https://doi.org/10.38124/ijisrt/25may917

Evaluation of Students' Satisfaction about a Team-based Learning Fixed Prosthodontics Course in Tunisia: A Pilot Study

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Publication Date: 2025/06/05

Abstract:

> Background:

The learning process is constantly evolving. In order to improve this process, we need to keep pace with changes in learning methods. In this context, the socio constructivist model has been implemented to replace the traditional transmissive model. The integration of these approaches into medical studies in particular means that students can better manage clinical situations and develop greater self-confidence. The learner becomes the actor of his own learning.

➤ Aim:

The aim of this study is to evaluate 4th year students' satisfaction with a team-based learning session of fixed prosthodontics, during the academic year 2023/2024.

> Methods:

A cross-sectional descriptive study using a satisfaction questionnaire sent to learners via google forms. The responses were formulated according to the Likert scale.

> Results:

All the students of the Group 2 of the 4th year of Dental students were included in the study. According to the results, about 37% of learners felt that the duration of the session was insufficient. 68% of learners felt that the allocation of time during the session was appropriate. Also 68% found the atmosphere favorable to learning and 81% were satisfied with the interactivity of the session.

> Clinical Significance:

The establishment of active learning methods is a new strategy in the dental faculty in Tunisia. To enhance this process we need all the participants' (students and teachers) feedbacks. In fixed prosthodontics courses, we opted for small groups experiences, feedbacks and briefings before moving to larger groups of students.

> Conclusion:

Learner feedback is of major importance. It is the learners' opinion that will enable us to rectify aspects of the TBL session and adapt it to the required objectives of this session.

Keywords: Active Pedagogy, Active Learning, Team-Based Learning, Group Learning, Flipped Classroom, Dental Medicine, Dental Students.

How to Cite: Zeineb Riahi; Dalenda Hadyaoui; Hanen Boukhris; Imen Kalghoum; Belhassen Harzallah. (2025). Evaluation of Students' Satisfaction about a Team-based Learning Fixed Prosthodontics Course in Tunisia: A Pilot Study. *International Journal of Innovative Science and Research Technology*, 10(5), 3328-3333. https://doi.org/10.38124/ijisrt/25may917. Volume 10, Issue 5, May – 2025

ISSN No:-2456-2165

I. INTRODUCTION

The process of learning has always been in the heart of the evolution of all humankind. Any type of art, technology or science can present certain particularities for its own process of learning. A process, which is not static, but evolves with the evolution of the discipline concerned. In this context, modern pedagogy shifted from transmissive old approaches to actual active approaches, or social constructivist model based on discussion and interaction. The use of these approaches in higher education, medical studies in particular, enables learners to better master the management of later situations that would have required advanced skills. Following this development relies on the use of new tools and techniques to achieve the learning objectives⁽¹⁻³⁾

Dentistry has adopted several active learning methods to optimize learner training and prepare him to subsequent clinical situations. As for example, the active group learning, that enables to enhance the students' self-confidence and balances the distribution off different students' profiles thanks to the groups' formation. It also helps each learner to develop his or her own abilities, and boost his performance to get along with his group's level. Active learning is mainly centered on the learner, who becomes an actor of his own education, and responsible for its progress^(4,5)

The flipped classroom is a flipped active pedagogy philosophy that has been adopted. It is based on tasks out of the classrooms, and a group wor in the classroom. Teambased learning is a variant of the flipped classroom based on team work in the classroom⁽⁶⁻⁸⁾.

The aim of this paper is to describe the progress of a team-based learning session of fixed prosthodontics on the theme of Clinical examination and treatment plan in fixed prosthodontics and to assess the students' perception of this session.

II. MATERIALS AND METHODS

A. Study Objective:

The aim of the study is to evaluate the strengths and flaws of a TBL session of a fixed prosthodontics course via the feedback of the students and assess their satisfaction.

B. Study Design:

A cross sectional study based on a questionnaire sent to the students who attended the TBL session, via google forms.

Learners' feedback was obtained by means of a questionnaire sent to them by e-mail via goole forms. The questionnaire (Appendix 7) was designed to assess the students' satisfaction with the team learning session, and to identify any weaknesses in the method or logistics deployed, from their point of view.

https://doi.org/10.38124/ijisrt/25may917

> The Questionnaire had 8 Items:

- The session length was not adapted to the content,
- The time allocated to each phase of the TBL was appropriate,
- The general atmosphere was suitable for learning,
- The session helped me make links with knowledge I had already acquired,
- The session was interactive,
- The learning materials provided were relevant,
- The explanations were clear enough,
- The overall quality of the session as satisfactory.
- The Responses were Recorded According to a Four Point Likert Scale as Follows:
- 1= I strongly disagree,
- 2= I disagree,
- 3= I agree,
- 4= I strongly agree.

