

MILA in Public Health Dentistry - A Learner Centred Model Approach

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Abstract--- Our significant shortcoming in the education system for many decades has been to ignore the Brain based active learning that utilizes all senses maximizing the learning experience as well as nurture the greater depth of reasoning. A student sitting at a square table, with a square piece of paper, in a square room with departmentalized topics and a regurgitating curriculum utilizes approximately 3% of the brain's capacity. This classic industrial age approach of teaching was found to be more prevalent among many Dental Universities in India. Dental educators should therefore attempt to utilize creative and innovative methods of teaching to accommodate students with differing learning styles to provide an opportunity to maximize their learning skills. One such learning method was adopted in Saveetha dental college is MILA (Multiple Interactive Learning Algorithm) which promotes active learning

among students and also ensures that they truly retain the knowledge and information they receive. Activities such as POGIL (Process Oriented Guided Inquiry Learning), Classroom Cartoon Character (game based learning), peer-led team based learning, role play, critical pedagogy and Jigsaw classroom method which enabled the students to find and apply information relevant to clinical cases and foster higher-order reasoning skills. Therefore, This paper aims to discuss the lecturer's experience and student's perception towards MILA in Public Health Dentistry topics. This model was employed on Saveetha Dental college third year dental students during their Pit & Fissure sealants, Atraumatic Restorative treatment, Tobacco cessation counselling, Fluorides in dentistry, Health Planning cycle, Evaluation, Levels of Prevention and Primary Health care lectures.

Keywords--- Flipped Class, Public Health Dentistry, MILA, Teaching, Learning.

INTRODUCTION

Chinese philosopher and reformer Confucius (551 BC to 479 BC), who stated *"I hear and I forget. I see and I remember. I do and I understand"* (1). A true learning continues until it is put into action. Learning is a natural human process and several models have been put forward to explain this process, or the ways that a student can acquire his or her knowledge and skills.

The impact of teaching plays a very important role in the learning outcomes which in turn plays a significant role in generating effective professionals. Teaching is a multiplex activity which involves not only giving instructions but also stimulation of learning. The effectiveness of teaching depends on how much has been understood by the students (2).

Times are changing and the students are totally different from decades ago. However, the education system followed in the majority of dental colleges in India remains the same and most of the teaching methods are still limited to giving lectures to large groups.

According to The State of Tennessee's Student/Teacher Achievement Ratio (STAR) Project (3) reducing the size of the class will bring about more benefits for the students and the teachers (3). The advantage of small group learning, where the teacher spends less time for managing the students, more time can be utilized in teaching (4).

Hence, a unique and exclusive teaching protocol was followed in Saveetha Dental college, India, which involves small group learning, short lectures and a particular algorithm approach. This is a learner-centered model where there is an integration of class room and applied work based experience. In this model, the onus is on the student to direct their own learning. On the other hand, lecturers need to be innovative and understand that there are numerous ways in which a student learns the subject. Studies have reported that promoting innovative and interactive sessions is equally important than just teaching to a mere small group of students (2).

With the above mentioned Chinese quote, that a student will remember and hopefully understand more by reading, hearing, seeing, saying and teaching someone else- therefore teaching methods should be inclusive of all of these activities in class. Dental Educators should adopt to mix and match their teaching methods to assist dental students with differing learning styles.

MILA (Multiple Interactive Learning Algorithm) model was followed by lecturers in Saveetha Dental College to maximise student learning. This method stimulate interest, provide core knowledge about a particular topic and encourages higher order of thinking among students. MILA provides a optimal learning environment and aims towards holistic development of the students in all dental subjects.

This paper aims to share the lecturers experience and student's perception towards MILA in Public Health Dentistry topics. This model was employed on Saveetha Dental college third year dental students during their Pit & Fissure sealants, Atraumatic Restorative treatment, Tobacco cessation counselling, Fluorides in dentistry, Health Planning cycle, Evaluation, Levels of Prevention and Primary Health care lectures.

A. Pit and Fissure Sealant

Pit and fissure sealant is a very important concept in Preventive dentistry. Students have difficulty in remembering and understanding the various steps in application of a sealant.

The role of fissure sealants in caries prevention is well established in the literature (5). A recent update of a Cochrane review evaluated the caries preventive effect of sealants in children and adolescents, compared with a no sealant control group. The application of sealant reduced the caries increment (6).

Pit and fissure sealant is an effective means of preventing pit and fissure caries in primary and permanent teeth. Dentists should therefore be encouraged to apply pit and fissure sealants in combination with other preventive measures in patients at a high risk of caries. Sealant placement is a sensitive procedure that should be performed in a moisture-controlled environment. Maintenance is essential and the reapplication of sealants, when required, is important to maximize the effectiveness of the treatment (7).

We utilized the following method of pedagogy in a class.

The Learning objective included a 20 minutes of active teaching of various concepts in Pit and fissure sealants. Introduction, History, Morphology, Type, Indications & contraindications using Slides and videos.

***I. POGIL - The POGIL Project is not about egos and CVs, but about putting the students first and providing teachers with tools to optimize learning."*— Shawn Simonson, Boise State University**

POGIL Project was carried out for a duration of 20 Minutes where the student is shown various materials used for pit and sealant procedure and further encouraged to search various commercially available pit and fissure sealants available in the market. Later, the student is asked to categories various types of sealants accordingly.

Later 20 minutes of discussion about steps in application of sealant is explained to the student. The same is explained to the student in the form of a cartoon character Named "Polly" (refer Figure 1a to 1h).

