



The Impact Of A Pre Lecture Educational Viewing On Gross Anatomy Lecture Comprehension

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AIM

To investigate the impact of a pre-lecture educational video viewing on students' lecture comprehension

ABSTRACT

Background: Gross anatomy lectures are commonly perceived to be cognitively challenging by medical students as they contain complex information that require three-dimensional visualization for understanding. Without prior preparation, it is often difficult to understand a gross anatomy topic through lecture. Hence, this study was aimed to investigate the impact of a pre-lecture activity in the form of video viewing on students' lecture comprehension. **Methodology:** A quasi-experimental study was conducted on 254 first year medical students of 2016/17 and 2017/18 academic sessions, which have never been exposed on the lecture topic. The students from each batch were divided into two groups and each group was exposed into two different video materials. Group A was exposed to an action movie, while group B was exposed to an educational video related to the lecture topic for 15 minutes. Subsequently, both groups were assembled in a lecture hall and attended a lecture on gross anatomy of the heart, delivered by a qualified anatomist. Afterwards, their understanding on the content was measured through a post lecture test by using ten vetted multiple true false questions. **Results:** The test scores were found to be significantly higher in group B compared to group A students ($p > 0.001$, $Z\text{-stats} = -3.274$). **Conclusion:** It was postulated that the pre-lecture activity had successfully instilled or stimulated some prior knowledge of the students before they attended the lecture session. This is aligned with the cognitive load theory that describes reduction in the learners' cognitive load as a result from stimulation of prior knowledge.

INTRODUCTION

Issues in Anatomy Education

1. Anatomy lectures is perceived as a cognitively challenging subject¹
2. Declining anatomy knowledge among medical graduates and students²
3. Scarcity of well-designed research on exploring the best teaching method in anatomy^{3,4}
4. Difficult to simplify anatomy lecture due to its complexity and content-driven nature

Our Approach

We introduced pre lecture activity in the form of educational video viewing to expose the students to the related topics.

Application of pre lecture video viewing is not widely explored in anatomy education compared to other education fields.

Hence, we believed that this pre lecture activity can contribute a huge impact on students' lecture comprehension

Literature Review

- Pre-lecture activity including pre-lecture educational video viewing has been reported to be able to stimulate prior knowledge of students^{5,6}
 - Through stimulation of prior knowledge, students would be able to retrieve their previously learned knowledge without investing much of their mental effort⁷. Hence the students can spend their limited mental effort to learn new information and integrate the information with their prior knowledge⁸
- Likewise, a stimulating lecture introduction would be able to instil interest and curiosity⁹, which in turn motivates the student to stay focused throughout the lecture¹⁰.

METHODOLOGY

Population : year 1 medical students of 2016/17 and 2017/18 academic session (n= 254)

Group A

Group B

Exposed to action movie

Exposed to educational video

Lecture on gross anatomy of heart

Post lecture assessment (10 vetted multiple true false questions)

Data analysis

RESULT

Difference in assessment score between student groups

Table 1. Difference in assessment score between groups

	Median (IQR)	Z-stat	P value
No preparation	56.0 (20.0)	-3.274	>0.001
Pre lecture preparation	60.0 (16.0)		

Mann-Whitney test p-value

CONCLUSION

- Our result suggests that students who were exposed to pre lecture educational video viewing has better understanding on the lecture topics
- Pre lecture activity has also successfully stimulated some prior knowledge of the students before they attended the lecture section, which indicate reduction of the students' cognitive load
- Hence, pre lecture activity could serve as a method for enhancing students' lecture comprehension
- However, future research should be conducted in a well designed environment as to evaluate the impact of pre-lecture activity on other measures of students' learning performance

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TBL- Based Anatomy Practical: An Innovative Way For Gross Anatomy Practical Session

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Abstract

Teaching anatomy through cadaveric dissection is no longer feasible in modern curriculum due to various reasons. Hence, anatomy educators are facing challenges in promoting active learning during gross anatomy practical classes. The normal practical demonstration by tutors fails to stimulate students' prior knowledge, engagement towards learning material, internal motivation and promote collaborative learning among students. To address these drawbacks, a new approach known as team-based learning (TBL) can be introduced as an alternative to the current teaching methods as it has successfully promoted active learning with attainment of desirable learning outcomes. However, its application in anatomy education is yet to be explored. TBL involves a sequence of learning activities consisting of three phases: 1) preparation of assigned content and objective oriented discussion (Phase 1); 2) student's individual and team assessments that explore their basic understanding of facts and concepts of learning material, followed by clarifying feedback and team appeal (Phase 2); 3) students teamwork on group application problems (Phase 3). The potential implication of TBL-based anatomy practical on students' learning could be explored in future studies by investigating its impact on students' knowledge acquisition, knowledge retention, motivation and engagement. It is postulated that a well-designed TBL-based anatomy practical would be able to improve anatomy teaching in large group, which currently faces challenges of limited time and resources.

Challenges in Anatomy Practical Session

1. Cadaveric dissection is no longer feasible in modern curriculum due to inadequate resources and time consuming^{1,2}
2. Anatomy has suffered a reduction in its teaching hours due to emergence of new medical subjects^{3,4}
3. Anatomy is perceived as cognitively challenging subjects that required active learning to promote better understanding⁵
4. Scarcity of well-designed research on exploring the best teaching method in anatomy^{6,7}

Drawbacks

1. Fail to stimulate prior knowledge
2. Lack of engagement towards learning material
3. Lack of collaborative learning elements
4. Do not motivate learners to learn

Team Based Learning

Structured form of **small-group learning** in **large group educational setting** that emphasizes student preparation out of class and application of knowledge in the class

Relevance of TBL

1. In anatomy education, TBL is adopted to replace the lecture-based instruction⁸
2. Resulted in marked increment in the anatomy knowledge acquisition and attainment of interpersonal skills⁹
3. Resulted in high engagement level, and attainment of learning objectives and desired learning behaviours¹⁰

Concept of Team Based Learning

PHASE 1
Preparation of assigned content and objective oriented discussion topic (take place before the TBL session)

PHASE 2

1. Readiness assurance test (iRAT)
2. Team readiness assurance test (tRAT)
3. Team Appeal
4. Clarification session

PHASE 3
Group assignment (application exercise)

What need to be explore?

TBL impact on students' :

1. Knowledge acquisition
2. Knowledge retention
3. Motivation and engagement level

Who will benefit from TBL- based Anatomy Practical ?

- 1) **Lecturers:** would be able to have proper evidence-based guideline on how to prepare and deliver an effective practical session
- 2) **Students:** would be able to promote knowledge acquisition and gain teamwork skills and professionalism
- 3) **Institution:** Improvement in pedagogical practice in higher institutions

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