


*The teaching learning process of the institution nurtures creativity, analytical skills and innovation among students*

**Teaching Learning Methods for Undergraduates that nurtures analytical skills**

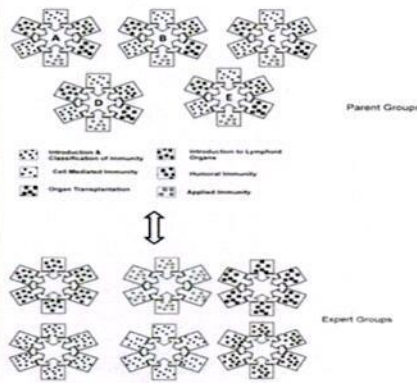
*Department of Physiology*

<b>Name of the Method</b>	<i>Jigsaw technique</i>
<b>Objectives of the Method</b>	To facilitate active learning among the students
<b>Competencies/Topics addressed by the method</b>	<p><b>PY 2.10</b> Define and classify different types of immunity. Describe the development of immunity and its regulation.</p> <p><b>PY 10.17</b> Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex</p>
<b>Short description of the method</b>	A physiological concept is chosen. It is divided into sub-topics. The students are divided into parent groups, where each student in the parent group is assigned a sub-topic of the chosen concept. Then expert groups will be temporarily formed by having one student from each parent group join other students assigned with the same sub-topic. After discussion among the expert groups, the students will return to their original parent groups. Each student in the parent-group will give a presentation of their concerned sub-topic. As a result, every student will get a holistic view of the chosen physiological concept. Finally, there will be a presentation to the entire batch of students
<b>Any kind of assessment done with the use of the method (Ex: Pretest/ Posttest)</b>	Nil

  
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**Feedback obtained from the students and Faculty regarding the method (Mention the key points, up to 5)**

Enhanced Concept understanding (5)  
 Referral habits (10), Teaching habits (3)  
 Categorization of the topic under study (5)  
 Integration of learnt information with other subjects (4), Time consuming (15)  
 Took time to adapt to this technique (10)



**Figure 1 : Formation of Parent groups and Expert Groups in the Jigsaw Technique**

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**Research article**

**Jigsaw technique as an active learning strategy in Physiology for I MBBS Students**

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**ABSTRACT**

**Introduction and Aim:** Innovative learning strategies may be introduced along with the conventional methods to enhance active learning by the students. Jigsaw technique is a co-operative learning method, where students play a dual role as an active learner and teacher. Hence the present study aimed to introduce and assess the acceptability of the Jigsaw technique as an active learning strategy in Physiology for first year medical undergraduates.

**Methods:** Five parent groups were formed from 30 first year medical undergraduates with six members in each group. Each member in the parent group was allotted a sub-topic in "Immunity". Members with the same sub-topic joined to form the expert groups. After three sessions of face-face and asynchronous online discussions spanning a duration of three weeks, facilitated by faculty, the students returned to their parent groups for peer teaching and presentation. The content of the presentation was evaluated by faculty with help of a checklist. Feedback questionnaire was administered to both the students and the faculty to assess their perceptions and acceptability of Jigsaw technique.

**Results:** Jigsaw method was addressed as an innovative method that favored active participation, high interaction and promoted communication skills and referral habits among the students. However, it was time consuming, and students expressed difficulty in adapting to the technique.

**Conclusion:** Students consider the learning process enjoyable and effective with Jigsaw technique in Physiology. However, owing to the time consumption and its complexity it may be sparingly used in routine curriculum.

**Keywords:** Active learning, jigsaw technique, medical education, physiology.



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Original Article

**UNCLE (Unconventional Learning Exercises): An Innovative approach towards active learning in Physiology for I MBBS students**

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**ABSTRACT**

**Objectives:** Physiology is a constantly evolving subject, hence, it demands participation from the students for effective learning. In the current trend of medical education, medical teachers need to accumulate a good knowledge of efficient "Teaching-Learning Methods" that enable active student participation. "UNCLE- Unconventional Learning Exercises" is one such approach that facilitates learning through discussions with colleagues and helps in acquiring facts through "Participatory learning" rather than through rote memory. The present study aimed to assess the effectiveness of an active learning method "UNCLE" in learning physiology among I MBBS students.