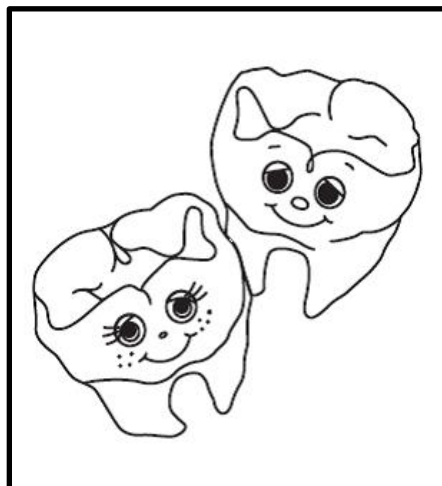


Figure 1a: Select the Teeth Indicated for Sealant

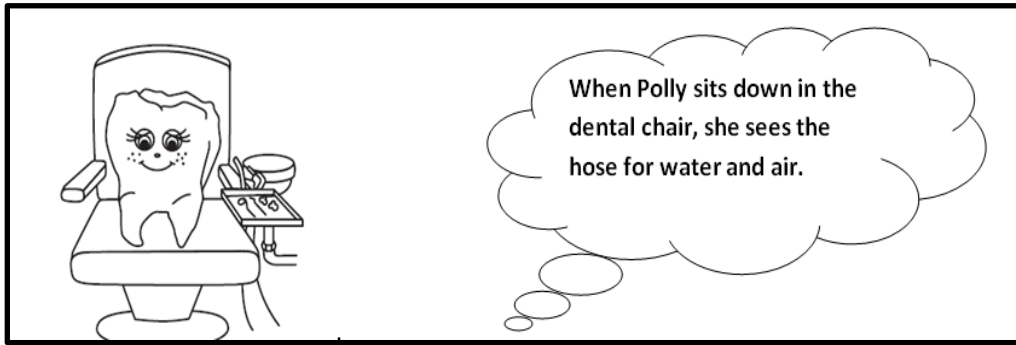


Figure 1b: Isolation of Teeth

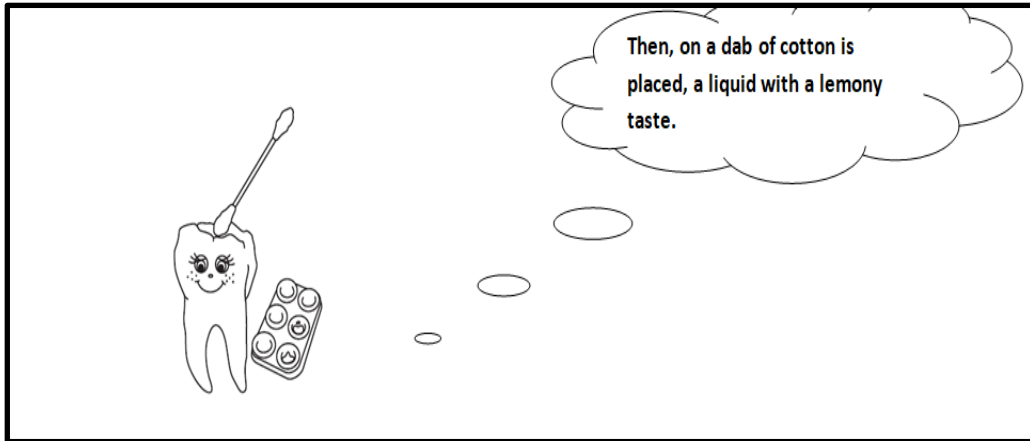


Figure 1c: Clean the Tooth Surface

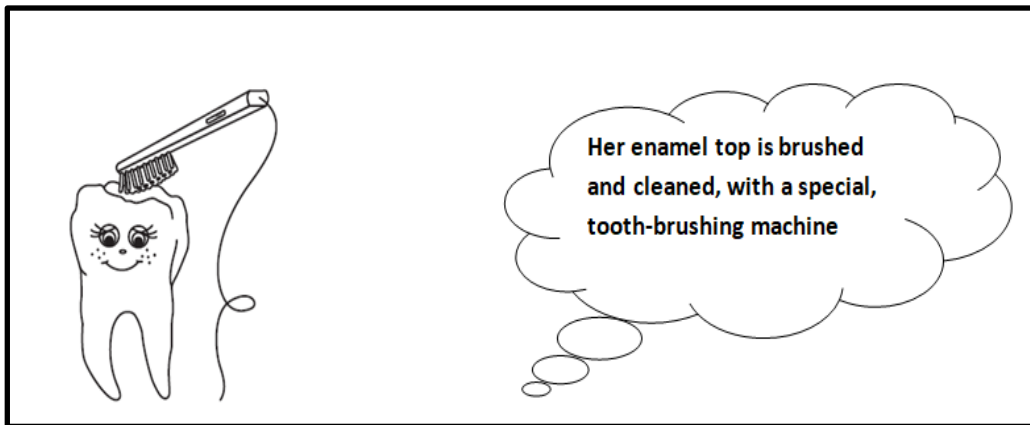


Figure 1d: Etch the Tooth Surface

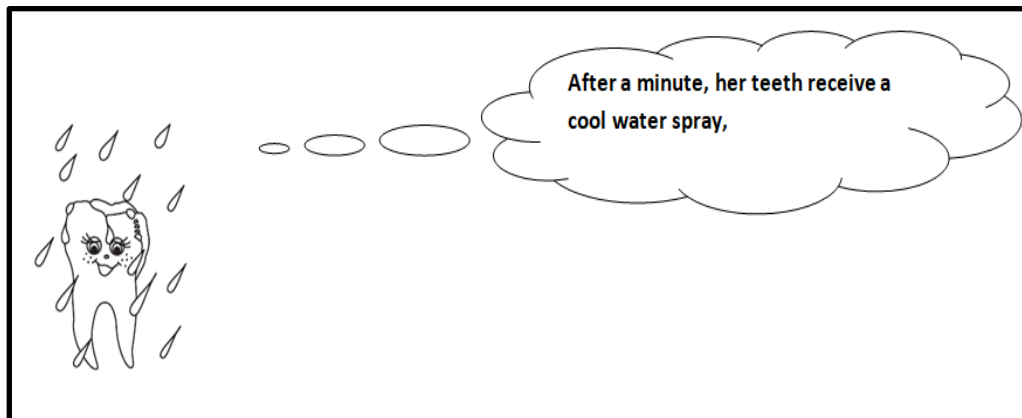


Figure 1e: Rinse the Tooth Surface for 30 Seconds

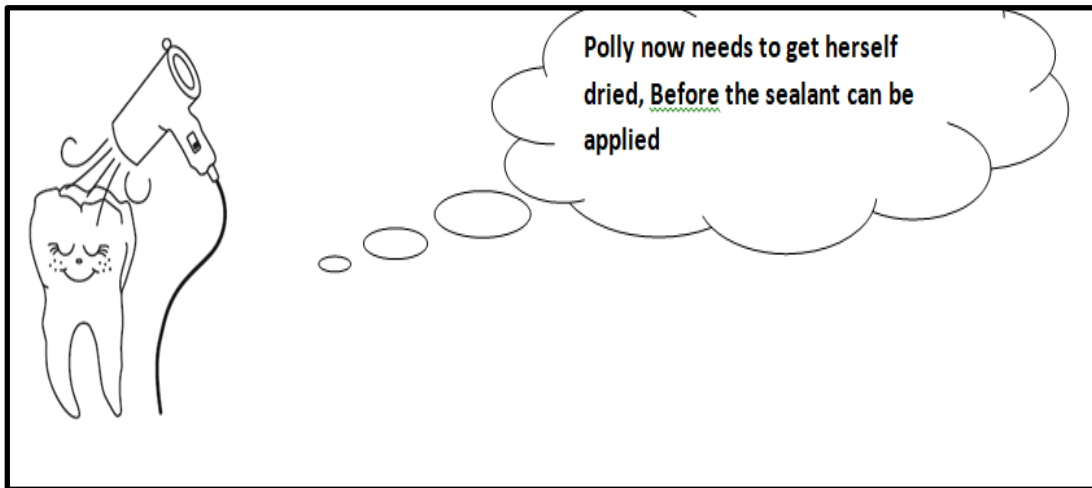


Figure 1f: Dry the Tooth Surface for 10 Seconds

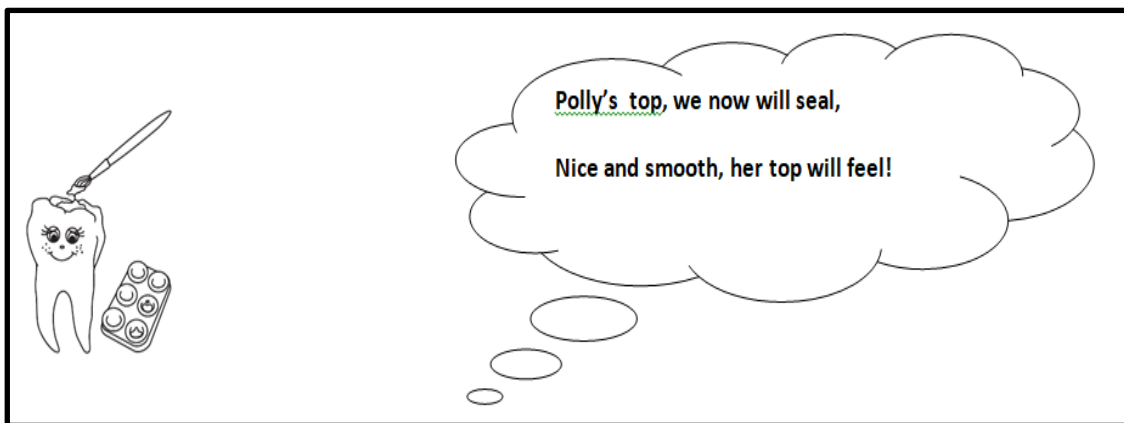


Figure 1g: Apply the sealant material

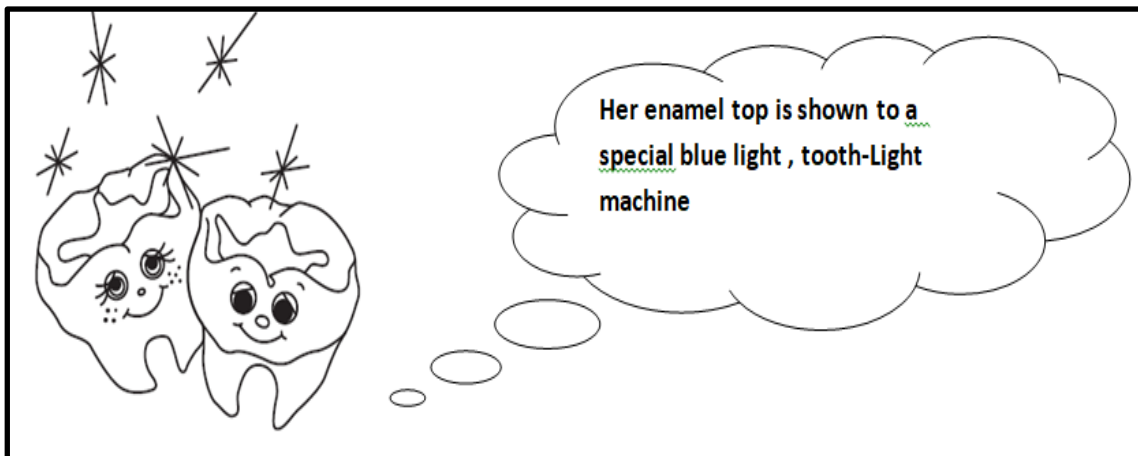


Figure 1h: Light Cure it for 20 Seconds

II. Hands on Work on a Model (Refer Figure 2)

The student is divided into pairs and asked to work on model teeth. They are allowed to place the sealant on the model; this helps them to understand the viscosity of the material so that the class is able to differentiate the property of the sealant with regular composite light cure resin.



Figure 2: Class Activity for Applying Pit and Fissure Sealants

III. Classroom Cartoon Character (Illustration Method)

Art is one of the most important building blocks of a child's development. Working and learning in a creative manner has been shown to benefit a learners motor skills and decision making. According to Hayden R. Smith and Dean A (8), young people who participate regularly in the arts (three hours a day on three days each week through one full year) are four times more likely to be recognized for academic achievement than children who do not participate.

Essentially, art encourages students to think outside of the box, to consider different perspectives, and to invent ideas instead of simply following directions, which leads to happier and more confident professionals in and out of the classroom.

Have students choose one of the cartoon characters from the text. Using this cartoon character as the protagonist (main character – new vocabulary word!), the students create a short story. For a prompt, students are encouraged to follow a story arc. The story may have 6-8 scenes. Because comic strips consist mostly of monologue and/or dialogue, have students find individual voices for each character. To begin, the students make a list of characteristics for each character using both the picture and their imagination. Now that students have a story and dialogue, it's time to illustrate the comic strip! Each scene needs a picture, so students will draw 6-8 cartoons (on 3×5 pieces of paper).

Discussion Questions

What was the crucial portion of the technique and why?

Cartoons are powerful teaching tools and can tell a complex concept in a few images. It Provides comment and provokes thought on events and issues. Use of a cartoon introduces the idea of humour in a classroom. The pictures were cut and the students were instructed to re-order the story (Figure 1a-1h).

The student is divided into pairs and asked to work on model teeth (Figure 9). They are allowed to place the sealant on the model; this helps them to understand the viscosity of the material so that the class is able to differentiate the property of the sealant with regular composite light cure resin.

The Student is now allowed to make a cartoon drawing to explain the same procedure to the School children if they were posted in School oral health awareness camps. This creates the students to understand the concept of sealant and also converts the same into a simpler concept to explain to the level of school children.

