

# **EVALUATION OF THE IMPACTS OF TASK BASED LEARNING (TBL) AND PROJECT BASED LEARNING (ProjectBL) APPLICATIONS ON SENIOR MARITIME STUDENTS**

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## **ABSTRACT**

In 2002 - 2003 Dokuz Eylül University, School of Maritime Business and Management (DEU-SMBM) has decided to transform its conventional education methodology to the “Problem Based Learning” (ProblemBL) methodology in order to meet the expectations of the rapidly changing maritime industry. During 2005 – 2006, Department of Nautical Science decided to apply Task Based Learning (TBL) methodology and Department of Maritime Business Administration decided to apply Project Based Learning (ProjectBL) which are higher phases of ProblemBL, for the education of senior class students.

In TBL, learning is built round the task such as loading and unloading operations of oil tankers, handling a ship under various situations or preparing voyage planning. Tasks are developed and carried out by the student and the instructor to develop professional skills and achieve target goals.

The definition of ProjectBL covers a spectrum ranging from brief projects based on a single subject to yearlong, multidisciplinary projects. In project-based learning, students work in teams to explore real-world problems and create presentations to share what they have learned. Concentrating on one of the most interdisciplinary and applied sciences, Department of Maritime Business Administration has adapted ProjectBL to be applied for the senior students. The Project groups are organized according to several real life shipping projects where they are supposed to establish a shipping company to purchase, operate and manage ships in a given market.

The purpose of this paper is to analyze student responses to TBL and ProjectBL practices in maritime education. For ProjectBL the paper is concerned with evaluation of student perceptions of the projects applied to the senior students of the Maritime Business Administration department. Most of the aspects of the feedback questionnaires applied in literature dealing with ProjectBL appeared applicable to this situation and the questions were incorporated into a questionnaire designed by the authors to evaluate students' responses to ProjectBL. Similarly, appropriate questionnaires have been developed for the senior class students of the Department of Nautical Science to evaluate the impacts of TBL applications.

The study brings together the perceptions of maritime students of different disciplines right before their graduation, and their responses to the applied new methodologies, which aim to prepare them to the industry in the most effective way. These applications are new for MET and the results of the study will assist the curriculum developments in maritime universities.

**Keywords:** Task Based Learning, Project Based Learning, Student Perceptions, Maritime

## **1. Introduction**

In 2002 - 2003 Dokuz Eylül University, School of Maritime Business and Management (DEU-SMBM) has decided to transform its conventional education methodology to the “Problem Based Learning” (ProblemBL) methodology in order to meet the expectations of the rapidly changing maritime industry. During 2005 – 2006, Department of Nautical Science decided to apply Task Based Learning (TBL) methodology and Department of Maritime Business Administration decided to apply Project Based Learning (ProjectBL) which are higher phases of ProblemBL, for the education of senior class students.

Maritime Education is mainly a practice oriented education system. This is the reason that the simulators which are used at maritime education are being renewed continuously and usage ratio of them is increasing rapidly. But the most important case is to serve these simulators accurately to the usage of the students. Another important point is to provide enough and equal usage time for each student.

It has been approved that an important ratio of the most marine accidents is caused by human error. An important factor to prevent this kind of accidents especially becoming at ships is enhancing the capability to work with a team. By using the correct methods teamwork can be improved and developed successfully. So prevention of the human errors at sea is determined as an important point at maritime education (Asyalı et al, 2003).

In both working and at the beginning of the working life self confidence is an important factor to become adapted to a ship and become a member of the team. So preparing an appropriate training environment for the students to improve themselves for the marine life is a very important case.

Another important factor at marine life is insufficient information and ability to prepare the adequate reports after an accident at sea. So improving the students’ abilities in preparing this kind of reports is essential (Asyalı, 2004).

The operations at ships must strictly comply with the international and national regulations. Learning these regulations related to the operations has a vital importance in preventing the accidents caused due to lack of knowledge.

It is important to get the related learning objectives during the education. The students are expected to perform different complex duties together in one block by Task Based Learning. They both have the chance to be a commander and a worker of the team and it develops their communication skills. In addition to this they have the chance to criticize themselves and the team members and it help students finding the correct solution by through a brain storm.

