



## Comparison of the Effect of Teaching Methods of Flipped Class and TBL in Enhancing Psychological Empowerment

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### Abstract

**Introduction:** Today, it is felt as necessary to promote the psychological empowerment of individuals, especially at the postgraduate level using an appropriate educational approach. Therefore, the aim of the current study was to investigate the effect of flipped class (FC) and team-based learning (TBL) in enhancing psychological empowerment.

**Methods:** This semi-experimental study (pretest-posttest model) was conducted on postgraduate students in the Faculty of Medicine. Ninety students were included in the study using census method. After applying the inclusion and exclusion criteria, forty students were divided into two groups of 20 in a non-random way according to their gender and educational level. The workshop teacher randomly selected one of the groups as a TBL and the other as an FC. A two-day workshop was held for each group (12 hours of training in total). The educational method was TBL in one group and FC in another. Spritzer's Psychological Empowerment questionnaire was used for data collection in pre- and post-test (one month apart). This questionnaire includes 12 questions (based on a five-point Likert scale) to assess the 4 aspects of job meaningfulness, feeling to be qualified, feeling to be effective, and feeling to have the freedom of choice. The minimum and maximum scores are 12 and 60, respectively. The experts of the field have confirmed its reliability. Its Cronbach-Alpha values were reported in previous studies at 0.86 and 0.89, respectively. Data were analyzed using statistical tests in SPSS16 and Wilcoxon and Mann-Whitney non-parametric tests.

**Results:** The Mann-Whitney U-test indicated no significant difference between the total mean of the two groups (FC: 35.20±1.73, TBL: 34.30±1.26) in the pre-test (P=0.157). However, there was a significant difference between the psychological empowerment scores of the two groups in the post-test (P<0.001). The Wilcoxon test showed a significant difference between pre-test and post-test scores for each group (P<0.05) and the psychological empowerment scores increased in the post-test for the two groups. However, the mean of post-test score in the TBL group (M: 42.55±1.82, P<0.001) was higher than the FC group (M: 38.45±2.64, P>0.001).

**Conclusion:** Due to the influence of the TBL technique on psychological empowerment at the postgraduate level, it seems that TBL is more useful and practical for enhancing psychological empowerment.

**Keywords:** Empowerment; Teaching; Education; Psychological

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## Introduction

The assumptions of the 21st century on the world are changing so rapidly that new concerns and demands have emerged regarding the graduates, and the expectations of societies from their educated workforce have undergone major transformations (1). Thus, the ability to adapt and solve problems is considered necessary to have a good life and becomes much more essential given the diversity and extent of the challenges students face (2). This is particularly for the postgraduate level individuals, who will receive important responsibilities in the social system. A major part of the social system will be organized according to their views and management (3).

In this regard, it is quite important that postgraduate students are empowered and enhance their work motivation. Empowerment is a modern concept considered a panacea for many problems and a novel factor for development (4). Empowerment means feeling more responsible and being more accountable to enhance the performance of an organization. It is among the approaches that have brought about numerous positive changes in the performance of students' activities (5).

There are two perspectives on empowerment: structural empowerment and psychological empowerment. Structural empowerment has been extracted from organizational theories and is related to delegating power and authority (6). Another type of empowerment is psychological empowerment, which has five aspects: meaningfulness, effectiveness, qualification, having a choice, and trusting others. The current study focused on psychological empowerment. The feeling of meaningfulness refers to adapting personal goals with those of an organization. Being effective influences the strategic or operational consequences. Qualification refers to the ability to turn threats into opportunities. The freedom of choice allows the person to act independently, and trusting others involves feeling security in work and sincere and justified behavior (7).

The review of the current study's authors showed that, in general, studies related to psychological empowerment could be divided into three categories. In some, psychological empowerment has been a dependent factor (The effect of knowledge sharing on the psychological empowerment in higher education mediated by organizational memory) and in others it is an independent factor (6, 7). The third category consists of studies examining the relationship between psychological empowerment and

other variables. For example, Fook et al.'s study indicated that there was a positive and significant correlated relationship between all five dimensions of psychological empowerment and intrinsic work motivation (8).

Also, psychological empowerment has a direct and indirect positive relationship with creativity through involvement of the creative process and intrinsic motivation. For example, Doan and Nguyen's study indicated that psychological empowerment had a direct and indirect positive relationship with creativity (9).

Researchers believe that every education leads to learning, but the depth and stability of learning are different in different learning methods (10, 11). For example, Nastiezaie and Hezare Mogadam's study showed that face-to-face short-term training promoted people's psychological empowerment more than non-face-to-face courses (10). Also, according to the literature, various approaches exist for empowering people. In some of these approaches, learning through cooperation and the ability to work together have been emphasized (12).