There has been a dramatic increase in the interest of the students. Students' minds get registered with the character named "Polly" and they are able to recollect the various steps easily in exams.

Overall, we believe teaching students by this method is effective for teaching the topic Sealants.

A) Atraumatic Restorative Treatment

ART is a process-oriented topic and is a complicated concept to apply in real time scenarios. The phase of translational learning where the student applies his text-book knowledge to actual practice engenders the inadequacies of traditional teaching philosophies. Students have difficulty in anticipating the technical and physical barriers one must face when applying ART in real time. ART was introduced as a basic package of oral care by the World Health Organization, ultimately to fulfil the health for all goal, encompassing oral health.

ART was designed to treat the most common chronic disease affecting humans 'Dental Caries', and was pilot tested in several countries like Tanzania, Zimbabwe, Thailand, Pakistan and Nepal. It basically had two principles; use of hand instruments to cut the teeth and restoring the cavity in the tooth using a material that sticks to teeth (9).

Current day technology enables students to learn all aspects of modern dentistry which allows the use of state of the art armamentarium to restore teeth back to life, but ART is indicated for regions which lacks access to such sophistication and relies on basic support facilities where in the manual skill of the operator is quintessential. The students hardly understand how difficult it is to cut a natural tooth with hand instruments, the hardest substance in our body, and they often fail to understand that dexterity is the key toward manual preparation of enamel using hand instruments.

Hence, I wanted the students to understand the practical difficulties that they can anticipate while performing ART on a natural tooth. Towards this aim Multiple Interacting Learning Algorithm (MILA) was used to teach this topic for final year BDS residents. The students were led into an active and entertaining phase of learning ART. The process (refer Figure 3) began with the most basic information about the background of ART and were encouraged to further explore the details as to why ART was introduced and its primary purpose through SCALEUP and POGIL. Students were divided into batches of two (based on the total strength of the class) and were asked to elaborate their findings after the activity.

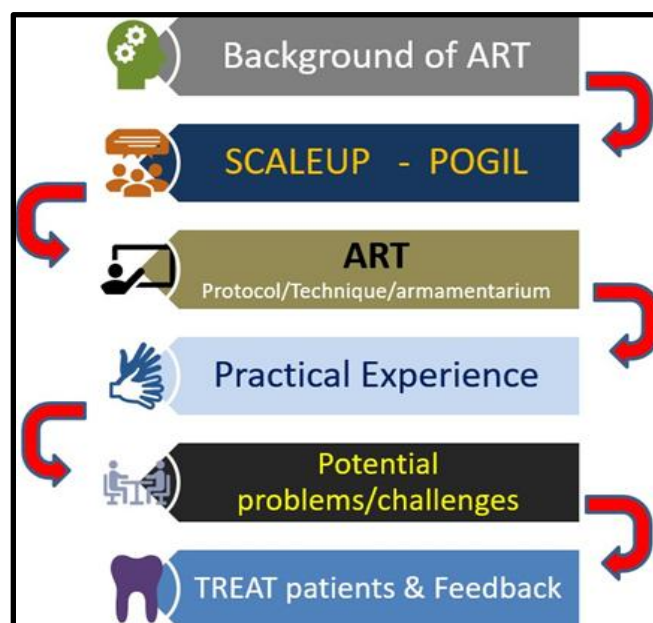


Figure 3: Process of MILA Augmented ART Teaching Protocol

The primary purpose of MILA is to augment the role of the teacher as a facilitator of knowledge and beat the banal and pedantic system of lectures which frustrate active learning. The next phase included the process of ART restoration where a power-point presentation was shown regarding the various instruments used, technique of enamel cutting, and material/process used for restoring the prepared cavity.

Further, to help them experience the actual process, each student was provided with a natural tooth and the necessary armamentarium to perform the ART (refer Figure 4). They were guided in a step by step process in preparing the cavity and understanding the 'Finger press' technique of restoration. The challenge in understanding ART is that it requires the student to unlearn their traditional dental practices and must orient themselves in a setting dependent upon appropriate technology and intersectoral coordination (10).

