits of teaching aids include helping learners improve their comprehension skills, illustrating or reinforcing a skill or concept, differentiating instruction and relieving anxiety or boredom by presenting information in a new and exciting way.
- It caters to the needs of the various learning types in the class helps to retain the learnt material/concept permanently. Teaching aids provide direct experience to the students. They also engage students' other senses since there are no limits in what aids can be utilized when supplementing a lesson.

Thus, teaching aids helps us to make the learning environment more interesting and engaging.

Types Of Teaching Aids

In order to best reach for the differentiations among the learning potentials of learners i.e., we can classify students as visual learners, auditory learners, multi-sensory learners (both Audio-Visual), and kinesthetic.

There are many aids available these days and teachers can also prepare their low cost materials. We may classify these aids as follows-

- (a) Visual Aids
- (b) Audio Aids
- (c) Audio - Visual Aids (d) Kinesthetic Aids

Visual Aids

The aids which use sense of vision are called Visual aids. They are:

Actual objects- At times it is possible to bring and use certain actual objects to enhance learning among the students. For instance, thermometers to measure the body temperature, spring balance for weighing etc.

Models- These models could be again working models such as model of a Heart demonstrating blood circulation, or dummy models like globe, 3-D shapes etc.

Pictures/charts- This tend to provide a clear concept of certain images that text books cannot such as pictures of Human Cell, Solar system etc.

Maps- These provide us a clear picture of a region of a world or the world in general depicting geographical boundaries and the various land forms.

Flash cards- These can be best used for Pre-primary sections which help them associate a word for an object and thus help them build their knowledge about things and persons around them. For example: flash cards for vegetables, fruits, community helpers etc.

Flannel board- A flannel board (or sometimes called a felt board) is a board covered with flannel that we can use in a variety of ways. Flannel is soft and has fibers in it that catch or cling onto other soft materials. Flannel comes in all colors. We can use them for almost everything that we like to display on it or also for storytelling.

Bulletin board- As a teacher, it is always a good idea to have interesting bulletin boards and displays around our room. These can satisfy a variety of needs, including the presentation of student work, the imparting of important information, and the reinforcement of key elements in the curriculum.

Chalkboard/marker board

Overhead projector- The OHP is a small machine designed to project an image onto a small screen or whiteboard.

Slides(Power point presentation)- This has been now used widely by the teachers to present information in an organised manner which gives a glimpse of the content taught over the screen and the students can also make present their own as well.

Theme rooms- This can mostly be used for the Pre-primary classes wherein a particular theme has to be taught and for this an entire room has to be allotted. For instance, we can create the Tundra region by providing a cool effect and decorating the room with cotton to give an effect of snow and models of polar animals can be kept.

Cut outs- This is very handy to use as teacher can take cut outs of pictures/images that are not available in the text books and distribute among the students during a class.

Audio Aids

The aids that involve the sense of hearing are called Audio aids. For example : radio, audio recorder set etc.

Audio - Visual Aids

The aids which involve the sense of vision as well as hearing are called Audio- Visual aids. For example: smart board, projector, film strips etc. These can help us to show certain abstract things that cannot be naturally brought into the classroom. For instance, the habitats of birds, Prey-predator relationship among the wild animals, melting of glaciers etc.

Kinesthetic Aids

In this we can make use of tactile aids in which **learning** takes place by the students carrying out physical activities, rather than listening to a lecture or watching demonstrations. These aids give them the ownership of learning by doing i.e., hands-on-experiences. For example:

Language lab- These can be exclusively used by the English teachers for improving the language efficiency of their students wherein the students are provided an opportunity to listen to the native speakers of the language, and are also allowed to speak.

Science lab- It provides hands on experiences for learning the sciences by doing rather than mere listening or watching others.

Computer lab- These can be best used to show abstract objects or models that other aids cannot and gives a virtual reality of natural processes. For example, in Bio-sciences the stages of cell division; the volcanic eruptions in geography etc.

