

Application TBL technology lectures on the discipline «Biostatistics» on «Sampling method»

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Article History: Submitted 20.12.2019

Revised: 07.01.2020

Accepted: 05.02.2020

ABSTRACT

The article highlights the practical application relevant TBL technology lectures on the discipline of biostatistics on "Sampling method". This method helps students to interact and develop skills in a teamwork.

Keywords: TBL technology, biostatistics, sampling, teamwork, feedback, test tasks

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DOI: [10.5530/srp.2020.2.28](https://doi.org/10.5530/srp.2020.2.28)

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INTRODUCTION

The introduction of innovative educational technologies is relevant. One of the methods of modern innovation is TBL technology - team-based training.

Team Based Learning technology was developed by Dr. Larry K. Michaelsen, professor of Oklahoma University in 1970s [1, 2, 3, 23, 24].

In order to provide students with quality education, the teacher contributes to the elimination of the first disadvantages of the student on the subject, and encourages students to motivate themselves. Evaluating the effectiveness of this lesson is testing, discussing, and summarizing the student's knowledge using TBL technology. [4, 7, 8, 10, 11, 15].

TBL- group of students interact as an individual team in the auditorium, receive feedback from the teacher through team participation on simple and complicated questions, learn to be an expert in that subject.

Among the medical universities of Kazakhstan, the first time TBL technology was introduced by teachers of the Department of Science and Natural Sciences of the West Kazakhstan State Medical University named after Marat Ospanov. TBL technology was introduced in the subject "Computer Science" in practical classes (Registration № 193. 23.11. 2012). The teachers of the Department of Medical Biophysics and Life Safety at Astana Medical University were introduced TBL- technology for the **General Medicine faculty's students in the subject "Life Safety"** in practical classes (Registration № 122 of 02.01.2015). Department of Clinical Disciplines of the Medical University of Semipalatinsk teachers were introduced the effectiveness of the team-based teaching method (TBL) in the lecture course of clinical discipline. (<https://articlekz.com>) [14,15,18,12,16,22] .

PURPOSE

Use of TBL technology in the lecture on the subject "Biostatistics" for 3rd year students of "General Medicine" faculty. Provide the student with the opportunity to develop their practical skills in their professional activities. Increasing students' motivation to take practical lessons.

Allow students to apply their knowledge to perform tasks. The development of cognitive and communicative skills.

MATERIALS AND METHODS

Methodical recommendations on "Biostatistics" course for the students of 3rd year (1, 6 streams) for specialty "General Medicine", held at the Department of Informatics, Mathematics with Biostatistics course.

The materials are: methodical handouts for practical lessons, test tasks, methodical guidelines of the teacher, scores sheet and student's questionnaire results about student's satisfaction with the lesson and methodology.

Team-oriented learning process consists of six stages:

Stage 1: Distribute tasks preliminary. Students have to prepare for questions and do their individual tasks out of class.

Stage 2: Students take individual tests. Control the classroom work and individual preparation for the lesson: students answer several questions (6 variants of tasks with 12 questions in each).

Stage 3: A team-controlled test is conducted.

Students discuss questions of the individual test together in a team and choose the right options.

Stage 4: Students answer additional questions and then discuss the result with the teacher (appeal). In the process of solving the test questions by the team, students will be given feedback. After discussion, the student must be confident in solving the following practical problems.

Stage 5: Teamwork (TAPP).

This is the most important stage. Students are given situational tasks on issues that they may encounter in their professional activities.

Students formulate the main problems of this situational task, analyze, choose ways to solve this problem, interpret the results, predict, summarize and make a conclusion.

The basic principles of conducting classes are used: students work together in small groups, and feedback is provided during the work.

Stage 6: Teams ask questions and discuss their answers together with the teacher. Teams should put the question correctly and logically support their responses.