**Materials and Methods:** Thirty I MBBS students were exposed to "Unconventional Learning Exercises" in small groups during the regular tutorial sessions. The study tools used for "UNCLE" were worksheets with critical thinking questions and analogies shown in flash cards. Pre- and post-test scores were obtained for the evaluation of their learning. Feedback was obtained from the students to elicit their perception about the effectiveness of the new method.

**Results:** The post-test scores (7.7 ± 1.57) were significantly greater than the pre-test scores (6.24 ± 1.57). The students reported the method to be innovative, interesting, refreshing, and more engaging. They reported that this method enhanced team work and improved their communication skills.

**Conclusion:** UNCLE may be considered an effective active learning strategy in physiology for I MBBS students.

**Keywords:** Active learning, Physiology, Unconventional learning exercises



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**Department of Dermatology**

<b>Name of the Method</b>	<b>Image based teaching and assessment</b>
<b>Objectives of the Method</b>	To interpret the images
<b>Competencies/Topics addressed by the method</b>	To identify and diagnose common diseases from the image bank.
<b>Short description of the method</b>	Clinical posting is carried out through images. Images are taken from the department image bank. For each class, 10 to 15 images are selected covering the clinical, complications and laboratorial aspects. At the end of posting, computer assisted - OSCE is conducted in the digital library of our institutions.
<b>Any kind of assessment done with the use of the method (Ex: Pretest/ Posttest)</b>	MCQ based pre test & post test Computer assisted OSCE (CA - OSCE)
<b>Feedback obtained from the students and Faculty regarding the method (Mention the key points, up to 5)</b>	Students were more attentive in class CA - OSCE is less stressful Objective way of assessment

Course Communication

**Image Based Teaching and Computer Assisted – Image Based Assessment for Undergraduate Medical Students in Dermatology Clinics amidst the COVID-19 Pandemic: Students' Perspectives**

The emergence and rapid escalation of the coronavirus disease-19 (COVID-19) pandemic have created a global disruption in medical education. A major challenge for the medical faculty in this pandemic is the inability to reproduce the experience of real-time clinical exposure to patients for the students. To overcome the shortcomings, such as lockdown restrictions and reduced outpatient consultations, our department created an Image-Based Teaching (IBT) module followed by Computer-Assisted Image-Based Assessment (CA-IBA) at the end of their clinical rotation. We have enhanced the perceptions of undergraduates about the IBT and CA-IBA. This cross-sectional pilot study was conducted among 28 final-year undergraduate medical students in the Department of Dermatology at Sri Manakula Vinayagar Medical College and Hospital, Puducherry.

On the week before to the clinical posting, an intra-department faculty meeting was held. For each clinical topic, 10-15 images were selected from our department image bank to cover the varied clinical presentations of each disease, diagnostic signs, and representative images of the laboratory procedures were chosen by the faculty. The findings in images were marked with annotations such as arrows and circles for better understanding. In a big ventilated hall, clinical sessions were conducted over 2 weeks using the selected images as an interactive medium.

At the end of the clinical posting, each student was allotted a personal desktop computer in our digital library preloaded with a Microsoft PowerPoint presentation consisting of 10 image-based clinical scenarios (Figure 1). Each image was accompanied by a set of five questions, giving equal weights of marks to each of them. A maximum score of 100 was allotted with 10 marks for each scenario. The examination answers given were evaluated by two examiners separately and the mean value was taken as the final mark.

A feedback questionnaire covering various attributes of IBT was collected from the students maintaining their anonymity and responses were recorded using the 5-point Likert scale. The questionnaires had good reliability (Cronbach's alpha = 0.77). The data were entered in MS Excel and analyzed using the SPSS version 24 software (SPSS Inc., Chicago, IL, USA) package. The overall response to the IBT was positive and encouraging. The feedback received is documented in Table 1.