It is easy to simulate the operational difficulties at ships by the simulators. By this way students learn how to react at these kind of situations and it accelerates their response performance. The system helps the students in being ready for this kind of operational emergencies and teaching them how to behave together with the team members (Asyalı et al, 2005).

## **2. The Practice of Task Based Learning in Department of Nautical Science**

The aim of the education by tasked based learning is to change the education strategy to develop knowledge, skill and attitude (Harden et al, 1996). By the rapid growth of the

shipping industry and the use of higher technologies at the ships, it became a necessity to improve the knowledge and behavior of the officers working at these special vessels. At the traditional education system the students have the chance to make some practices at the related lessons. But as it is known by all that if the related educational practices are not put together, they won't be successful. With the help of Task Based Learning it is aimed to adapt students to their working conditions rapidly by getting these related practices together (Ozan et al, 2005).

Tasked Based Learning that is implemented at Dokuz Eylül University School of Maritime Business and Management (DEU SMBM) Department of Nautical Science is based on true missions to reach the target. The missions that are expected to be done put together the related learning objectives and international regulations for the maritime education.

Table 1 summarizes the basic steps of the Task Based Learning and the blocks that are applied at DEU SMBM Department of Nautical Science.

**Table 1. Basic Steps of the Task Based Learning and The Blocks**

Basic steps of task based learning	The blocks
a. Determine the knowledge and skill targets of the students, b. Getting the targets together concerning the real life, c. Developing the blocks d. Determining the duties / activities that will be implemented in the blocks e. Forming the simulator based scenarios that will support the missions	Block 1. Voyage Planning Block 2. Electronic Navigation Block 3. Ship Construction and Ship Power Plants Block 4. Tanker Operation and Safety Block 5. BTM Block 6. Dry Cargo Ship's Operations and safety Block 7. Ship Management Block 8. Ship Handling and Emergency Procedures

After forming the blocks, information forms are prepared and in these forms, the aim and definition of the block and the practices together with the missions that will be implemented during the weeks are defined. In addition to this the learning objectives and basic concepts that are related to the missions defined, are given in these forms. As an example the implementation of the "Tanker Operation and Safety" block is shown in Figure 1.

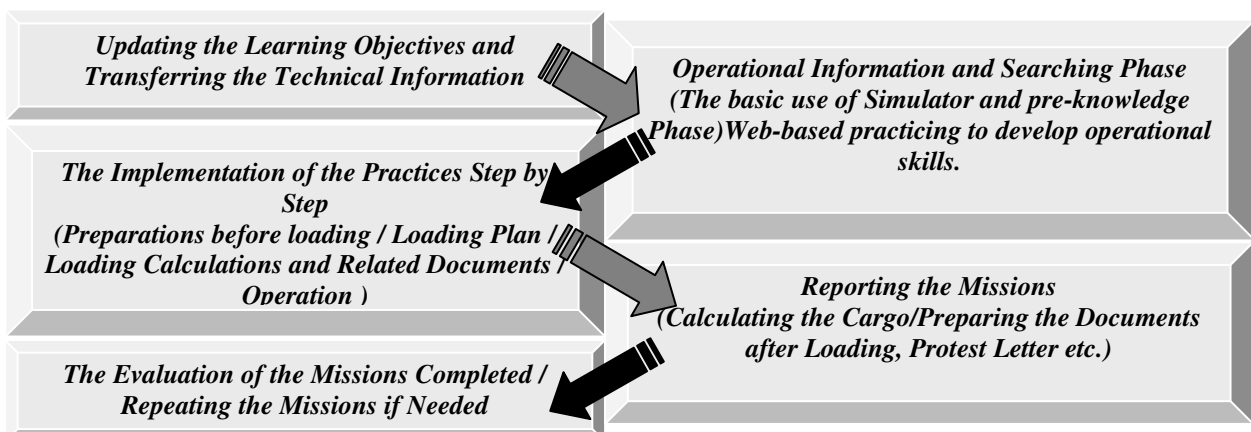


Figure 1. Tanker Operation and Safety Block in TBL Applied at DEU SMBM Department of Nautical Science

To summarize basically the steps of the education method that is implemented is defined as; Pre-knowledge, development of skills, practice, reporting and evaluation. (Harden et al, 1996).