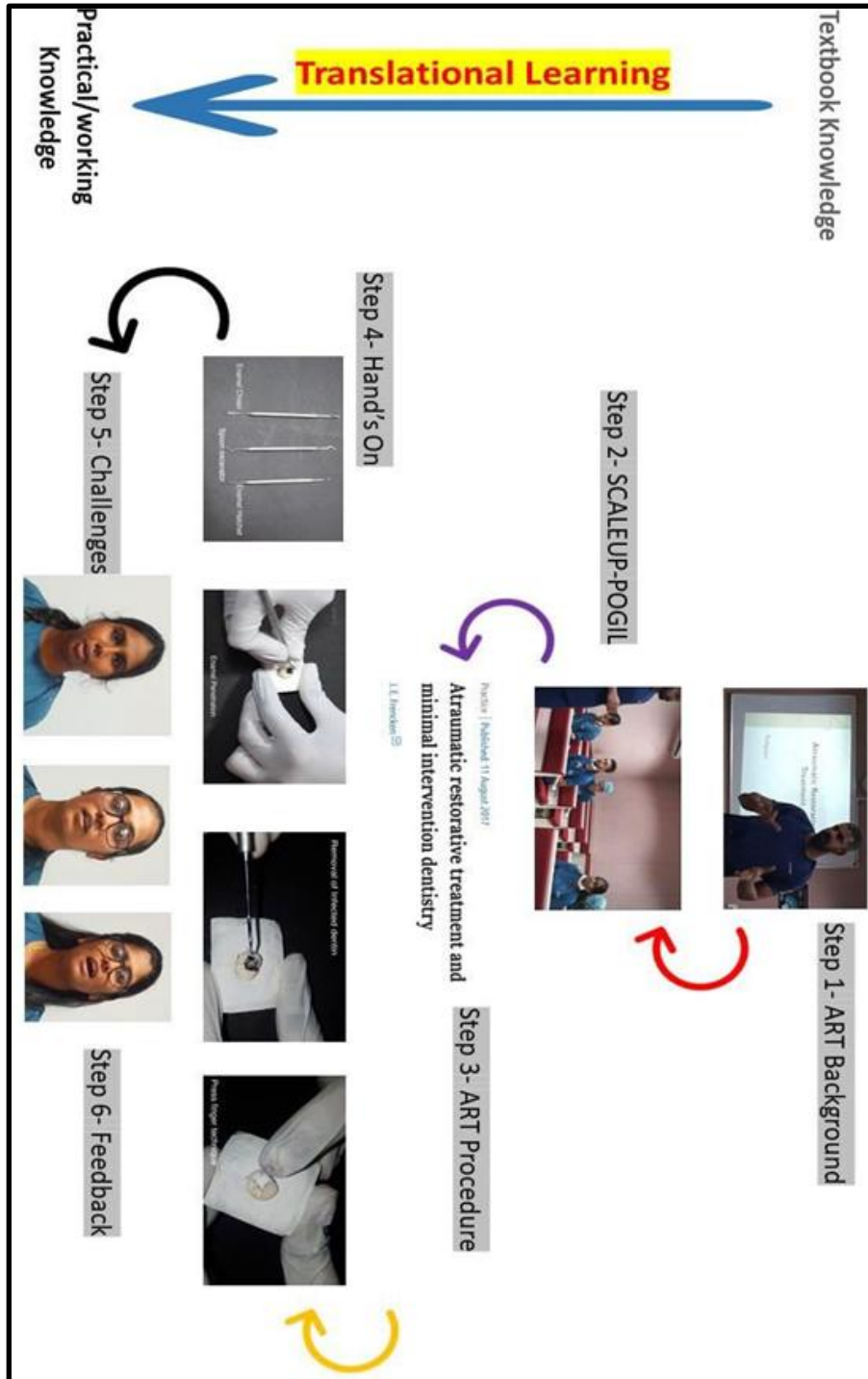


Figure 4: Learning Process

The students realized the importance of effective instrument grasp techniques which significantly affects the outcome of the restorative procedure. Moreover, it was a revelation for the students that how difficult it is to cut a natural tooth only using hand instruments. They didn't quite understand the terminology 'press finger technique'(11) but when they performed the process, they finally could comprehend what it meant!

This process of learning helped the students to actively experiment the knowledge acquired and inculcated a habit of asking doubts during the procedure which is often not the case in traditional teaching resulting in disastrous consequences during actual patient care. ***Traditional teaching propagates textbook knowledge, which is like teaching the students how to fly an aeroplane using a book and next time make them fly one in real time inside a cockpit.*** The feedback from the class was very positive and students did try and implement the procedure learnt in class in real patients and exclaimed in awe the beauty of God's creation, the anatomy and texture of Human Teeth. I firmly believe this learning exercise helped our students to appreciate the skills acquired and realize the importance of basic knowledge gained through their course. Most of all I feel satisfied that we could teach Holistic Dentistry!

Evaluation Prior to Class

1. Do you know the importance of proper hand/instrument grasp techniques?
2. Name of the common instrument grasp you practice everyday?
3. Ever prepared a cavity in natural teeth using hand instruments?
4. Are you confident that you can prepare a cavity in natural teeth using hand instruments alone?

Response

1. 78% reported they knew the importance and 19% were ambivalent and 3% did not provide any response.
2. Almost all of the reported modified pen grasp, but when asked to demonstrate they were not confident if they knew it right.
3. Unanimously No.
4. 85% were confident and 15% were not.

Following ART Learning through MILA

1. 100% realized the importance of instrument grasp in dentistry, in particular, operative dentistry
2. All of them learnt Modified pen grasp and understood it completely
3. Yes, all of them prepared on the natural teeth
4. Before the technique demonstration, they were asked to try and prepare a cavity in natural teeth, almost all of them failed in disbelief, But after the demonstration through power point and proper instrumentation sequence, they were successful. Most of all they reported they could feel the consistency of dentin which they had never felt before when using high speed rotary instrumentation.

B) Tobacco Cessation Counselling

Teaching "**Tobacco Cessation Counselling**", is a very essential part of Undergraduate Curriculum, at the same time it is a complex process; because the cessation process involves guiding and motivating one individual by talking to them at an intellectual and empathetic level. Even after **elaborate lecture** sessions on the concept of cessation, the students were not able to **tailor** it to an individual patient's needs and **translate it** into practice. A Survey was taken among the IV year BDS students of Saveetha Dental college and Hospitals regarding the barriers they had, which were as follows (refer figure 5).

