

The Level of Acceptance for Interactive Lecture among Lecturers in School of Dental Sciences, Universiti Sains Malaysia

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Abstract

Introduction: In education, engagement and participation of the students are very important to achieve learning and interactive lecture (IL) is one of the important way to achieve it.

Aim: This study was done to assess the pre and post intervention level of acceptance for IL by the lecturers at School of Dental Sciences, Universiti Sains Malaysia (PPSG) for further strategic planning.

Material and methods: All the lecturers at PPSG were invited for the study and classified into either clinical lecturers or basic sciences (BS) lecturers. The assessment were done using 2 sets of questionnaire for baseline and after the intervention.

Results: Both group of lecturers have an improved knowledge of IL after intervention and majority accept for the future application at PPSG. However clinical lecturers presented with more limitation in applying it.

Conclusion: The IL concept is generally accepted by lecturers for future application at PPSG.

Introduction

In the current education globally, many new changes have been applied to increase the effectiveness of teaching and learning where most of the time need to incorporate the used of new era digital gadgets which can help in more engaging and interactive learning. Interactive lectures (IL) are classes in which lecturers engaged the students through incorporation of engagement triggers or activities where the lecture might be stop at least once so that there will be activities for students to participate by working directly with the materials or colleagues. Various IL techniques can be applied to increase the engagement depends on the skills and capabilities of the instructors or lecturers. This immediately applied content at the same time can provide feedback to the lecturer. Interactive lecture became very important nowadays due to the changes in way of learning and more digital materials and gadgets available.

School of Dental Sciences (PPSG), Universiti Sains Malaysia (USM) was established in 1998 and comprises of administrators, supporting staffs and academicians/lecturers. Majority of the lecturers were dental clinicians which most of their time teaching practical and clinical skills related to dentistry in various disciplines: oral maxillofacial surgery, conservative's dentistry, prosthodontics, periodontics, orthodontics, paediatric dentistry, oral pathology, oral

medicine and dental public health. They supervised the clinical practice in the clinic set-up and ward round else than giving lectures or seminars. Another group of lecturers was basic sciences (BS) that mainly teaching medical and basic sciences subjects, more in classroom and lecture hall.

PPSG is a teaching and learning centre of undergraduates for the degree of Doctor of Dental Surgery (DDS) and postgraduate for Master of coursework, mixed mode and Master or PhD by research. The studying of DDS involved a 5-year course where SPICES concept was applied which meant application of Student - centered, Problem-based, Integration, Community-oriented, Elective and Systematic. The school is always try to accomplish and targeting to produce good dentist and professional for the better of the country and world.

Interactive lecture is still quite new terminologically to PPSG lecturers even several of them unnoticeably have applied it in their teaching. General feedback found that many lectures still seem unaware or have poor awareness and knowledge when being asked about IL. The claim of heavy workload and less time especially by clinicians were among common reasons given and this might hinder the use of IL in teaching and learning.

Considering the important of IL in teaching and learning, the use is highly recommended by the government and ministry especially in preparing the country's education for the 4th industrial revolution era. This concept is going to be making known and applied in PPSG as soon as possible for the better graduates and also better academicians. Prior to that, a study was planned to assess the acceptance level of the lecturers at baseline and after receiving some interventions to help finding the right strategies in conducting and enhanced the implementation of IL at the school. The study looks at the acceptance level which mean the act of accepting or the state of being accepted either by words or conduct by which a person signifies his assent to the terms and conditions. Thus, a survey focused on the knowledge and acceptance level of IL among lecturers in PPSG was conducted using 2 sets of questionnaire pre- and post-intervention.

Study that had been done previously for dental staff at Taibah University found positive feedback about the workshop on interactive learning. Awareness of staff to the concepts was increased even there is some scepticism and concerns related to the applicability of IL methods to real-life settings [1].

This study is to investigate the acceptance level to IL by dental lecturers at current time and after some exposure through intervention for the future and further planning and application at PPSG. It is to look at if there are any changes on the acceptance level to IL between clinical and basic sciences lecturers after intervention. At the same time, it is also to compare if there is any difference between dental clinician and basic sciences lecturers.