### **3. The Practice of ProjectBL in Department of Maritime Business Administration**

During the academic year 2005-2006, senior students in department of Maritime Business Administration were required to carry out projects over a yearlong period. A class of 40 students, divided into groups of five, were given one of the eight projects, the assessment of which contributed to their final end-of-semester grades.

The projects for the groups were specifically designed to cover, as far as possible, situations which typically arise in the world of shipping business and to raise students' awareness of the application of managerial principles to industrial and commercial problems. The overall aim was therefore to simulate situations which require solutions by small project teams. The steps followed for the execution of the Project-BL in the department of Maritime Business and Management is given below (Cerit et al, 2006).

#### **▪ Overview of the learning objectives and curriculum**

Initially the learning objectives and curriculum of senior students (class 4) were examined by the tutors with the aim of creating opportunities for the introduction of innovative project work for small groups. It was explored that students should be exposed to a project work covering the learning objectives and curriculum in small groups since such a work could be continued throughout the semester. By rearranging a section of the core curriculum and eliminating a number of traditional presentations, a yearlong project was cleared to make way for an extended interdisciplinary team project. Senior students being in their last (fourth) year at the school had reached the background learning objectives, practices and skills by Problem Based Learning method. This meant that most of the students had been ready enough to carry out real life projects which would prepare them to professional work life.

#### **▪ Constitution of the project groups**

Since the number of students involved was large (40) and the students' desire to specialize in specific markets in the shipping industry were different field of activities it was decided to arrange the students into groups of five, which constituted a total of eight project groups. In addition to this, in grouping students, each student's knowledge, skills and ability were also taken into account. An interview was carried out to explore the students' specialization field in shipping markets and the students who wanted to concentrate in a certain field of specialization were assigned into the same group.

#### **▪ Determination of the topic of the Project**

The topic and question that will launch a Project-BL program is believed to be one that will engage the students (Blumenfeld et al, 1991). A real-world topic was taken for launching the project study. The topic of the project given for the groups was management and operation of a shipowning company in Turkey. It included the establishment of the company purchase of the ship(s) and their operation under the Turkish flag in a specific market. The question of the project was open ended and there was no certain answer and solution. With this topic the whole curriculum of the senior students was included into the project. Students felt that they were making an impact by answering the questions or solving the problem in the project.

- **Design of the project plan and schedule**

When designing the project, predetermined certain content standards were addressed. Students were involved in the planning process and they felt the ownership of the project when they had an active role in the decision making for the activities. Activities that supported the question were selected by utilizing the curriculum, thus fueling the process. Many subjects related to ship purchase, management and operations were integrated into the project. External tutors were accessible to the students to assist them.

A timeline for the project components were designed. Tutors were flexible due to the changes to the schedule. Students were directed for managing their time and assisted when they needed to finalize their thoughts, findings, and evaluations. When the group seemed to be going in a different direction, the students had to explain their reasoning behind their actions. They were helped by the tutor to stay on course.

- **Monitoring of the Progress of the Project and the Students**

Questions and checklists in a standard focused flexible project plan served as a guide to monitor the phases of the project study. Students were taught how to work collaboratively and a fluid role for the group members was designated such as “general manager”, “marketing manager” ect. Group dynamics were observed and monitored during discussion sessions. Each member of the groups was reminded that every part of the process belonged to each individual and needed each member’s total involvement. Minutes of meetings were filed to record the decisions taken and activities allocated to the members of the group. Thus team working dynamics and real life company atmosphere were provided. Interim and final reports covering the phases of the project were asked from the groups. At the end of each phase of the project, groups presented their findings. The requirements were clear to the students so that all could reach success.