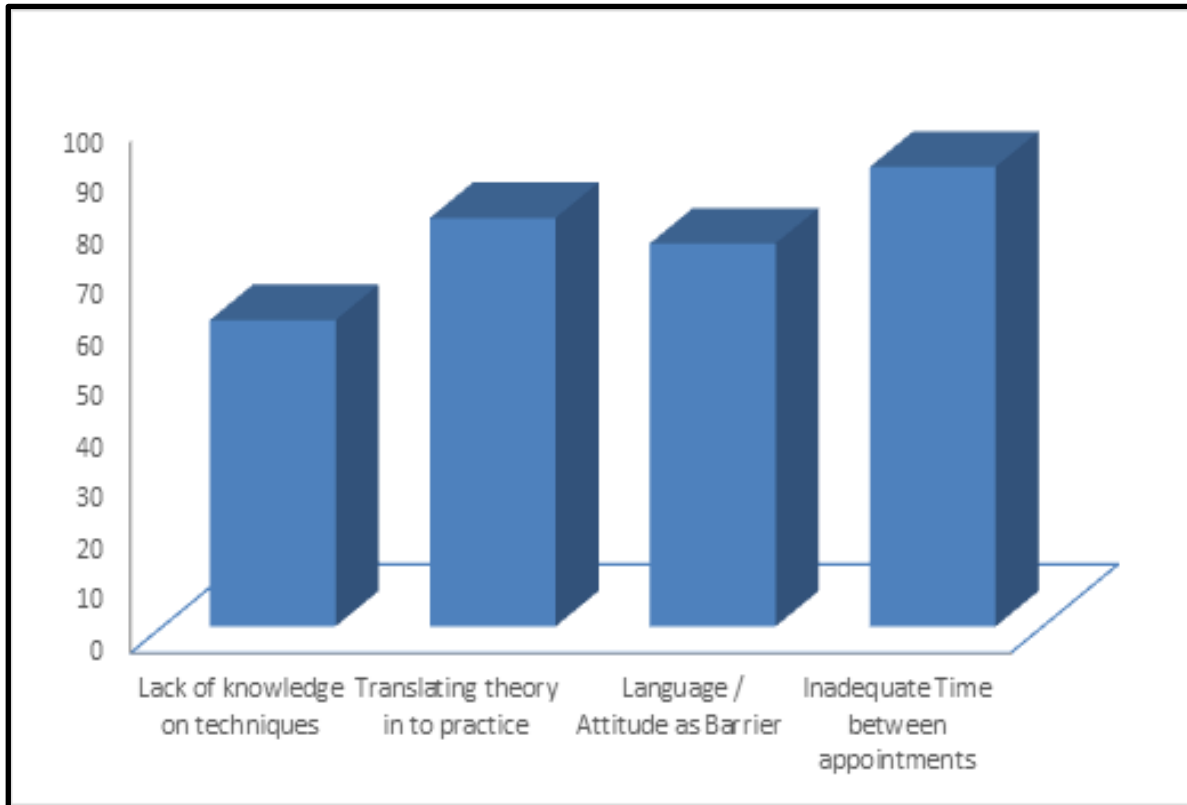


Figure 5: Barriers in Understanding and Delivering Tobacco Cessation Counselling

A survey on Dental students by *YIP JK et al (12)* emphasised that barriers like, inadequacy in time and knowledge and attitude towards their role in counselling only improved with formal practical training. Yet another study on Indian dental students by *Vikneshan et al (13)* supported the fact that practice based training and reinforcement through periodic teaching can only remove the barriers like resistance, inadequate skills, knowledge gap and etc. Apart from sharpening the knowledge, attitude and receptivity of the student was one important factor to be addressed during teaching sessions, evidence the studies by *Bhagyashree. P et al (14)* and *Omoloara. G et al (15)* indicated that, **Patient follow up for other procedures, Dentist patient relationship, age difference** were some of the mind block the students had towards performing sessions and indirectly these reflected on their **perceived interest** towards the current topic. With the strong literature evidence, we decided to address the barriers like lack of knowledge in techniques and translating theoretical concepts into practice. For this a **Role play** and a **demonstration** session was planned.

Communication skills are essential for clinical practice throughout the life of a doctor, and it has found to have a significant impact on patient care and finally correlates with the improved health care outcome in future (16). These skills have been improved by activities like role playing and demonstrations (17). According to *Manzoor et al (18)*, by engaging students in role plays, the component of both cognitive as well as affective domain of medical education can be delivered. A clinical trial to compare two methods to teach smoking cessation to medical students was done by *Papadakis MA et al (1997)⁽¹⁹⁾*, demonstrating that role play method of teaching was effective when compared to conventional teaching using a standardised patient model. As we don't restrict ourselves with the conclusions of previous researches, we enquired the students prior to the lecture to pick an activity which they would prefer for learning "Tobacco Cessation Counselling and techniques". And the results are depicted in the graph below (Figure 6).

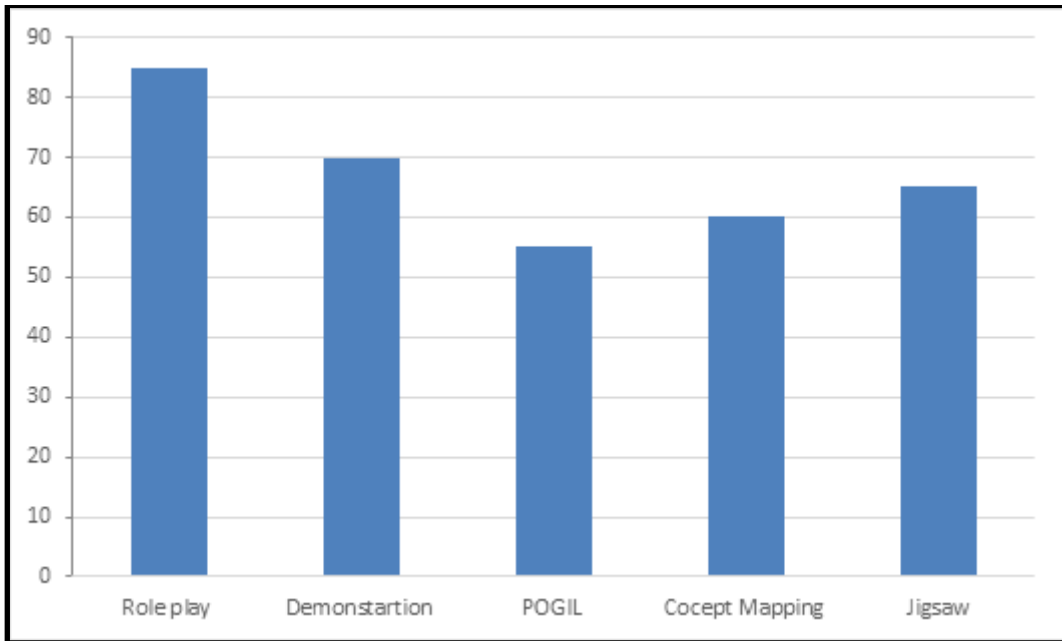


Figure 6: Preference Regarding Type of Activity in Class for Tobacco Cessation Counselling

Similar to the results of our survey on student preference, studies by Nikendei. C et al (20) and Bosse HM et al (21) concluded that, “the role play helped them to learn the correct attitudes required of a doctor to treat his/her patients”.

Following a forty Minute lecture session (Split into two) using a Power point, students were given a hypothetical situation of a patient visiting a dental OP and was asked to enact three counselling visits. Following the role play and Demonstration of individual techniques (refer figure 7) like “Wait Out”, “Trigger Coping”, “Cue Exposure”, “Aversive Conditioning” and “Tapering”, “NRT – Gum usage”, “Progressive Relaxation Techniques” (refer figure 8) along with regular tobacco history recording and CO level monitoring were done by the students with the guidance of the faculty.



Figure 7: IV Year BDS Students Performing a Role Play Simulating a Tobacco Cessation Counselling in a Dental Office



Figure 8: IV Year BDS Students Demonstrating Progressive Relaxation Technique as a Part of Tobacco Cessation Counselling Exercise

Armamentarium Used in the Lecture

- Performed patient education placards
- Patient education video made by the Department
- E – Cigarette
- Carbon Monoxide Monitor
- Standard TCC Questionnaire
- Fagerstrom Nicotine Dependence scale
- Readiness to quit scale
- NRT Gum – for demonstration purpose

Students Feedback was obtained at the end of the teaching sessions. The results were similar to that observed by **Singleton JA et al (22)**. The collective response from the students were as follows:

- They understood their barriers well
- Subjective norms were improved
- Perceived skills improved
- Efficacy and intentions to provide Tobacco cessation services were better than before
- Role confusion towards providing this service was completely nil

True to the proverb by **Confucious** – ***“If I hear I forget, If I see I Remember, If I do I Understand”***. The response to this way of teaching was positive and it definitely improved the knowledge on practical applications and attitude towards their role in tobacco cessation counselling in future.