Clinical Dermatology is a visually oriented field, which can be easily taught and assessed through images. However, there is a paucity of literature regarding the use of images in undergraduate Dermatology teaching and assessment in India.<sup>1</sup> In our department, previously Kumar et al.<sup>2</sup> had studied the role of clinical images as a teaching tool supplementing the conventional clinical teaching in the dermatology specialty. A significant improvement in the student's knowledge and skills was observed after the introduction of clinical images as a teaching tool. In that study, Fawcett et al.<sup>3</sup> demonstrated improved diagnostic skills in skin lesions among family medicine residents, when they used digital photographs made into posters as a mode of teaching. Kumar et al.<sup>2</sup> reported longer retention of learning and better

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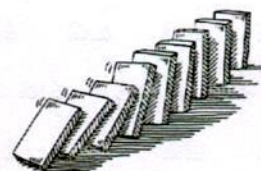
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<b>Name of the Method</b>	<b><i>Unconventional Learning Exercises (UNCLE)</i></b>
<b>Objectives of the Method</b>	To facilitate active learning among the students
<b>Competencies/Topics addressed by the method</b>	<p>PY 1.1 Describe the structure and functions of a mammalian cell</p> <p>PY 1.2 Describe and discuss the principles of homeostasis</p> <p>PY 1.5 Describe and discuss transport mechanisms across cell membranes</p>
<b>Short description of the method</b>	<p>Students were exposed to unconventional learning exercises through worksheets with critical thinking questions and flashcards with analogies.</p> <p>It is a form of collaborative learning exercise, where the students work in small groups</p>
<b>Any kind of assessment done with the use of the method (Ex: Pretest/ Posttest)</b>	<p>Pre Test score - <math>6.24 \pm 1.57</math></p> <p>Post test score - <math>7.7 \pm 1.37</math></p>
<b>Feedback obtained from the students and Faculty regarding the method (Mention the key points, up to 5)</b>	<ul style="list-style-type: none"> <li>- Favoured long term retention</li> <li>- Innovative, interesting and easy learning, quick, interactive learning</li> <li>- Enjoyed the learning process</li> <li>- Refreshing knowledge</li> <li>- Hidden points in the book are discovered</li> </ul>



Compare this analogy to positive feedback mechanism


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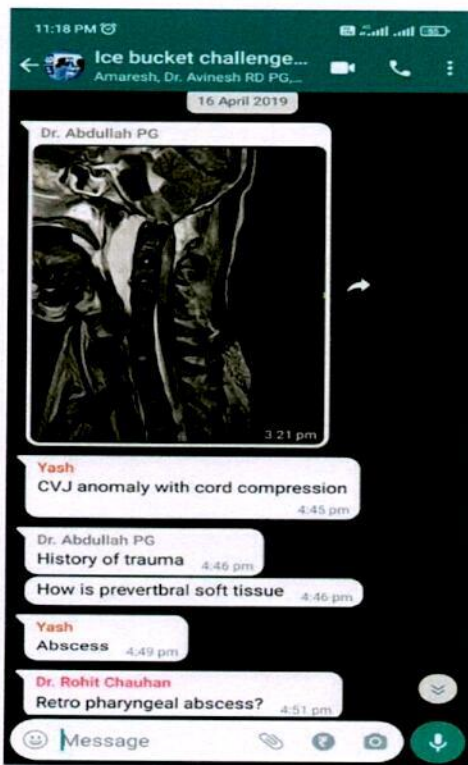
**Department of Radiodiagnosis**