In other words, research indicated that dimensions of teaching style were able to identify the students' empowerment component (13).

Therefore, educational methods and style affect the learners' motivation and effectiveness of educational courses (12). Nowadays, modern and dynamic methods like flipped class, peer teaching, teamwork, role-play, and simulation – among others – have attracted the authorities' and instructors' attention. In these methods, learners and their interests and capabilities are at the center of attention, and teachers attempt to enhance the learners' abilities in the skills of listening, speaking, reading, working group, writing, arguing, comparing, adapting, analyzing, constructing, and creating and present the teaching materials accordingly. The advantages and disadvantages of each one of the above methods have been investigated in various studies. For instance, in a study conducted on the students' of nursing, it was found that 92% of the participants preferred dynamic and modern educational methods to the traditional and passive methods and were significantly inclined towards using them. According to the students, using modern teaching methods deepened their learning and developed their critical thinking and self-confidence, which are the goals of higher education programs (14). Two methods of flipped classroom and team-based learning were used in this study. Flipped classroom is changing the educational environment from a large place to an individual learning space and providing learning content outside the classroom. Acquisition of new

information and learning at home and homework is done at the university. The teacher prepares and records a videotape of the classroom and provides it to the learners, so that they can access it anywhere and anytime, and enables them to be better prepared in the classroom (15). The team-based learning method is a type of cooperative learning. This method aims to improve the quality of students' learning by increasing problem-solving skills, ensuring students' presence in the classroom with prior preparation, and creating a class full of energy and active learning. TBL aims to increase the students' skills in achieving higher levels of cognitive learning by applying individual knowledge in a team format (16). Based on the above points, the main questions and purpose of the current study was to find out:

- Which educational method (TBL or FC) has a greater impact on improving psychological empowerment?

## Methods

### *Study Design and Setting*

The current semi-experimental study (Pre-test - post-test model) was conducted in Iran University of Medical Sciences from 2019 to 2020. After obtaining the permission of the ethics committee of Iran University of Medical Sciences (IR.IUMS.REC.1398.717) and the informed consent of the study participants, we conducted the study.

### *Study Participants and Sampling*

The study participants were all postgraduate students in the Faculty of Medicine at Iran University of Medical Sciences who were included in the study by census method (N: 90). We selected the postgraduate students' population for the study because most of these students were either currently working or had quit work to continue their studies (in postgraduate level). Therefore, most of them had the experience of an employee. Also, this course had benefits for their current work performance and increased their motivation to participate in the study.

The criterion for inclusion in the study was being a postgraduate student (with at least three years of work experience) and entering the university during the 2019-20 academic year (the list of students was obtained from the deputy office of graduate studies). Postgraduate students who were not currently employed were excluded from the study. Also, students' unwillingness was considered as the exclusion criterion. By applying the inclusion and exclusion criteria, we enrolled 40 participants in the study (n: 40).

Participants were assigned to two groups

of 20 in a non-random way according to their gender and educational level. The workshop teacher randomly selected one of the groups as a TBL and the other as an FC. Therefore, the quota of educational level and gender were considered equal in each group. Also, we conducted a pre-test to examine the differences between group rounds before the intervention (educational workshop). The results showed that the two groups did not differ significantly (stated in the results section). The teaching materials and instructors of both groups were similar.

### *Study Interventions*

Nowadays, topics such as creativity, innovation, work motivation, empowerment, and its aspects (meaningfulness, effectiveness, qualification, having a choice, and trusting others) have gained great attention in format entrepreneurship training in academic systems. These issues are considered in Iranian educational programs and documents (such as the Plan of Educational Transformation and Innovation, the Comprehensive Health Roadmap, and the Comprehensive Scientific Roadmap) (17). Studies also indicated a significant relationship between psychological empowerment and entrepreneurship (18). In other words, when the characteristics of entrepreneurial people are mentioned, their psychological empowerment aspects are also emphasized. Ameri et al. also stated in their study that the psychology of empowerment should be considered as one of the factors that form the background of entrepreneurship (19, 20). Therefore, in entrepreneurship training programs, attention has always been paid to the training of psychological empowerment.

Therefore, educational programs such as the university entrepreneurship program provide an opportunity for paying more attention to psychological empowerment. Therefore, the authors used the university entrepreneurship training courses as an opportunity to teach psychological empowerment as an educational objective and content for this course. Researchers planned a two-day workshop for teaching psychological empowerment. This two-day workshop was held for the groups (12 hours). The course plan of the workshop was organized in consultation with educational and psychological experts in terms of psychological empowerment. Its main focus was promoting work motivation (looking to the future) and psychological empowerment, and fostering innovation. Therefore, the main educational topics were meaningfulness, self-efficacy, effectiveness, qualification, having a choice, creativity, and



trusting others.