Literature Review

Lecturing is well known as a good way to relay information and sharing knowledge and has been practiced by educators since very long time ago. Hence, traditionally many lectures were more on one-way communication based on teachers transfer knowledge to students with lack of interaction. With this style many weaknesses were observed such as underperformance of teacher, 'lecturalgia' that includes boring lecture session, sleepiness, loss of attention etc. To improve this, the 70: 20: 10 model for learning should be followed; which was created in the 1980s by three researchers Morgan McCall, Michael M Lombardo and Robert A Eichinger. It holds that individuals obtain 70 percent of their knowledge from job-related experiences with participating and engagement, 20 percent from interactions with others, and only 10 percent from formal educational event or class.

This is also supported by the other model of learning which is constructivist that focus on students actively involved in their own learning process. Constructivism is a well accepted theory of knowledge which argues that humans generate knowledge and meaning from an interaction between their experiences and their ideas. The teacher functions more as a facilitator in helping students develop and assess their understanding and learning. Following these; the new approach by application of IL is introduced to improve the condition. This IL will help the instructors to intellectually engage and involve students to actively participate during the knowledge transferring process. This way might begin with the instructor given an engagement trigger that create student thinking, increase attention and interested to get involved in the learning activities. Then the instructor incorporates an activity that allows students to apply what they have learned or give them a context for upcoming lecture material.

As the instructor feels more comfortable using interactive techniques he or she might begin to call upon a blend of various interactive techniques all in one class period. Study by Roopa, *et al.* (2013) for 78 first year dental students in India discovered that 92% of the students found that IL was more useful than regular lectures. Significantly more number of students agreed or strongly agreed that IL kept them attentive, created interest, overcame monotony, motivated them for self learning and provided well defined learning than regular lectures. This supports the use of IL in ensuring increased student's interest and attention during lectures [2].

In medical and dental education, it is expected to move students along the path from layperson to novice physician. Traditionally, basic science and clinical education components of medical school are kept separated where by fact, both of this should be integrated so students can incorporate basic science concepts into their clinical problem-solving [3]. More interactive methods of teaching should be applied to make this happen so that by doing the activities; they can develop thinking and improve their understanding and connection of both components. In a study among dental students with 85% response rate, more interactive clinical seminars as opposed to lectures were found more effective way of learning and more relevant to self-development. Students prefer seminar-based learning which was considered to be more amenable to self-direction rather than formal didactic lectures [4].

Interactive lecture application will promote student retention and learning of the material presented during lecture, allow students practice in developing critical-thinking skills, and enable instructors to assess how well the class is learning through feedbacks. The study was planned at PPSG to assess the current level of awareness and knowledge regarding IL and to see their acceptance to this new application. It is basically to investigate the acceptance level to IL among lecturers, to compare the difference in the acceptance level to IL between clinician and BS lecturers and to compare the difference before and after some intervention. This will help the administrator to properly plan and strategize what is needed in the way to successfully implement IL fully at PPSG.

Study Methods

A cross-sectional study was conducted at PPSG targeting all the lecturers within a 3-month period from August to October 2015. The source population is lecturers of academic year 2015/2016 where the inclusion criteria is all BS and clinical lecturers in PPSG and the exclusion criteria is trainee lecturer. Target sample size was determined using the sample size calculator via website <http://www.surveysystem.com/sscalc.htm>. The confidence level is set at 95% while the confidence interval is 5 with sample population is the total number of lecturers in School of Dental Sciences which is at the time was 72; hence all lecturers was invited for the study. Based on the online sample size calculator, the sample needed is 61 subjects but the responds are not fully achieved.

The questionnaires were created using Google form for online application containing 4 sections where the first questionnaire set was delivered for the baseline data. It includes demographic profile, Section A of acceptance and knowledge, Section B of interactive tools and techniques; Section C of awareness and section D of additional information such as reasons if IL cannot be applied in their teaching. It contains questions with Lickert scale marks and also an open answer questions. They were given around 3 weeks

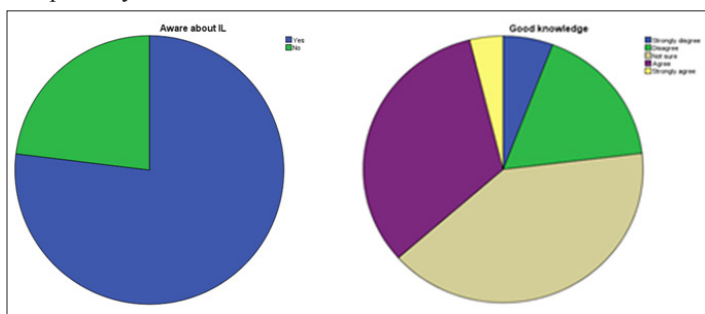
to answer it with few reminders through email. Then in September there is an intervention where a morning lecture and discussion session was given about IL which also includes information about how they could find more things related to it. In the campus itself during that period there is also a continuing professional development related to IL and workshop for staff that interested to join. They were advised to find and practice more IL in their teaching. After the interventions, the second similar questionnaire was post online for the lecturers to answer.