<b>Name of the Method</b>	<b><i>Quiz Box for Undergraduates and Postgraduates.</i></b>
<b>Objectives of the Method</b>	To interpret the image displayed in the quiz box.
<b>Competencies/Topics addressed by the method</b>	To assess the skill in picking up imaging findings.
<b>Short description of the method</b>	<ul style="list-style-type: none"> <li>• X-ray/CT image is displayed in the quiz box placed in the ground floor (Hospital block), on weekly basis.</li> <li>• Answers can be dropped in the adjacent drop box.</li> <li>• Prize for winners are given the yearly Roentgen day celebration.</li> </ul>
<b>Any kind of assessment done with the use of the method (Ex: Pretest/ Posttest)</b>	<ul style="list-style-type: none"> <li>• Prize for winners are given the yearly Roentgen day celebration.</li> </ul>
<b>Feedback obtained from the students and Faculty regarding the method (Mention the key points, up to 5)</b>	<ul style="list-style-type: none"> <li>• Increases the recalling capacity</li> <li>• Thought provoking</li> </ul>



  
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<b>Name of the Method</b>	<i>Online PG quiz</i>
<b>Objectives of the Method</b>	To assess the ability of the post graduates in interpreting images.
<b>Competencies/Topics addressed by the method</b>	The topics address various imaging systems
<b>Short description of the method</b>	Whats app group has been created in which radiological images are uploaded; Post graduates are encouraged to send the answers, following which the findings and diagnosis would be discussed.
<b>Any kind of assessment done with the use of the method (Ex: Pretest/ Posttest)</b>	No
<b>Feedback obtained from the students and Faculty regarding the method (Mention the key points, up to 5)</b>	<ul style="list-style-type: none"> <li>• The post graduates are exposed to various sorts of imaging findings and diagnosis.</li> <li>• Thought provoking</li> </ul>

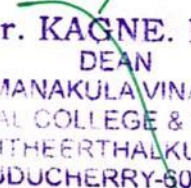


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<b>Name of the Method</b>	<i>Concept Mapping</i>
<b>Objectives of the Method</b>	To explain the rule to be followed at the PG Quiz
<b>Competencies/Topics addressed by the method</b>	For case of understanding of rules of the quiz
<b>Short description of the method</b>	Inter-college PG quiz was conducted on 06.11.2021 at MIT auditorium, Sri Manakula Vinayagar Medical College and Hospital. The concept mapping was used to in order to explain the rule to be followed in the quiz, step by step.
<b>Any kind of assessment done with the use of the method (Ex: Pretest/ Posttest)</b>	No
<b>Feedback obtained from the students and Faculty regarding the method (Mention the key points, up to 5)</b>	Ease of understanding of the rules of the quiz.




  
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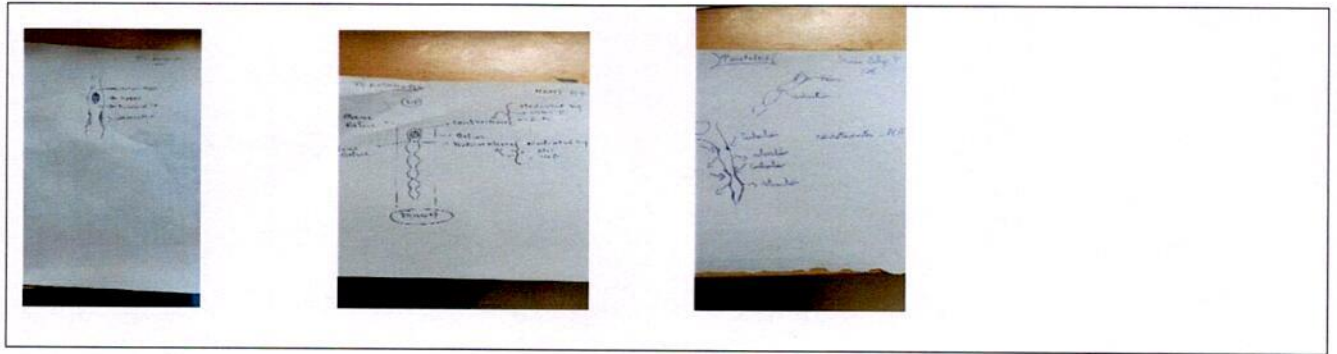