C) Fluorides in Dentistry

Memorizing the year is considered to be the toughest part with respect to **History of Fluorides** in Dentistry. Students always face difficulty in remembering the dates and the year. When learning history it is very important to remember the year in which the important event has happened. Therefore, a new memory technique known as **“IMAGE-EVENT ASSOCIATION”** has been adapted.

This technique involves three simple steps. **Step1**-Creating a DATERONI number table. **Step2**- Converting the historical year into a word using the table. **Step3**- Link the word and the historical event.

Example: 1931- **Shoe Leather survey- Trendley H Dean**

Step 1- DATERONI number table – Don't include the Vowels (a,e,i,o,u)

0	B	N	Z
1	C	P	
2	D	Q	
3	F	R	
4	G	S	
5	H	T	
6	J	V	
7	K	W	
8	L	X	
9	M	Y	

Step 2- Converting the year in to a word

Remember the last two digits of the year. → 31

The words which corresponds to the digit 3 are F, R

The words which corresponds to the digit 1 are C, P

We can choose either F, R for digit 3 and the same holds good for the digit 1

The final combination of words will be R and P.

Step 2- Correlating the word with the event.

Add vowels to the word. Final word will be **ROPE**. Imagine **rope** similar to a Lace for the Shoe. This letter can be correlated with **SHOE LEATHER SURVEY**. Students were divided into two groups. In groups, clear roles were assigned to the students which in turn encourages each and every student to work effectively in the group. Sticky notes and Charts were given to both the groups to draw the table and create an imaginary word to the event associated.

The second technique will be LOCI (Places) method. The **method of loci** is a strategy of memory enhancement which uses visualizations of familiar spatial environments in order to enhance the recall of information. The **method of loci** is also known as the memory journey, memory palace, or mind palace **technique**. This technique has been followed to remember the **Classification of Delivery of Fluorides in Dentistry**.

In this activity, students were encouraged to Create a mental picture of each information to be remembered.

For example: Kitchen for Systemic Fluoride- Here we prepare the food and Eat which helps to remember the term systemic which is ingested in to the body (refer figure 9).

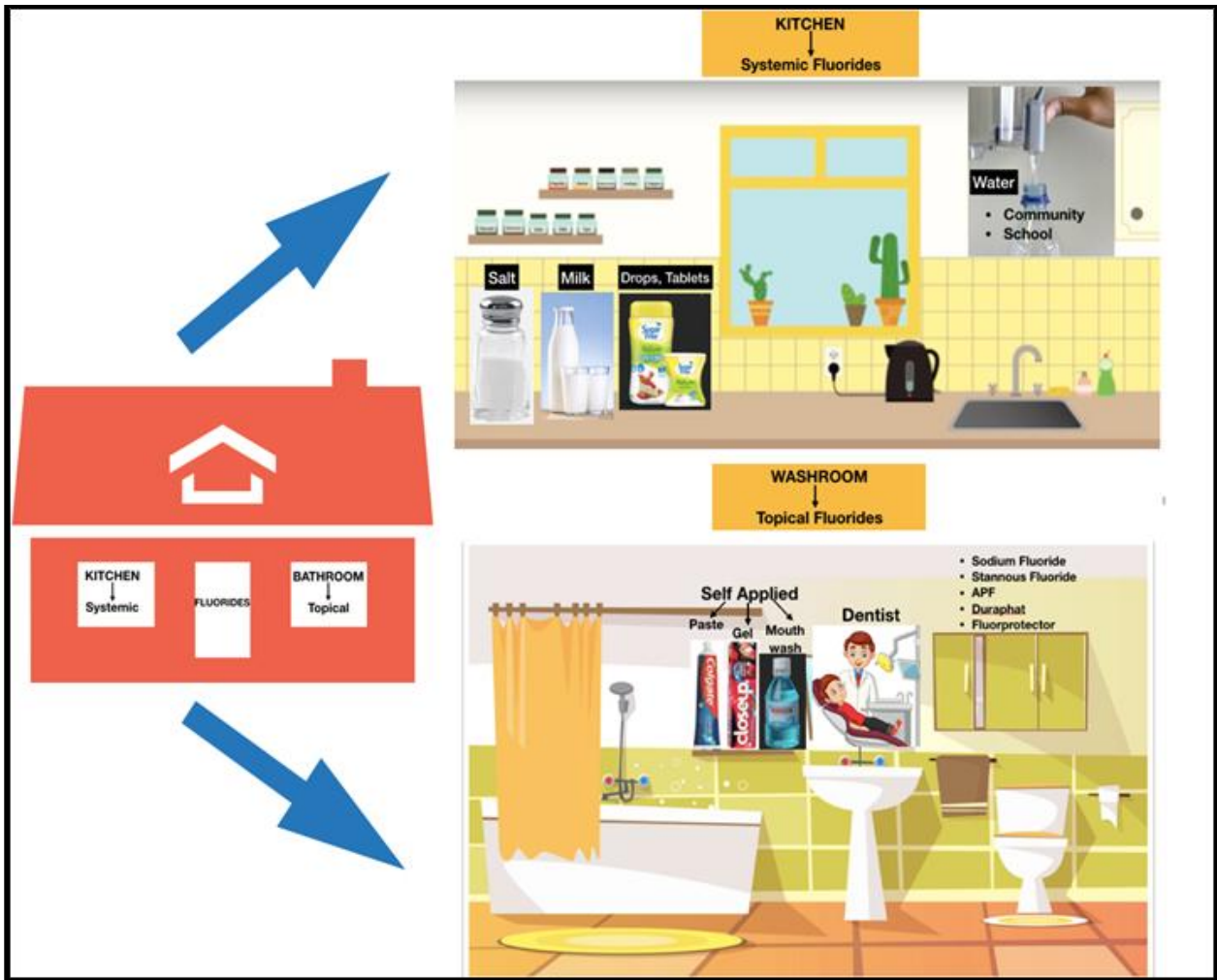


Figure 9: Sources of Fluoride in a Kitchen

1. **Tap water** for Community Water Fluoridation
2. Filling up the **pet bottle** for School Water Fluoridation
3. **Salt** for Salt Fluoridation
4. **Milk** for Milk Fluoridation
5. **Sugar Free** for Fluoride Tablets and Fluoride drops

For example: Wash room for Topical Fluorides- Here we place all the plaque control agents to maintain proper oral hygiene at home

At home or self-applied topical fluorides:

1. Toothpaste for sodium mono fluorophosphate dentifrice
2. **Gel** for Fluoride gel
3. **Mouth rinse** for Sodium Fluoride mouthwash

Mirror for Dentist- Professionally applied topical fluorides (2% Sodium fluoride solution, 8% and 10% Stannous fluoride solution, 1.23% APF solution or Gel, Varnish- Duraphat and Fluoroprotector)

Multimedia approach was followed with the help of Internet source: Open source Learning.

Students searched articles (23, 24) related to the Evidence based clinical recommendations for the use of Professionally Topical fluoride for caries prevention for different age groups and its cost effectiveness. This method helped the students to summarize, Critically evaluate and disseminate the scientific evidence into dental practice that is used easily by the dental professionals. Students were able to construct a multi flow charts and summary table for

clinical recommendations stratified by age groups and caries risk categories which can be used as a decision making resource material in dental practice.

Summary Table: Finally students made a summary table for the various professionally applied topical fluorides based on the following headings: Name of the Topical fluoride, Concentration, Method of preparation (Techniques), Mechanism of Action, Indications and contraindications. This summary table was used as a chairside resource material for the exam. Students found it very useful and were able to remember and answer the fill ups. A shift from regular conventional methods of learning and indulging students in activities stimulates their interest towards reading, writing, thinking and finally applying the concepts in dental practice. Therefore, these active based learning were embedded in the lecture class which enabled the students to understand the concept, memorize the event and finally secured good marks in the exam. Students were able to retain the important concepts related to Fluorides as they were encouraged to apply their knowledge and skills through activity based learning.