- **Assessment of the Outcome**

Performance of each student in the project group was assessed by their tutor individually at the end of each section of the projects. In addition to this, final reports of the project were evaluated by the tutors by using predetermined checklists. To test the level of reaching learning objectives a written examination was carried out at the end of the modules of the project. Apart from the tutor’s assessment, each group presented their study and peer assessment was carried out for the projects presented.

- **Evaluation of the experience and the reflection**

Evaluation and reflection of the project study is a very important part of the learning process. In the busy schedule of the school day both individual and group reflections including discussions were allowed in the project group’s meeting sessions. Students were given time to reflect what they have discovered and thus they could be able to synthesize their new knowledge. Time designated for reflection of activities was also set for tutors to reflect their evaluations. Students discussed what worked well and what needs to be changed and they shared ideas that would lead to new questions.

## **4. Methodology**

This study aims to analyze the student’s perceptions and evaluations about the TBL and ProjectBL applications. This is an explorative and partially descriptive research aiming to analyze primary data sources about the TBL and Project-BL evaluations of the senior level students.

#### 4.1. The Questionnaire

The questionnaire developed by Garvin et al (1995) and implemented by Bourner (2001) to collect the first class students' perceptions for the small project group implementation is adapted to this study and implemented on the senior students of DEU SMBM. The questionnaire consists of 15 questions except the profile questions. 8 questions are interval scale and 5 questions are nominal scale. Questions are aimed to measure the perceptions of the student's on TBL and ProjectBL.

#### 4.2. Sample

All of the senior level students at the DEU SMBM, Department of Maritime Business Administration and Department of Nautical Science constituted the population of the study. Senior level students at the Department of Nautical Science are the population of the study for the TBL. Senior level students at the Department of Maritime Business Administration are the population of the study for the ProjectBL. The study had been carried out on April- May 2006. The total numbers of the students in Department of Nautical Science were 36, in Department of Maritime Business Administration is 40 and the return of the questionnaire is 35 and 39 respectively, the return ratio is being 97.2%.

#### 4.3. Data Analysis

In data analysis relative frequency analysis was used with the help of the Statistical Package Programme for Social Sciences (SPSS).

#### 4.4. Results of the Study

Tablo 2 covers students' perceptions on how they considered the team work conditions at the project or task based learning application. The highest frequencies for the Nautical Science Department students are; beneficial (4.15), a fine learning experience (4.00) and enjoyable (3.86) whereas for the Maritime Business Administration students are a fine learning experience (3.58), beneficial (3.40) and enjoyable (3.37).

**Table 2. How was working (TBL and ProjectBL) as a team?**

		5*	4*	3*	2*	1*	Mean	
Enjoyable	1	<b>26.3</b>	<b>18.4</b>	<b>31.6</b>	<b>13.2</b>	<b>10.5</b>	<b>3.37</b>	Not Enjoyable
	2	37.1	28.6	22.9	5.7	5.7	3.86	
Stimulating	1	<b>2.6</b>	<b>28.9</b>	<b>34.2</b>	<b>26.3</b>	<b>7.9</b>	<b>2.92</b>	Dull
	2	14.8	38.2	38.2	8.8	0.0	3.59	
Easy	1	<b>10.5</b>	<b>28.9</b>	<b>15.8</b>	<b>36.8</b>	<b>7.9</b>	<b>2.97</b>	Difficult
	2	8.8	26.5	38.3	23.5	2.9	3.15	
Satisfying	1	<b>5.4</b>	<b>18.9</b>	<b>45.9</b>	<b>24.3</b>	<b>5.4</b>	<b>2.95</b>	Frustrating
	2	11.8	52.9	23.5	11.8	0.0	3.65	
Beneficial	1	<b>15.8</b>	<b>31.6</b>	<b>36.8</b>	<b>7.9</b>	<b>7.9</b>	<b>3.40</b>	Not Beneficial
	2	41.2	38.2	14.7	5.9	0.0	4.15	
A fine learning experience	1	<b>23.7</b>	<b>31.6</b>	<b>28.9</b>	<b>10.5</b>	<b>5.3</b>	<b>3.58</b>	A bad learning experience
	2	35.3	38.2	20.6	2.9	2.9	4.00	
Very creative	1	<b>10.5</b>	<b>15.8</b>	<b>28.9</b>	<b>31.6</b>	<b>13.2</b>	<b>2.79</b>	Not creative
	2	14.7	44.2	20.6	17.6	2.9	3.50	

1:Maritime Business Administration 2:Nautical Science \* Values are given as percentages

Tale 3 summarizes the feelings of the students about the working together as a group. Feelings about the team work in both TBL (55.9%) and ProjectBL (33.3%) are evaluated "well".