The data was analysed using SPSS version 22.0 using descriptive statistics and using independent sample T-test with Mann-Whitney in order to ascertain differences between BS and clinical lecturers with regard to the acceptance level to IL. This short time study has their limitation including time and responds that just satisfactory.

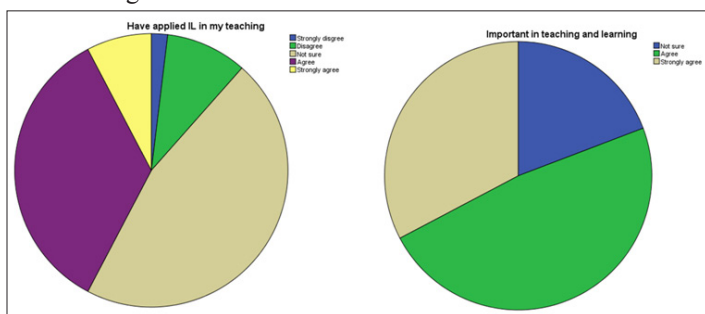
Results

Pre- intervention

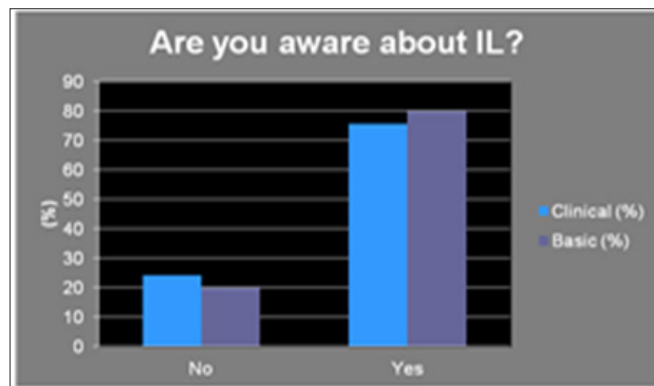
During the survey time, at PPSG there was 52 clinicians which is around 3/4 of lecturers and 20 are BS lecturers. For the pre-intervention result, only 52 (71%) responds where 37 (71.15%) clinician and 15 (28.85%) were BS lecturers which in accordance with the number of lecturers within groups. There is difficulty in achieving targeted sample may be due to time matter or other commitments.



77% answered that they actually aware about IL and majority claims that they have good knowledge about it. But, as many as 46.2% not sure whether they has applied it in their teaching or not. Anyway, 80.8% of the lecturers understand the important of IL in teaching and learning.



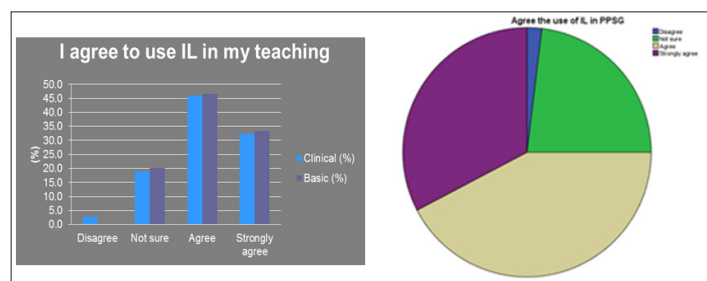
When comparing between the 2 groups of lecturer, similar responds were detected with no significant different where more than 70% of both group give positive answer about awareness and only quarter number of the lecturers were not aware about it. Around 40% not sure about their knowledge of IL and whether they have applied it or not even many claims they know that it is important. Another half of the lecturers' number responds that they have applied IL in their teaching.



More responds receive from BS that from clinician for have a good knowledge of IL

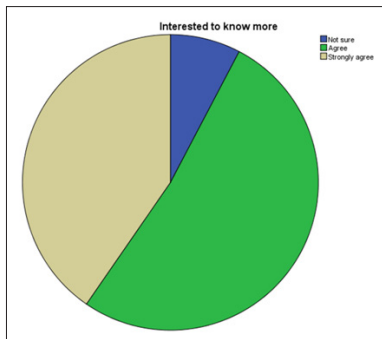


Around 80% agrees that IL is important in teaching and learning. The BS lecturers respond that they have used effectively in their teaching but quite broad answer from clinicians which many not sure whether they have used it effectively or not. However, majority of both thinks it is suitable and agrees to apply IL in their teaching.