D) Health Planning Cycle and Evaluation

MILA in teaching **Health Planning cycle and evaluation** is a very complicated concept. Students have difficulty in understanding and remembering each step of the planning cycle and also its application in planning a program to solve a health problem at village level, district level and state level (mention the difficult section) concepts. This has been widely reported in various publications (25, 26).

We used the **designing instructions** method of pedagogy in a class between 10 am to 12 pm. The protocol included how you will plan for a trip with friends. What are all the steps you will consider when you plan for a trip right from choosing a place for the trip? Students were given a chart with colour sketches and play clay to put their ideas to plan for a group trip. They are asked to design their trip plan in their own style. Students were asked to highlight the important trip plan steps. All students have decided to plan for a trip to Goa. Each student had their own style of plan. After collecting the chart, each of their steps in plan for the trip was correlated with a health planning cycle (Figure 10). The steps in the health planning cycle (refer Figure 11) and planning for a trip will be almost similar. This includes:

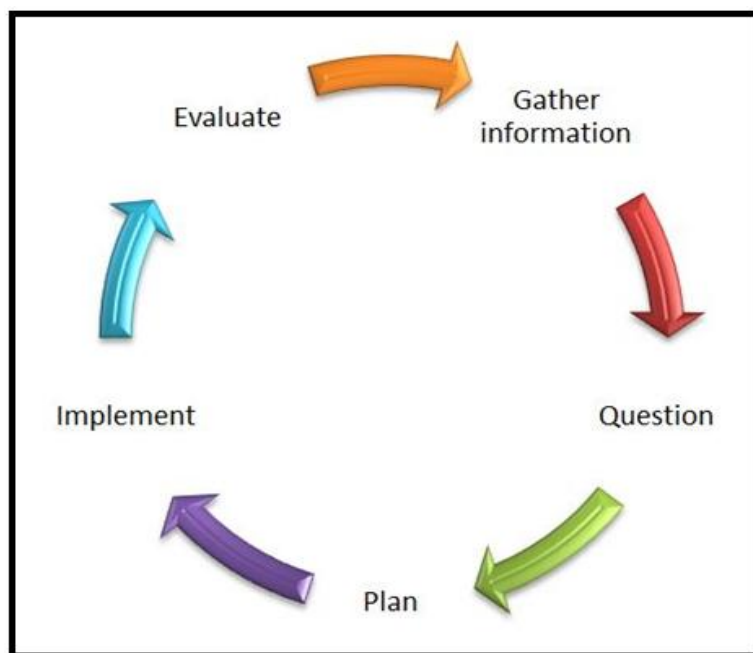


Figure 10: Planning and Evaluation Cycle

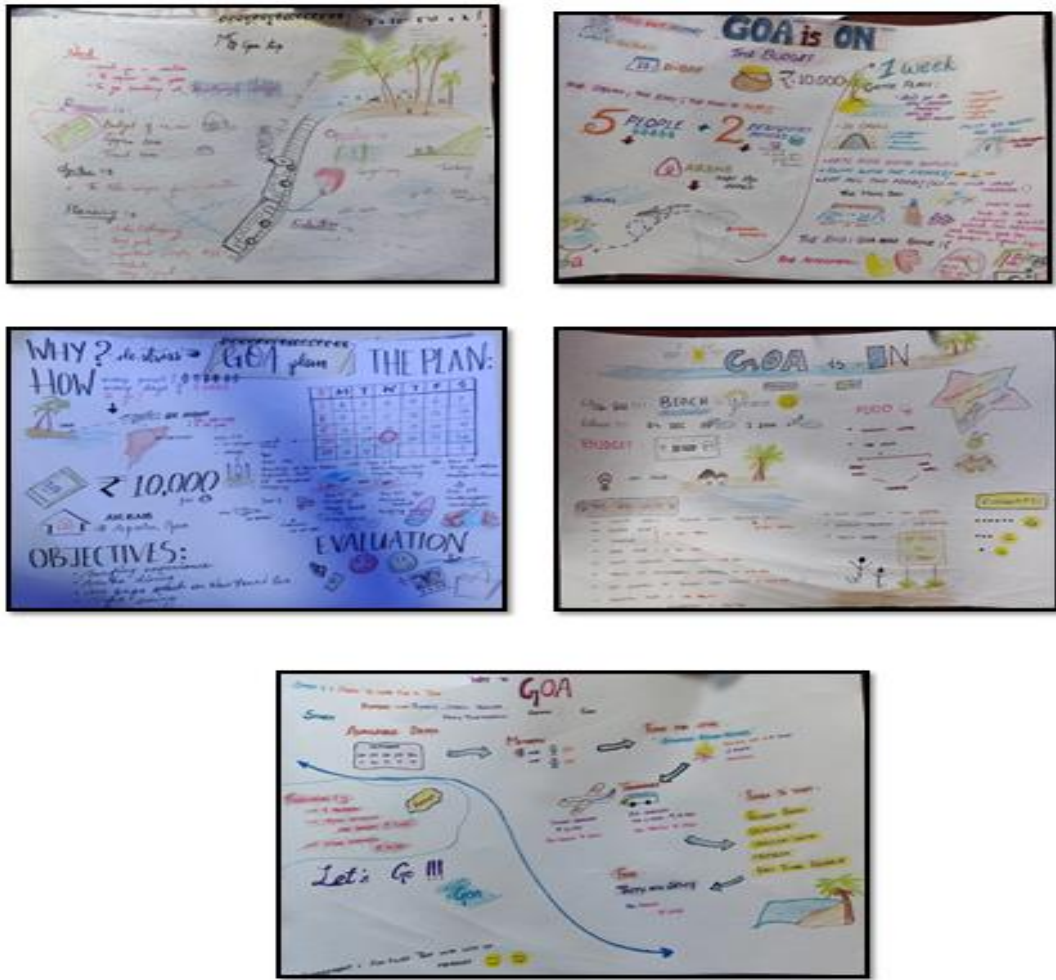


Figure 11: Activities for Health Planning and Evaluation Class

Step 1: Need for a trip (Assessment of health need).

Step 2: Assessment of famous places in Goa to visit and vehicles to travel (Assessment of resources: available health services, transport services, govt budget allocations, govt schemes available).

Step 3: High priority places for the trip (Setting priority health problem with needs for a program to be planned).

Step 4: Setting dates and time for the trip (Setting up goal with aim and objectives for the health plan).

Step 5: The plan that is number of members for the trip, travel cost, food cost, accommodation cost for the trip (Man power calculation, Money calculation, Material calculation).

Step 6: Trip to Goa is on (Implementation of plan).

Step 7: Assessment of the trip – whether the trip goes on as per plan or any changes to made and assessment after trip whether trip was a successful one or not, if not that point has to be rectified in next plan for a trip (Evaluation of plan – subjective & objective; Formative evaluation (evaluation when the program is going on, Summative evaluation (evaluation after the program in terms of cost-effectiveness, cost-utility, cost-efficacy).

There has been a dramatic increase in understanding, remembering capacity and applicability of the health planning cycle. Students were able to remember and answer the steps in the planning cycle by order correctly by remembering the trip to Goa. A dental health problem scenario in the village for the 6-12 year age group was given to them and they were asked to solve the problem in their own style but to remember the steps in the planning cycle. All were able to solve the problem by implementing the steps in the planning cycle with few mistakes.

Overall, we believe teaching students by this method is effective for teaching Health planning cycle and evaluation.

E) Levels of Prevention

Levels of prevention in different oral diseases is a very complicated concept in the aspect where students have difficulty in understanding and categorizing the different treatments of oral diseases on the basis of levels of prevention i.e., primary, secondary and tertiary levels of prevention.