**Table 3. Level of working together**

	<b>5</b> Very well	<b>4</b> Well	<b>3</b> Satisfactorily	<b>2</b> Not too well	<b>1</b> Poorly
<b>1</b>	23.1	<b>33.3</b>	20.5	17.9	5.1
<b>2</b>	17,6	<b>55.9</b>	23.5	2.9	0.0

1:Maritime Business Administration 2:Nautical Science \* Values are given as percentage

Students are asked to what extent they have learned about themselves during the task based and project based learning. 71.9% of the students in the Department of Nautical Science learned about themselves well enough and 64.1% of the students in the Department of Maritime Business Administration learned about themselves well enough (Table 4).

**Table 4. The level of learning about themselves during the Projects and Blocks**

	<b>4*</b> Very well	<b>3*</b> Well enough	<b>2*</b> Must be more good	<b>1*</b> Very poor
<b>1</b>	12.8	<b>64.1</b>	20.5	2.6
<b>2</b>	15,6	<b>71.9</b>	12.5	0.0

1:Maritime Business Administration 2:Nautical Science \* Values are given as percentages

Table 5 shows the skills that are developed after TBL and Project-BL. The highest frequencies for TBL in Department of Nautical Science students are; development of the officer skills (4,23), working with the others in a group, action planning and organizing (4,13), adaptation to the duties given (4,00) whereas oral presentation (4.11), working with the others in a group (4.08), action planning and organizing (4.00) are highest scores for ProjectBL students.

**Table 5. Skills that are improved after TBL and ProjectBL**

	Very Much				None	
<b>TBL</b>	<b>5*</b>	<b>4*</b>	<b>3*</b>	<b>2*</b>	<b>1*</b>	<b>Mean</b>
Solving the problems	28.1	43.8	25.0	3.1	-	3.97
Adaptation to the duties given	22.6	54.8	22.6	-	-	<b>4.00</b>
The improvement of the officer skills	29.0	64.5	6.5	-	-	<b>4.23</b>
The improvement of the reporting skills	29.0	38.7	29.0	3.2	-	3.94
The improvement of the communication skills	25.8	38.7	25.8	9.7	-	3.81
Working with others in a group:	35.5	41.9	22.6	-	-	<b>4.13</b>
Action planning and organizing:	38.7	35.5	25.8	-	-	<b>4.13</b>
Time management:	29.0	35.5	22.6	6.5	6.5	3.74
<b>ProjectBL</b>						
Solving the problems	17.9	59.0	12.8	10.3	-	3.85
Researching	35.9	41.0	10.3	7.7	5.1	3.95
Analyzing the data	23.1	46.2	20.5	10.3	-	3.82
Presenting information in a written form	36.8	36.8	26.3	-	-	<b>4.11</b>
Oral presentation	41.0	28.2	20.5	7.7	2.6	3.97
Working with others in a group	41.0	35.9	15.4	5.1	2.6	<b>4.08</b>
Action planning and organizing	38.5	35.9	12.8	7.7	2.6	<b>4.00</b>
Time management	17.9	41.0	17.9	17.9	5.1	3.49

\* Values are given as percentages

Table 6 shows the skills that are to be developed after TBL and Project-BL. The highest frequencies for TBL in Nautical Science Department are; development of the communication skills and time management (3,13), development of the officer skills (2,94) and solving the problems (2,91). For the Maritime Business Administration students having ProjectBL, time management (3.53), oral presentation (3.45), researching (3.37) are to be developed.