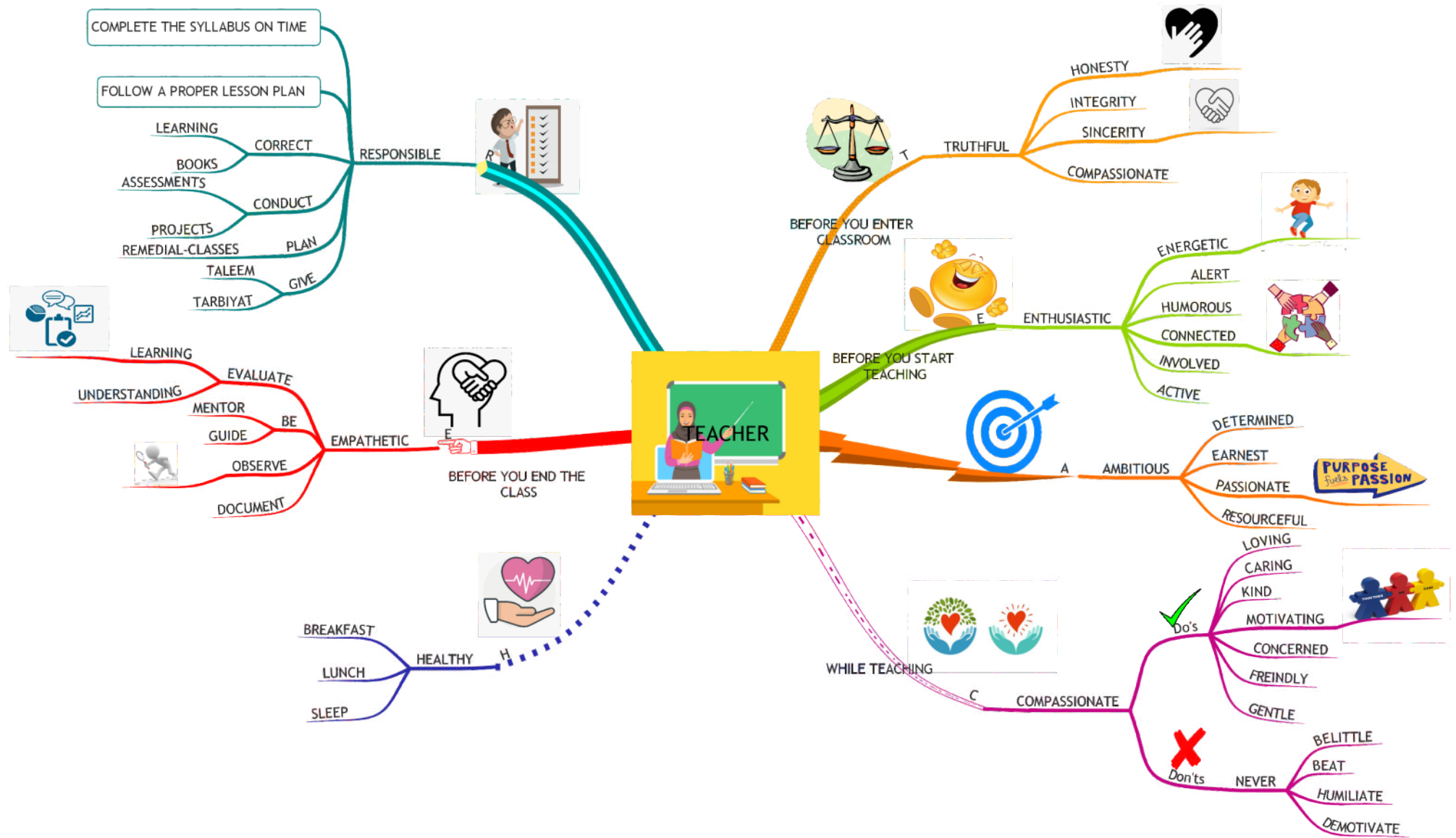
Field trips- These provide real life opportunities for the students to explore the world around them. For instance, by taking them to the industries, markets, nursery, places of work, places of worship etc.



Innovate –Paradigm Shift from Teaching to Learning

Intervene – Perform Action Research to ensure every child succeeds

Inspire – Students to lead and take responsibility



Notes

[illegible]