The scores of the individual and team tests were also compared. The progression index was calculated to evaluate the efficiency of the team work.

C. Inclusion Criteria:

All the 4th year students belonging to Group 2 who attended the TBL session under the theme: Clinical examination and treatment plan in fixed prosthodontics during the academic year 2023/2024.

Students' consent was obtained beforehand.

D. Exclusion Criteria:

We excluded all learners who did not attend the TBL session.

- E. Scripting the TBL Session:
- 15min: Welcome students and introduce TBL, explaining how the session works,
- 15 min: Activity 1: individual test (i-RAT)
- 15 min: Activity 2: Team test (t-RAT)
- 30 min: Activity 3: Calls: correction of the test, students ask targeted questions based on the course,
- 30 min: Activity 4: Feedback: explanation of the main course concepts,
- 15 min: Activity 5: Intra- and inter-team application and discussion: resolution of a clinical case.

III. RESULTS

A. Demographic Characteristics:

The study included 16 students, with a median age of 23 years. The participant cohort comprised 13 females and 3 males (Fig1), resulting in a sex ratio of 0.23. Among the learners, no one had a previous experience with TBL courses.

ISSN No:-2456-2165

https://doi.org/10.38124/ijisrt/25may917



Fig 1: Pie Chart Showing the Distribution of Learners According to Gender

B. The Questionnaire Answers:

Most of the learners were not satisfied with the length of the TBL session or the time allocated to every phase of it

(Fig 2 and 3). They reported that the time allocated was not enough to take advantage of every phase of TBL.



Fig 2: Bar Chart Showing Learners Satisfaction with the Length of the Session



Fig 3: Bar Chart Showing Learners Satisfaction with the Time Allocated to Every Phase

Volume 10, Issue 5, May – 2025

ISSN No:-2456-2165

According to the results of our survey, more than 2/3 of the learners expressed their satisfaction with the general atmosphere during the session. 75% of them also agreed having deepen the knowledge acquired out of the class. All the learners showed satisfaction about the interactivity during the TBL session. https://doi.org/10.38124/ijisrt/25may917 For the rest 3 parameters of the questionnaire: the relevance of the documents provided, tutors explanations and the satisfaction about the overall quality of the TBL session, the responses were ranged between agree and strongly agree. (Fig4)



Fig 4: Bar Chart Showing Learners' Satisfaction with the Six Different Parameters of the Questionnaire Related to the TBL Session

C. Comparison of Individual and Team Test Scores:

The MCQ was weighted on 5 points. Every correct answer was worth 05 points and every incorrect answer was scored 0. The scores obtained in the individual and team tests were as follows:

Learner	Rating
L1	2
L2	2.5
L3	3.5
L4	3
L5	4.5
L6	3
L7	3.5
L8	1.5
L9	3
L10	3.5
L11	3.5
L12	4.5
L13	4
L14	2
L15	2.5
L16	2

Table 1: Individual test scores for each learner

T	ał	ole	2:	Team	Scores

Group	Note
G1	3.5
G2	4
G3	4.5
G4	3

Table 3: Progression Index

Overall Evaluation Average	i-RAT: 2.9	t-RAT: 3.75
Progression index (i-RAT and t-RAT)	29%	

IV. DISCUSSION

The team-based learning approach is an active learning method, with the entire process centered on the student. Students are responsible for their own learning. This learning method is increasingly used in higher education, particularly in medical studies. Bishop and Verleger (2013) talk about the huge number of new websites dedicated to this learning method, as well as the effervescent production of many scientific articles discussing it ^(6,9,10).

In this TBL session, we tried to apply the basic model of a TBL with its different phases. First, we stressed to the students the importance of pre-class preparation of the document to be sent. Then, at the start of the session, we took 15 minutes to explain how the flipped classroom would work, and to form the teams.

At the end of the session, a longitudinal study was carried out with these same students, using a form sent to them via google forms, to get their feedback.

The aim of this study was to assess student satisfaction with the TBL session.