**Table 6. The skills that are identified to be developed further in TBL and Project-BL**

	Very Much				None	
<b>TBL</b>	<b>5*</b>	<b>4*</b>	<b>3*</b>	<b>2*</b>	<b>1*</b>	<b>Mean</b>
Solving the problems	15.6	15.6	25.0	31.3	12.5	<b>2.91</b>
Adaptation to the duties given	16.1	16.1	22.6	29.0	16.1	2.87
The improvement of the officer skills	16.1	16.1	29.0	22.6	16.1	<b>2.94</b>
The improvement of the reporting skills	12.9	19.4	25.8	22.6	19.4	2.84
The improvement of the communication skills	19.4	22.6	25.8	16.1	16.1	<b>3.13</b>
Working with others in a group:	6.5	25.8	25.8	25.8	16.1	2.81
Action planning and organizing:	9.7	19.4	25.8	29.0	16.1	2.77
Time management:	25.8	12.9	22.6	25.8	12.9	<b>3.13</b>
<b>ProjectBL</b>						
Solving the problems	18.4	28.9	21.1	15.8	15.8	3.18
Researching	23.7	26.3	21.1	21.1	7.9	<b>3.37</b>
Analyzing the data	18.4	26.3	34.2	13.2	7.9	<b>3.34</b>
Presenting information in a written form	18.9	24.3	32.4	13.5	10.8	3.27
Oral presentation	28.9	23.7	21.1	15.8	10.5	<b>3.45</b>
Working with others in a group	21.1	18.4	15.8	31.6	13.2	3.03
Action planning and organizing	15.8	28.9	21.1	21.1	13.2	3.13
Time management	31.6	18.4	31.6	7.9	10.5	<b>3.53</b>

\* Values are given as percentages

Table 7 presents the answers to the question “if the blocks for Nautical Science students and projects for the Maritime Business students would be formed again in what ways would you do it differently?”. The highest frequencies for TBL are; more research about the theory of the duties (51.4 %), better time management about the duties (40.0%) and more practicing about the related duties (34.3%) whereas better division of labour (71.8%), better time management (66.7%), more planning (46.2 %) for ProjectBL.

**Table 7. Different ways to form the Blocks and Projects**

<b>TBL</b>			<b>Project-BL</b>		
		<b>%</b>			<b>%</b>
1	More focusing on the duties given	28.6	1	More planning	<b>46.2</b>
2	More observation about the duties	28.6	2	More field study	20.5
3	Better time management about the duties	<b>40.0</b>	3	Better time management	<b>66.7</b>
4	More research about the theory of the duties	<b>51.4</b>	4	More research about the theory of the duties	28.2
5	More practicing about related duties	<b>34.3</b>	5	Better division of labour	<b>71.8</b>
6	Learning more about the legal factors and responsibilities	25.7	6	More group meetings	35.9
			7	Other	10.3

Table 8 presents the most liked aspects of the blocks for Nautical Science students and projects for the ProjectBL students. Students selected team work and realistic practices as the most liked aspects of the blocks for task based learning. Students in Maritime Business department most liked studying as a group and integration of knowledge.

**Table 8. The most liked aspects of the Blocks and Projects**

<b>TBL</b>	<b>n</b>	<b>%</b>	<b>Project-BL</b>	<b>n</b>	<b>%</b>
Team work	11	35.5	Studying as a group	10	32
Realistic practices	8	25.8	Integration of knowledge	8	26
Learning new subjects with different point of view	3	9.7	Flexibility	5	16
Relaxed and funny	3	9.7	Being practice oriented	3	10
Contribute the adaptation for the job	2	6.5	Acquisition of presentation skills	3	10
Tutor's effort	2	6.5	Making research	2	6
Provides easy learning	1	3.2			
Improves the self confidence	1	3.2			
<i>Total</i>	<i>32</i>	<i>100</i>	<i>Total</i>	<i>31</i>	<i>100</i>

Table 9 shows the most disliked aspects of the blocks and the project studies. Time problem (35.7%), lack of harmony inside the team (21.4%) and problems at focusing the subjects (14.3%) are the most disliked aspects of the Nautical Science students. For the Maritime Business Administration students, difficulty to reach information and documents (20%), based on the assumptions (20%) and rules of the project study (15%) are the most disliked aspects of the ProjectBL application.