RESULTS

Using the materials of this topic and carrying out the test tasks on the topic during a lecture on the theme «Sample method» with students of the General Medicine Faculty will allow to organize a few teams of students and set up interactive discussions and cooperation in the audience. First, students demonstrate extracurricular readiness in the process of solving the individual (IRAT) and team test tasks (TRAT). The benefit of TRAT and the appeals period is very important to students. Since team members carry out team test tasks, communicating and discussing material with each other, make decisions together, and on an appeal, students receive additional information about their mistakes or clarify questions incomprehensible to them from the teacher. Such feedback will help you to avoid repeating the mistakes they made and to remember the information they received on the lesson for a long time. [10,25,16,17,20,23,24].

During the discussion of situational tasks, students learn to interact with each other and teachers. The teacher first divides the students into teams, introduces them to the topic and approaches of the TBL lesson.

Students understand that, unlike a traditional lesson, they should always be ready for classes, and learn to correctly express the opinion of the team. The success of each team depends not only on the interaction of team members with each other, but also on the personal contribution of each student.

DISCUSSION

Assesment of students on the lesson is comprised of the following steps:

1. Preparation Test (IRAT and TRAT) - assess individual and team-based tests.

2. Appeal and a team-based task (tapp) are evaluated using feedback.
3. At each stage of the team’s work, an assessment is made and then the final assessment is computed as IRAT + TRAT + Appeal + Task = Final Score.

TBL consists of 4 steps:

1. Formation managed and well-organized teams.
2. Assess the student's extracurricular readiness and teamwork.
3. Give tasks that help motivate the student to learn, develop and interact with the team.
4. Conduct frequent and immediate feedback obtained by taking RAT and solving team-based tasks.

Lecture Assessment

1. Preparation Test (IRAT and TRAT) - assess individual and team-based tests.
2. Appeal and a team-based task (tapp) are evaluated using feedback.
3. At each stage of the team’s work an assessment is made and then the final assessment is computed as IRAT + TRAT + Appeal + Task = Final Score.

For assessment of the 301, 302, 303, 304, 305, 327, 328, 329, 330, 331, 337 General Medicine Faculty groups’ students team-based work were taken 30% for solving individual test, 20% for team-based test and 40% for team-based task. 10% was allocated to an appeal or to a job requiring teacher assistance. The.

The marks for each type of work and the overall score is displayed as shown in the table below.

Table 1. Criteria for knowledge assessment

Full Name	IRAT 30% (0,3)	TRAT 20% (0,2)	Appeal 10% (0,1)	Task 40% (0,4)	Mark

Summarize the lesson

Summarize all the criteria of the lesson and individual activities of each student: announce student marks, put the marks in the gradebook, and give homework for the next lesson.

Table 2. Questions and results of the questionnaire and the results of the student's satisfaction with the technology used at the lesson

№	Questions	Totally disagree	Disagree	Hard to answer	Agree	Totally agree
1	It was an experience for me to work with the team				28	72
2	The team work helped me more than self-studying to master the material				37	63
3	All members in the team made the same contribution to the outcome				20	80
4	Working with the team is a great way to use the time of learning				16	84
5	The independent assessment of knowledge is a great way to read the learning material				24	76
6	The team works closely together to achieve good results				25	75
7	I read extra scientific literature to become a leader in the team	1	2	1	20	76
8	It needs more training than traditional classes		2	1	43	54
9	Working with the team motivated me to stimulate my leadership skills				35	65