According to the results we obtained, we noted the impact of this session on learner satisfaction. Indeed, the majority of students were satisfied with the experience

Volume 10, Issue 5, May - 2025

ISSN No:-2456-2165

overall. This is in line with the results reported by several studies, which have shown a correlation between learner satisfaction, motivation and reduced absenteeism with TBL sessions $^{(11-12)}$

The majority of learners (75%) stated that this TBL session helped them to deepen their initial knowledge acquired through individual reading of the document provided. In fact, the percentage of comprehension in a TBL session is far better than that obtained following a traditional course⁽¹³⁾

81% of learners found the session interactive. The major advantage of the TBL session is that it encourages communication: firstly within the team, to be able to agree on an answer the students have to communicate together. It was interesting to observe the learners first struggling to agree on a correct answer, and then finally coming to a consensus on which they could agree, and according to which they could carry on more reasoned and argumentative conversations. It is this conversation that will promote each learner's cognitive level and critical thinking ^(13,14).

Next comes inter-team communication and communication with the tutor, which will enable the learner to ask for clarifications on points little or misunderstood. We emphasize the importance of an atmosphere conducive to this learning method, giving learners the confidence to boost their communication skills.

75% of learners confirmed that the document they had previously consulted was relevant. In this experiment, a handout was sent to learners. It's essential to insist on the quality of the support to be consulted outside the classroom. Indeed, several types of support can be used, the best of which would be plaques or video capsules. In this context Sales (2013) draws attention to the fact that it can be difficult for some teachers to access reliable, easy-to-use software for creating video capsules. It should also be mentioned that it can be somewhat complex for the teacher to prepare a TBL session, which can be an additional burden. To be successful, the tutor needs to be well trained and to master the pedagogical tools to be used outside or inside the classroom.

68% of learners found the explanations clear. We must insist on the feedback phase provided by the tutor, which will enable learners to confront their shortcomings and overcome them. When the tutor notices that particular questions have the wrong answers in the team tests, he or she must insist on this information and take the time for the learners to assimilate it.

On the other hand, most of the students felt that the time allocated to the session was insufficient, and that the distribution of time between the rubrics was irrelevant. Indeed, this was our first TBL session. It was difficult to manage time between sections. To manage time better, students need to be more used to this method, to ensure that the session runs more smoothly. https://doi.org/10.38124/ijisrt/25may917

Logistically too, for a first-time experiment, it was difficult to find the right layout and distribution of teams. The distribution and collection of individual tests and their correction at the same time as the learners were collectively answering the t-RATs was also difficult to manage.

A comparison of the average scores obtained on the individual and team tests showed a 29% progression rate in favor of the group tests. This can be explained by the fact that teamwork enables some learners to correct certain shortcomings through their teammates. The knowledge a team uses to answer a question is cumulative knowledge enriched by the intervention of several individuals.

Indeed, this is the main objective of this learning method, which is to get the good elements to help the not-so-good elements improve through inter- and intra-team discussions. Learners learn from each other and correct each other. The best-prepared learner (who has assimilated the most knowledge acquired outside the classroom) will share this knowledge and verbalize it within his or her team to achieve a better team score^(15,16)

> The Strengths of this TBL:

- Involvement of the majority of students in pre-reading the document,
- Harmonious group work
- Better ratings for group tests compared to individual tests
- Weaknesses of this TBL:
- Difficult management of the time allocated to each phase,
- The room layout was not conducive to group work,
- As this was a new experience for the students, the transition from one phase to another was not smooth.

> Recommendations:

- Limit technical difficulties,
- Offer students content that is easy to assimilate, complete, unambiguous, short and concise,
- Train teachers in pedagogy,
- Teachers can work in groups for better performance⁽¹⁷⁾

V. CONCLUSION

Nowadays, the TBL is an essential teaching tool in the training process for all healthcare professionals.

Dental training in particular requires the acquisition of clinical knowledge and practical skills for professional practice. TBL as a learning method in fixed prosthetics has shown a positive impact on student training (11,18). A high level of satisfaction has also been achieved among students.

However, the application of this method requires prior logistics. Trainers need to acquire the skills required to manage TBL sessions and bring them to a successful conclusion. Volume 10, Issue 5, May - 2025

ISSN No:-2456-2165

Learner feedback is of major importance. It is the learners' opinion that will enable us to rectify aspects of the TBL session and adapt it to the required objectives of the session.

The application of active pedagogy in the dental curriculum, and particularly in the teaching of fixed prosthetics, will optimize learners' clinical reasoning, communication skills and self-confidence, which in a few years' time will result in an accomplished practitioner capable of managing patients in a real-life context(11,15).

The application of active pedagogy in our higher education is becoming a necessity, not only to align with pedagogical approaches around the world, but also to bring its methods into the training of learners.

This application will require a great deal of preparation and logistics, as well as teamwork within the institution concerned to achieve satisfactory result.

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