Around 2/3 of lecturers in both group agree with the implementation of IL at PPSG.

Regarding accessing for more knowledge and information, 92.3% interested to know more and 7.7% not sure. Only half have thought they can get more information by themselves. Anyway, still none of the comparison was significantly different.



Several reasons were given by those who cannot apply IL in their teaching and learning. Many reasons come from clinicians but fewer reasons from BS lecturers. Basically is related to knowledge, time, clinical factor and limitation of support or facilities. Among reasons from clinicians are as listed below:

- In clinical teaching, live practical is the only way that give benefit (teach, show, share, give then practice)
- IL needs a lot of time for preparation and also practise before it becomes a reality for the beginners
- Do not have enough time
- Lack of computer knowledge and lack in computer literacy
- Need few modification in our lecture room
- In clinical teaching: student must do the clinical part by himself
- Lack of facilities and support in University to implement the application of IL
- IL will need careful and thoughtful planning to fit in a limited class-time
- Don't have enough knowledge about it
- Need to attend courses regarding the matter to appreciate IL better
- Lack of knowledge in modern application
- Not enough exposure of how to use IL
- Not much information about it
- Less knowledge and skill
- Lack of knowledge in modern application
- I need to know in details on what is IL
- Time to prepare not enough
- Need lecturer and students' commitment to participate
- Can apply once I know how

Only 2 reasons from BS which are the time limitation and need more students' participation not only from lecturer.

When the questions asked about tools used for the IL; variations of tools were given. Few most popular web-based interactive tools and techniques used were E-learning (35), YouTube (25), Prezi (10), Facebook (10), What's app (10), Blend space (8), Blogspot (3), Twitter (2), Mind map (2), Kahoot.it (2) and Edmodo (2). For the traditional interactive tools and techniques, they used seminar (41), question and answer (40), group discussion (35), forum (15), reflection (13), role play (11), one sentence summary (2) and think-pair-share (1). Only 5 types of document management tools used which are Dropbox (36), Google drive (16), OneDrive (4), iCloud (2) and Box (1).

Intervention

The intervention session was conducted where there is lecture, seminar and discussion. They were also given guide to seek more information by themselves. It was given by one of the e-learning and

IL educator where only 46 lecturers have attended. Anyway, during that period there is also another workshop regarding IL organized by the campus continuing education department where the lecturers can attend and learn more.

Post-Intervention

The post-intervention questionnaire was answered by only 37 of the lecturers (51.4%) and all of them have answered the pre-intervention questionnaire before. As many as 27 (72.97%) are clinicians and 10 (27.03%) are BS lecturers. By this time, 100% of both group answered aware of IL and majority claims have a good knowledge about IL. Majority of both group also accept the important and have or agree to apply IL in their teaching.

When being asked about reasons why if they cannot apply IL in their teaching, still many responses received from clinicians when compared to BS lecturers

Clinician's feedback:

- Poor internet connection speed
- No facilities and support provided by the university
- Not clear on the copyright issues as we want to share material for learning purpose
- Not enough time
- Don't know how to use and apply web based interactive tools
- Not applicable
- Time limitation and need pre-planning to use IL
- Unsure how it can be implemented well in teaching clinical dentistry
- I need some time to learn more about the tools and techniques
- Problem may comes from the inadequate facility at some lecture hall/seminar room
- I need to attend workshops/courses and expose myself more on how to use a web based interactive tools
- Internet support when at home is slow
- Needed our class room and campus to be upgraded in IT technology; faster internet facility
- Less information about it
- In clinical teaching, direct approach and hands on skill are more relevant

Basic sciences's lecturer's feedback:

- Not enough knowledge
- Not computer savvy enough to apply
- Seminar Room in Trauma building is not equip with the IL facilities and no audio system connected to a PC
- Time constraint
- Preparation needs tons of hours as I'm not expert in handling new methods

Anyway, still many not sure whether they have applied IL effectively in their teaching or not. Many agrees that IL will be used at PPSG and thinks it should be practiced fully in Malaysia. Regarding interest for IL, only small percent disagree to seek more knowledge. Three-quarter to two-third want to explore for more information by either attending courses or by their other own way.

The answer for the tools used is similar with the pre-intervention maybe due to time is quite short after intervention for them to practice straight away. For the comparison between clinician and BS, there is no significant difference.