10	Working with the team has improved my clinical thinking				38	62
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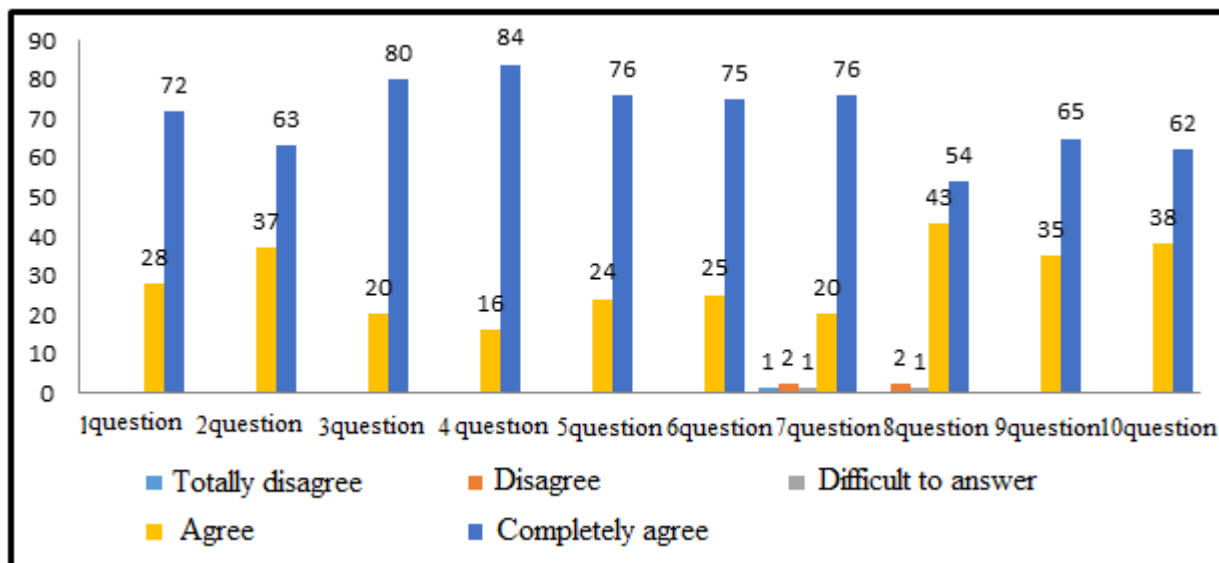


Figure 1. Questionnaire

QUESTIONNAIRE RESULTS.

According to the questionnaire results, students answered 10 questions and when asked about the use of TBL technology, most students chose the option “agree” and “completely agree”.

To the question: “All team members made the same contribution to the outcome” only one student, that is 2% , “found it difficult to answer.”

To the question “The independent assessment of knowledge is a great way to read the learning material” and “I read extra scientific literature to become a leader in the team”, only one student, i.e. 1%, replied: “I do not agree”.

To the question “There is more training required than traditional classes” 2 students, i.e. 2%, replied “I do not agree.”

To the question “ The team works closely together to achieve good results” 100 students, i.e. 84%, replied “Agree” and “Completely agree”.

Finally, you can see that using TBL- technology to improve the quality of the lesson, the interests of students in the subject can have a very good effect.

The survey participants showed that they are fully satisfied with 100% of the lessons and the importance of using innovative teaching methods. 96% were satisfied with the subject matter, 94% were satisfied with the quality of teaching by the teacher on TBL. 94% of students supported the ability to use the knowledge and the usefulness of the lesson. Finally, it can be seen that the use of this technology in improving the quality of the practical lesson gives the most effective results.

CONCLUSION

In the 2016-2017 academic year, the average score of 3 rd year students of the General Medicine Faculty for the “Sample method” topic amounted to 95% for the lessons using TBL technology, while it showed 90% of the average score for the same topic , who studied traditionally in the 2015-2016 academic year.

The effective use of new technologies in the classroom improves the quality of training, develops the creative abilities of students.

According to the questionnaire, the level of satisfaction with the TBL technology used in the lesson was 37% (who chose the “agree” option), and 63% of the students chose the “Fully agree”option.

Therefore, it can be seen that the use of TBL technology to achieve the objectives of this discipline has a significant impact.

The process of conducting lectures on TBL technology was highly appreciated among students, the students' motivation to prepare for the lesson has increased, the results of the topic acquired increased.

Further, TBL technology used for students of general medicine faculty on biostatistics subject, is currently also widely used in lecture classes in biostatistics among other faculties.

This methodology improves the communication skills of students, the introduction of new technologies helps to increase student’s satisfaction in the learning process and helps to improve the quality of teaching and achieve the best results for the teacher.

To improve the quality of lectures on the subject, use this innovative technological method further with students of other faculties in Russian, foreign and Kazakh faculties.

To improve the quality of lectures on the subject, use this innovative technology method further with students from other faculties.

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