*Department of Physiology*

<b>Name of the method</b>	<i>Picturing to learn</i>
<b>Objectives of the method</b>	To make the students to get a deeper learning in the class and also to assess the reach of our teaching to the students
<b>Competencies/Topics addressed by the method</b>	Functional anatomy of heart, Mechanism of action of Insulin Peristalsis
<b>Short description of the method</b>	During the teaching of the topic in the lecture class, the concept was explained without showing any related picture. After explanation the students were asked to depict the concept in the form of a picture by drawing in a paper. Correct diagram was shown after that for reference and correction
<b>Assessment done</b>	<p>Based on the correct conceptions and mis conceptions in the diagram the percentage of marks were given for the topic “Route of blood flow through heart and the blood vessels attached to it.</p> <p>Only 6 students out of 135 students’ drawing were more than 90% similar to correct diagram. Two students’ drawings were completely wrong. Majority of the students (n=34) depicted 80 – 90 % of the correct diagram. 33 students scores were between 60-70%. 24 and 26 students scored 50 – 60% and 70-80% respectively. 9 students’ drawings showed that they conceived below 50% of the explanation</p>
<b>Feedback obtained from the students and Faculty regarding the method</b>	Feedback was not obtained

  
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<b>Name of the Method</b>	<b><i>Concept Mapping &amp; Mind Mapping</i></b>
<b>Objectives of the Method</b>	To enrich the students' understanding of a particular concept
<b>Competencies/Topics addressed by the method</b>	<p><b>PY 2.10</b> Define and classify different types of immunity. Describe the development of immunity and its regulation.</p> <p><b>PY 5.1</b> Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.</p>
<b>Short description of the method</b>	<p>Concept map is a graphic organizer that enables the students to visualize the concepts in a hierarchical fashion and facilitate their understanding of the relationship between the concepts. During the lecture class, the students are instructed to design a concept map, on the difficult concepts of a particular topic.</p> <p>Students were encouraged to utilise softwares like freemind app</p>

*Department of Anatomy*

<b>Name of the method</b>	<b><i>Concept mapping</i></b>
<b>Objective of the method</b>	To impart better understanding of the cellular components of histology
<b>Topics addressed by this method</b>	Histology (general and systemic)

  
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<b>Short description of the method</b>	The class starts with a single topic say “cartilage” it is divided by lines into types, cellular components and are further linked to other components as the discussion proceeds. This graphical linking of concepts reduces the monotony of the lecture and gives a better overview of the subject content
<b>Assessment</b>	Multiple choice questions
<b>Feedback</b>	1) Useful during the exam revision

*Department of Paediatrics*

<b>Name of the method</b>	<i>Spellbee competition</i>
<b>Objective of the method</b>	To explain the spellings and meanings of medical terminology and conditions in Neonatology
<b>Topics addressed by this method</b>	<p>PE20.1 Define the common neonatal nomenclatures including the classification and describe the characteristics of a Normal Term Neonate and High Risk Neonates</p> <p>PE20.6 Discuss the etiology, clinical features and management of Birth asphyxia</p> <p>PE20.7 Explain the follow up care for neonates including Breast Feeding, Temperature maintenance, immunization, importance of growth monitoring and red flags</p> <p>PE20.8 Discuss the etiology, clinical features and management of respiratory distress in New born including meconium aspiration and transient tachypnoea of newborn</p> <p>PE20.10 Discuss the etiology, clinical features and management of Hemorrhagic disease of New born</p> <p>PE20.12 Discuss the temperature regulation in neonates, clinical features and management of Neonatal Hypothermia</p> <p>PE20.13 Discuss the temperature regulation in neonates, clinical features and management of Neonatal Hypoglycemia</p> <p>PE20.15 Discuss the etiology, clinical features and management of Neonatal seizures</p> <p>PE20.16 Discuss the etiology, clinical features and management of Neonatal Sepsis</p>

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