**The Flipped Class (FC):** The FC method refers to transforming an educational space from a large place into a personal learning environment and presenting educational materials outside the classroom. Novel information and education are received at home, and the homework is done at the university. Thus, the materials for the group of the flipped class were prepared in the form of educational pamphlets and distributed among the learners before the workshops. On the first day of the workshop, the materials were reviewed in the format of a seminar for 20 minutes and then practiced in the form of questions and answers. During the workshop, the students received constant feedback. The second day was conducted in the form of questions and answers and constant feedback. Also, the participants were asked to evaluate their work in these two days.

**Team-based Learning (TBL):** the TBL method creates a dynamic and participatory learning environment and emphasizes personal and team accountability, group interaction, and motivation to participate in group discussions. This method is a function of four major principles, including the formation and maintenance of groups, student's responsibility for personal and group work, the presentation of timely feedback, and the design of team tasks to enhance learning and the development of the team. In the current study, before holding the workshop of the TBL group, teaching materials in the form of pamphlets were sent to the students, so they could get ready to use this method. The stages of the TBL method in the current study were in the following format:

The title and schedule of the workshop were sent to the students, who were required to study these items before the workshop. First, the workshop on multiple-choice tests (including 8 scenarios based on the prepared materials) was held. The questions had been obtained from the course's main content and were difficult enough to cause group discussion among the group members. After the individual test, the same test was given in the group format to test group performance. During the latter test, the students solved the problems by discussing them with other team members. During this stage, the group members could consult the materials studied before, give reasons for their answers, and defend them. After the test, the group members filled out an appeal form in case they had any objections on the answers to the questions or the manner of answering them. Then, 25 minutes were devoted to giving feedback with the participation and supervision of the instructor. Later, all groups received similar tasks. The

task was to present an innovative idea and a suggestion about effectiveness in their discipline according to the brainstorming technique. During this stage, the students had access to the resources and evaluated their peers. The same procedure was done on the second day.

#### *Instrument*

For data collection, the researchers used Spritzer's Psychological Empowerment Questionnaire. A pre-test was conducted in both groups before conducting the workshop. This questionnaire was designed by Spritzer in 1995. It includes 12 questions and assesses the 4 aspects of job meaningfulness, the feeling of being qualified, the feeling to be effective, and the feeling to have the freedom of choice. The questions (e.g., my work is quite important for me) are based on a five-point Likert scale and assess psychological empowerment (Table 1).

The minimum and maximum scores in this questionnaire are 12 and 60, respectively. Scores of 12-20 indicate low levels of psychological empowerment, 20-40 point an average rate of psychological empowerment, and higher than 40 indicate a high degree of psychological empowerment. The experts of the field have confirmed the reliability of the questionnaire. In addition, the Cronbach-Alpha values obtained for this questionnaire in the studies by Salimi et al. and Aliabadi et al. were reported 0.86 and 0.89, respectively (5, 16). After the training, both groups took the post-test (Spritzer's Psychological Empowerment Questionnaire).

In this study, the questionnaire was given to 7 medical education professors to check the qualitative validity. They were asked to express their opinions about the questionnaire and its external characteristics, which was approved. Its reliability was also obtained 0.84 (using Cronbach's alpha).

#### *Statistical Analysis*

Then, the pre- and post-test scores were compared. Analysis of data was done using IBM SPSS16. The demographic data were reported with numbers, and the quantitative variables were presented as Mean±Standard Deviation (SD). The Kolmogorov-Smirnov test was used to examine the normality of quantitative variables. The Mann-Whitney U test was used to compare quantitative variables between the groups. The Wilcoxon test was used to examine the difference between the mean of the pre- and post-test in each group. If the Probability value (P-value) was less than 0.05, it was considered statistically significant.

**Table 1:** The aspects of empowerment with the related questions

Item	The aspect of the variable	Number of questions
1	The feeling of meaningfulness	1-6-11
2	The feeling of being qualified	2-5-7
3	The feeling of being effective	4-9-12
4	The feeling of having freedom of choice	3-8-10

**Table 2:** Demographic characteristics of the participants in each group

		FC	TBL
Sex	Female	12	12
	Male	8	8
Educational level	MSc	11	11
	PhD	9	9

**Table 3:** The comparison of the scores of psychological empowerment of each group and between groups in the pre- and post-test

Psychological empowerments	Group		P
	FC (N=20)	TBL (N=20)	
Pre-test	35.20±1.73	34.30±1.26	0.157
Post-test	38.45±2.64	42.55±1.82	<0.001
Change (Effect Size)	0.18	0.63	<0.001
P	<0.001	<0.001	-

## Results

There were 20 postgraduate students in each group. The mean age of the study participants was  $27 \pm 4.41$ . They were 24 females and 16 Males. In addition, there were 22 MSc and 18 PhD students in the current study. Table 1 indicates the demographic features of the participants for each group (Table 2).