Articles View on Prevention and Students' Knowledge on Prevention

A study was done by Arzu Pinar Erdem et al (27) to evaluate final-year Turkish dental student's knowledge, attitude, and self-perceived competency towards preventive dentistry. It was reported in the article that to manage dental caries both at individual and at population levels, the newly graduated dentists who are the future oral health professionals should be educated and trained on preventive dental care and cariology in the dental curriculum. The value of prevention and its integration into undergraduate dental curricula have become increasingly admitted by the dental profession because dental education plays a crucial role in ensuring future dentists gain both the evidence-based knowledge and clinical skills that are central to patient-specific preventive care. This is applicable not only to dental caries but also to other oral diseases such as periodontal diseases, oral cancer and malocclusion.

Dental disease prevention is one of the most powerful and affordable ways to promote oral health, lower the incidence and prevalence of disease. Oral health care professional have responsibility to develop positive attitude to serve the community (28).

Dental health care professionals and their knowledge and attitude towards oral health care provides a framework as they are the person who convey evidence based knowledge about oral health and educate the individuals as well as groups. Dental professionals act as role models for patients, friends, families and the community at large and hence they can influence others oral health related behaviour (28). In order to create more positive attitudes for future care professionals, there should be an early and sufficient exposure to preventive aspect of oral health in every healthcare professional curriculum (29).

Methods Utilised for Teaching Levels of Prevention

'Real world' learning method was utilized, where real world experiences were infused to enrich the learning process and this was done as **game based learning**. Also **peer led team based activity** was utilized for understanding the concept of levels of prevention.

Teaching Protocol

The protocol included the following:

The class was divided into twenty minutes micro sessions where the lecture was taken for a duration of around eighteen minutes and a related activity was given followed by the lecture. Prerecorded class video pertaining to the topic of the session was played before every session.

Theoretical knowledge about levels of prevention was taught by power point presentation. The first session explained about the three levels of prevention which was followed by a peer-led **team based learning** type of activity where the students were divided into three groups and one member from each group explained about the concept of primary, secondary and tertiary levels of prevention respectively.

Further sessions included levels of prevention of different oral diseases like dental caries, periodontal diseases and oral cancer. Students were asked to explain about the treatment options available for treating different oral

diseases. Students were grouped and they were asked to collect images related to treatment of different oral diseases. Pictures depicting various treatments of dental diseases shown by each group were reviewed by the staff and sent to the students. This include pictures related to dental caries treatment such as topical fluoride application, pit and fissure sealant, fluoride rinses, fluoride supplements, amalgam restoration, root canal treatment, implants; images pertaining to periodontal treatment including plaque control program, scaling, deep curettage, periodontal surgery, removable and fixed partial dentures; photos illustrating oral cancer treatment such as anti-tobacco counselling, biopsy, radiotherapy, complete excision, plastic surgery. **Game based learning method** was employed where the students were asked to categorize the given treatments of dental caries, periodontal diseases and oral cancer based on the levels of prevention for different oral diseases.

Outcome and Student's Perception of Mila

There has been dramatic improvement in the students' understanding about the different levels of prevention. This method helps the students to probe for various treatment modalities available for oral diseases and they found this as a friendly way of learning. Students showed great interest in searching preventive measures of oral diseases and with regard to student's perception about this method of learning, they found this as fun filled knowledge search. Also the students felt that they were able to concentrate in a better way and there was less distraction as this was an interactive session. Overall, we believe teaching students by this method is effective.

F) Primary Health Care

Primary health care includes the following essential components such as providing education concerning prevailing health problems and methods of preventing and controlling them.

Students were asked to express their views on what they felt about primary health needs of a community. What they expect for their community in respect for health? Students are encouraged to think in what ways healthcare can be improved?

Then the components are described in detail to the students as follows. Primary health care includes the following essential components (30):

- Providing education concerning prevailing health problems and methods of preventing and controlling them.
- Provision of food supply and proper nutrition.
- Adequate supply of safe and clean drinking water and basic sanitation.
- Provision of maternal and child health care.
- Immunization against major infectious diseases.
- Prevention and control of local epidemic diseases.
- Appropriate treatment of common diseases and injuries.
- Provision of essential drugs.
- Promoting health education in schools and colleges.

Activity 1

Students are asked to write their experience about the primary health care services available in their community. Experiences on immunization camp, have they visited primary health care centre, Availability of emergency drugs etc.

Then each student is asked to narrate their experience shortly to each other.

Evolution of Primary Health Care

Alma Ata conference and its subsequent evolution of PHC concepts are discussed. Area covered and No. of People benefited by PHC are also discussed. Manpower allocations in PHC are well described.

Activity 2

Students are asked to search details on PHC in their native place via web and collect details on manpower. ASHA, Anganwadi Workers, Health assistants etc., roles to be defined. Details on the number of Primary health centres available in our country etc are collected.

Concepts

- Affordable
- Available
- Acceptable

The approaches should be affordable by the community and the conventional methods deployed should be acceptable by the community.

Activity 3: Peer to Peer Teaching

Use of mnemonics for the remembering and memorizing the elements of Primary Health care. Students discuss among themselves and shall make the following mnemonics during the flipped classroom activity.

E- Education regarding prevailing diseases

L- Local epidemic diseases prevention and its control

E- Essential drugs provision

M- Maternal and Child health care services

E- Health Education Promotion in schools and colleges

N- Nutrition and food supply

T- Treatment of common diseases and injuries.

S- Safe water supply and Sanitation

This technique helped to retain the elements of primary health care and answer the fill ups.

Activity 4: Game based Learning- Making of Color Wheels

This activity-based learning was embedded in flipped classroom activity to remember the important points in a definition of Primary health care. Students were asked to construct a **colour wheel** with all the terms needed for the definition.

For example: Essential health care, Scientifically sound, Socially acceptable and Affordable.

Activity 5: Tree Chart Graphic Organizer

Tree chart can be of great help to take a trip down memory lane to recollect the main Five principles of Primary health care based on Alma ata Declaration. Students were asked to form a tree with the following details. The topmost section is the main title which is five principles of Primary health care, below that are the subtopics which will be principles (Equitable distribution, Community participation, Intersectoral coordination, Appropriate technology and Focus on prevention.) (30).

Below the subtopics, the relevant information related to each principle forms a list.

Students are asked to discuss their experience about immunization camps etc among themselves and one student is asked to summarize their views.

Activity 6: Critical Pedagogy

A paragraph on PHC with false inputs is given to students. Students were asked to identify the false statement and to correct it.

Failure to improve the underlying conditions for health is compounded by insufficient allocation of resources to address priority needs with equity (universality, accessibility and affordability). Based on this students are enlightened about various novel methods to reach each and every citizen of our country.

Moving beyond Health Policy to Healthy Public Policy

The conventional developments belong mostly within the traditional context of 'health care policy'. However, if we must look beyond this to embrace a much larger domain: 'healthy public policy', which has evolved into a major movement to stimulate health-promoting policies around the world. 'Healthy public policy' prescribes that 'health' must be on the agenda of *all* government ministries. Hence, students are trained in analyzing inter-sectoral coordination among various departments Municipality, corporation, Transport, Engineering etc in implementing community oriented preventive measures.

Activity 7 – Jigsaw Technique

The jigsaw technique is a method of organizing classroom activity that makes students dependent on each other to succeed. It breaks classes into groups and breaks assignments into pieces that the group assembles to complete the (jigsaw) puzzle. Such as, No. of PHCs in each state, Analysing whether existing numbers meet the demands of the population, No. of people benefited by existing PHCs etc. Finally all the students are asked to complete the puzzle.

CONCLUSION

The future of dental professionals highly depends upon the upbringing of dental students in dental colleges. Effective teaching of dental subjects is very much required to produce more efficient dentists. MILA method showed that learning in the classroom can be "Enjoyable, Educational and Enriching" for dental students.

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