**Table 9. The most disliked aspects of the Blocks and Projects**

<b>TBL</b>	<b>n</b>	<b>%</b>	<b>Project-BL</b>	<b>n</b>	<b>%</b>
Time problem	10	<b>35.7</b>	Difficulty to reach information and documents	7	<b>20</b>
Lack of harmony inside the team	6	<b>21.4</b>	Based on the assumptions	7	<b>20</b>
Problems at focusing the subjects	4	<b>14.3</b>	Rules of the project study	5	<b>15</b>
Tutor's pressure	2	7.1	Time limitation	4	11
Few student undertake the presentations	2	7.1	Presentation of the reports	4	11
Being at the backward because of the rotation	1	3.6	Lack of team working	4	11
Very tiring	1	3.6	Lack of sessions	3	9
Procedures that prevent to work freely	1	3.6	Problems related to tutors	1	3
Being scattered during the year	1	3.6			
<i>Total</i>	<i>28</i>	<i>100</i>	<i>Total</i>	<i>35</i>	<i>100</i>

Table 10 reports the opinions of the students on how to improve the TBL and ProjectBL studies. The highest frequencies for the TBL students are increasing the practices (22.2%) and improvement of time management for the ProjectBL students (26%).

**Table 10. How to improve Block and Project studies**

<b>TBL</b>	<b>n</b>	<b>%</b>	<b>Project-BL</b>	<b>n</b>	<b>%</b>
Increasing the practices	6	<b>22.2</b>	Improvement of time management	9	<b>26</b>
Expressing the students that TBL is not done for grades	3	11.1	More realistic in subjects and practice	7	20
Increasing the numbers of the tutors	3	11.1	Update information should be used	7	20
Existing situation is well enough	3	11.1	Training on team working	5	14
To improve the system knowledge and make it continue	3	11.1	Better direction	4	11
Make the teams always at school	3	11.1	Project study should begin from the first year in the school	3	9
Team members must be formed by the students	2	7.5			
Teams must prepare some reports and present them during the year	1	3.7			
To evaluate continuous observation and feedbacks	1	3.7			
Helping about the timing	1	3.7			
Supporting the self improvement during the practices	1	3.7			
<i>Total</i>	<i>27</i>	<i>100</i>	<i>Total</i>	<i>35</i>	<i>100</i>

## CONCLUSION

There has been a trend to transform the traditional education system into a more contemporary education system in almost all fields of education during the second half of the twentieth century. These intensifying discussions made important contributions to the education systems. Being an applied science and having international characteristics maritime science and education has to change to meet the expectations and needs of the maritime industry. In DEU SMBM both Department of Nautical Science and Maritime Business Administration has transformed their conventional education methodology into ProblemBL for the first 3 terms. In addition to this, Maritime Business Administration Department has

decided to apply ProjectBL and parallel to this Department of Nautical Science has decided to apply task based learning methodologies which are higher phases of ProjectBL.

The research carried out to measure the perceptions of the students has revealed that students have considered the new education methodologies positively. Team working at the TBL and ProjectBL systems have been considered beneficial, a fine learning experience and enjoyable by both departments' students.

Both department's students evaluated the level of learning of themselves during the projects and blocks positively enough. Students in Nautical Science Department expressed that development of professional skills, working with others in a group and, action planning and organizing has developed after the TBL application whereas students in Maritime Business Administration Department expressed that oral presentation, working with others in a group, action planning and organizing have developed and improved after the ProjectBL application.

Most liked aspects of TBL are team working and realistic practices and studying as a group and providing knowledge for the ProjectBL. For the students of the Department of Nautical Science; time problem, lack of team harmony and problems at focusing on the subjects and for the Maritime Business Administration Department's students; difficulty to reach information and documents, basing on the assumption and rules of the project study have been considered as the most disliked aspects of TBL and ProjectBL respectively.

For the development of TBL it is suggested by the students that better time management, more research and more practising should be applied whereas again better time management, better division of labour and more planning are suggested to improve the ProjectBL.

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