Kolmogorov-Smirnov test indicated that the distribution of data was not normal ( $P < 0.05$ ). Therefore, nonparametric tests were conducted for data analysis. The Mann-Whitney U test results showed no significant difference between the two groups in their pre-test scores ( $P = 0.157$ ). In other words, the psychological empowerment of the two groups had no significant differences before starting the intervention.

However, the results of the Mann-Whitney U test showed that there was a significant difference between the psychological empowerment scores of the two groups in the post-test ( $P < 0.001$ ), and the difference in the TBL group was more significant.

The results of the Wilcoxon test showed that there was a significant difference between pre- and post-test scores for each group ( $P < 0.001$ ), and the psychological empowerment scores of both groups increased in the post-test (with a more significant increase for the TBL group) (Table 3).

## Discussion

The current research was conducted to determine the effect of FC and TBL learning methods in enhancing psychological empowerment. The

current study used entrepreneurship training programs as an opportunity to train and enhance psychological empowerment.

According to a literature review conducted by authors, studies related to the usefulness of a particular educational approach to enhance psychological empowerment are limited. Most of the research mainly focused on the role of psychological empowerment on organizational change, work conflict, job burnout, etc. (21, 22). Reviewing these limited number of studies revealed that selecting an appropriate approach depends on the group being trained and the educational objectives. No particular approach can be regarded as the best method.

Valeh et al. conducted a training course for teachers' psychological empowerment. They used psychological empowerment training package that included 10 sessions and 2 hours in each session. Their study indicated that the short- and long-term psychological empowerment training effectively increased the psychological capital (23).

Karimivakil et al.'s study indicated that seventeen sessions (one and a half hours) of a group psychological empowerment training program affected the reduction of learned helplessness. In this study, no special educational method was used (21).

Hosseinpour et al. conducted the psychologically empowering instruction for nurses in 10-week sessions of 90 minutes each. Results of the study indicated that the psychologically empowering instruction promoted occupational compatibility and vitality

in nurses. They also did not report the use of a specific training method (22).

In the current study, two teaching methods were used for psychological empowerment. The findings indicated that the mean pre-test scores of the psychological empowerment obtained by the two groups were at the average level (between 20 and 40), and no significant difference existed between the two groups. After the intervention, the mean post-test scores of both groups in the psychological empowerment increased significantly, but this increase was more significant (above 40) in the TBL group.

According to educational literature, higher education institutions are expected to use a student-centered approach using active learning (24). FC and TBL are both active and student-centered approaches. TBL is a good teaching method for developing critical thinking, cooperative learning, deep learning, student engagement, etc. (25). According to the current study findings, it seems that the TBL method is more suitable for teaching psychological skills than the FC. This has also been true for similar issues. For instance, Hassanzadeh et al. found in their study that the TBL method increased deeper learning and facilitated learning in more than half of the students. In addition, this method influenced the enhancement of communication skills and increased the students' participation in the lessons (24). Loftsson and Matthíasdóttir reported the use of flipped class and TBL methods in a programming course. They stated that around 61.0% of the students liked the TBL method, and around half of them felt that the course lacked any traditional speech (25).

However, studies have reported no difference between these two methods. For example, Hayama et al. compared the TBL and flipped class methods in a dental prosthetics class at Tokushima University, Japan. The findings of their study showed no significant difference between the scores obtained by the two groups in the final exam (26). The mentioned finding was in contrast with those of the current study findings, and this difference might be attributed to the nature of the subject and the timing of that study.

### Limitation

The limitations of the current study included the small size of the samples which was limited to graduate students.

### Conclusion

Due to the effectiveness of the TBL method in enhancing the learners' psychological

empowerment to a large extent (above 40), it seems that this method is more useful and practical for training creativity and entrepreneurship among the students of medical schools. In addition, it can be combined with the flipped class method and create TBL-based flipped classes.

### Suggestions

It is suggested that the two methods should be applied in a combined form and for a longer duration in the training of classes.

### Authors' Contribution

All authors contributed to the discussion, read and approved the manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated resolved.

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**Conflicts of Interest:** None declared.

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