For comparison pre and post-intervention by group: both groups have answered more for pre-intervention than post-intervention even a token of appreciation was given if the answered the questionnaire. The awareness increase to 100% after intervention comparing to only 80% at baseline and generally the knowledge and understanding of important also improve after intervention. There was also an increased number of lecturers that agree to the use of IL in either their teaching or at the dental school after intervention and they claim have improved knowledge and understanding the important of IL after intervention. Similarly many claims that they have used IL very effectively and increase agreement to use IL in the post-intervention survey.

Discussions

The limitation for this study is the short time and difficulties in getting enough response especially post-intervention. Majority claim they have some knowledge of IL and improve to 100% after the intervention. Anyway, still many lecturers were not sure about IL. Generally, lecturers at PPSG accept the application of IL whether they are teaching clinical or basic sciences; they agree about the important and show interest in applying it in their teaching. Only very small per cent that reluctant to accept this application of IL.

Previous study in overall indicates that the dental clinical learning environment supports close perceptual conformity between students and clinical teachers in regard to what each group considers to be “good practice” in clinical teaching [5]. Providing faculty development related to evidence-based teaching, introduction of IL technique might be able to motivate clinical learning environment for clinical students, clinical teachers and also classroom educators as well as improve engagement.

When comparing both groups of clinician and BS lecturers; there is no so significant difference of all acceptances to IL components tested in this study. That mean either they are busy with the clinic or they have time more in lecturing; most lecturer knows the important and many wants to learn more and apply it in their teaching. This will be a good feedback on further application of IL at PPSG even clinical lecturers have given more reasons/problems in applying which mostly claims due to lack of knowledge, time limitation and unsatisfactory supports and facilities especially internet at the university else than not suits the clinical teaching condition.

Regarding the comparison of pre and post-intervention, no significant difference observed between clinicians and BS lecturers response. Several reasons were given for pre and post-intervention with more variation during post-intervention. Concern and strategies must be found to overcome the hindering factors especially commented by the clinician if to make application of IL at PPSG successful. A way must be found to help them applying it for example simplifying the technique such as using gadget like iPad to show cases in clinic or improved the internet access in classes.

For clinical they can use such as Cliff hanger cases where students are asked to read a case that outlines a complex situation and includes a problem that need discussion or Incident type case where students are presented with a short description of a problem situation which need to think and asked correct question to gather more information [6]. Other ways might be through using films, or radiograph or videotape for interactive discussion.

In teaching of basic sciences subjects, a study found that the perception of 97 students and 15 lecturers indicated usefulness of IL in better understanding of subject content. About 93% of lecturers were convinced with its role in concept visualization. Students in majority satisfied with the content’s delivery, understood structural and functional relationship. They conclude that both lecturers and students agreed upon usefulness of IL and its continuation as part of core curriculum in teaching of basic science subjects [7].

For the limitations, time for the survey is quite short; it is difficult to get enough respondents because some lecturers were on leave such as study or sabbatical leave, research leave, attending courses abroad, and also other human related factors. The time for intervention also short where there should be more sessions and more knowledge transfer. Anyway, the feedback shows the current situation at PPSG which the information can be used for future plan.

For the pedagogical implications; IL should be applied by all PPSG lecturers. A study found that students preferred the interactive media module even did not regard it as a total replacement for the traditional teaching [8]. Another study involving dental student also give good feedback of using IL technique than didactic lecture where statistically significant higher average on unit exams compared with traditional didactic lectures (8.6% higher, $P < 0.05$). The students also demonstrated an improved long-term retention of information via higher scores on the comprehensive final exam (22.9% higher in engaging lecture sessions, $P < 0.05$) [9]. Many qualitative improvements were also indicated via student surveys and evaluations, including an increased perceived effectiveness of lectures, decrease in distractions during lecture, and increased confidence with the material. For this, lecturers at PPSG should be more exposed to the IL maybe through CDAE/CPD workshops or online education. Strategies need to be developed to enhance the application of IL by clinician. At the same time infrastructures, facilities and support such as good internet access needed to be improved so that it will increase acceptance and more convenience for lecturers to adopt IL maximally.

Conclusion

By limitation of this study, in general PPSG lecturers highly accepted the application of IL and no significant differences between group of clinician and BS and also pre and post-intervention. The clinical dentistry lecturers have expressed more reasons and limitations in applying the IL even after intervention, which imply that concern and strategies with improvement should be taken to give a better route for the proper implementation of IL at PPSG, USM.

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