

The Effect of Blended Learning Approaches in Faculty Development Programs

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Abstract

Background: The necessity of responding to changes and promoting the quality of education has increased the necessity of applying new approaches to empowerment programs.

Objectives: The present research aimed to determine the effects of mid-term empowerment programs using a blended approach in the form of flipped classrooms (asynchronous, live meetings) before the coronavirus disease 2019 (COVID-19) epidemic and a virtual (asynchronous-synchronous) approach during the COVID-19 epidemic on teachers' learning and satisfaction concerning teacher roles in the medical science education system.

Methods: This study was quasi-experimental, and its participants were faculty members of Shahid Sadoughi University of Medical Sciences, participating in the empowerment program. This program was implemented in four periods, including 20 training sessions concerning the roles of a teacher in educational systems in the areas of "professional commitment, lesson planning, teaching-learning methods, assessment and evaluation methods, production of educational products, effective communication, and classroom management". The program evaluation was performed using the participants' levels of learning and satisfaction by scenario-based questions and a questionnaire, respectively. The results of different blended education approaches were compared in two time periods, before and during the COVID-19 epidemic. Data were analyzed using descriptive (mean and standard deviation) and inferential (independent T-test) tests. $P < 0.05$ was considered the significance level.

Results: One hundred and eighteen faculty members participated in the study, of whom 56 were female (47.5%), and 62 were male (52.5%). The faculty members' satisfaction scores with blended empowerment courses with the flipped classroom were reported as 4.34 ± 0.16 and the virtual blended classroom as 3.26 ± 0.59 . A significant difference was observed between satisfaction scores in different periods ($P = 0.001$). The participants' learning scores in the programs held by the blended approach with the flipped classroom (82.16 ± 32.20) were significantly higher than those held during the COVID-19 epidemic (virtual approach) (59.23 ± 48.53).

Conclusion: The satisfaction and learning of participants in the flipped classroom program and the virtual blended classroom were at favorable and average levels, respectively. This difference in learning and satisfaction from the perspective of faculty members was significant. Therefore, interactive approaches in different virtual education platforms and a blended approach in empowerment programs are recommended.

Keywords: Empowerment of Faculty Members; Teacher Role; Blended Approach

Background

Medical science education has encountered increasing changes in recent years, such as the development of educational standards, the growth of educational technologies, and new educational approaches (1). They increase the need to respond to changes and promote the quality of education (2). Today, the development of professional and competent teachers, researchers, and managers in medical education through empowerment and solutions influencing it is considered among the critical issues in educational

systems (3, 4). It was thought in the past years that every individual who graduated from the university had the teaching ability, but gradually it became clear that teaching was not an innate issue, and in addition to content mastery, it required a design process. Therefore, faculty members needed training and support for teaching (3). Hence, planning to empower faculty members has become one of the necessities of educational systems.

Nowadays, empowerment programs are expanding, aiming at improving teachers' teaching abilities (5). In

other words, any type of activity or process that is performed by an individual or a group of individuals to promote and improve professional functions, qualifications, or skills in education at the institutional level is defined as the process of empowering faculty members (6). Empowerment programs for teachers have been recommended to achieve more awareness and gain enough knowledge in various areas of education (7). In these programs, by emphasizing the use of diverse approaches and methods, reinforcing faculty members' knowledge and professional skills are facilitated (1), and their relationships with other teachers are reinforced, leading to their occupational progress (8-11).

McLean et al. proposed three phases and six stages to compile an empowerment program for faculty members. The first phase (planning) includes problem identification and needs assessment, participants' needs assessment, and explanation of measurable objectives. The second phase (implementation) includes an explanation of educational strategies and final implementation. Finally, the third phase includes evaluation and providing feedback (3). In the empowerment program of faculty members, paying attention to items such as making new members familiar with university culture, developing specialized skills through implementing new evaluation methods or online learning, making teaching professional in various fields, developing educational scholarship, supporting individuals active in the medical education field, and developing educational leadership are necessary (3). Therefore, empowerment programs have to be organized for faculty members in such a way that meets different needs at the systematic and individual levels (3). Moreover, it is necessary to provide the opportunity for practical-experiential learning so that participants can apply their learnings regarding the principles of education. The use of diverse, interactive, and blended approaches is recommended in empowerment programs (3).

Empowering faculty members is not easy and needs supportive-institutional leadership, allocation of suitable resources, and recognition of teaching excellence (12). In the present study, the empowerment program was designed and implemented to establish a structured training course and empowerment in a proper opportunity in two periods: before and during the COVID-19 pandemic. Before the COVID-19 pandemic, the training program was designed and implemented in the form of flipped classrooms, and during the COVID-19 pandemic, the blended and synchronous and asynchronous approach was used. The current research was carried out to determine the effects of empowerment programs using a blended

approach in the form of flipped classrooms (asynchronous, live meetings) in the pre-COVID-19 period and a virtual approach (asynchronous-synchronous) during the COVID-19 epidemic on teachers' learning and satisfaction concerning teacher roles in the medical science education system.

Objectives

The present research aimed to determine the effects of mid-term empowerment programs using a blended approach in the form of flipped classrooms (asynchronous, live meetings) before the coronavirus disease 2019 (COVID-19) epidemic and a virtual (asynchronous-synchronous) approach during the COVID-19 epidemic on teachers' learning and satisfaction concerning teacher roles in the medical science education system.

Methods

This research was a quasi-experimental study conducted at Shahid Sadoughi University of Medical Sciences. In the first stage, the present status of the formal and informal empowerment program in university was assessed using the existing documents and also needs assessment from the perspective of teachers via a poll to compile a training program. The upstream documents were reviewed to explain the needs and requirements of the relevant ministry. Also, the results of faculty members' assessment (including asking the opinions of learners and educational managers) and educational documents were considered in needs assessment. In the second stage, the related texts regarding empowerment programs of pioneer universities were reviewed, and the results of the text review and needs assessment were provided in the expert panel. The expert panel members consisted of 15 educational managers, members of the Empowerment Committee, and teachers who familiar with the field of medical education and participated in empowerment programs for faculty members for at least two years.

In the empowerment program that was implemented to develop the teachers' skills in the fields of educational planning, the use of new methods of teaching-learning, assessment-evaluation, educational products, professional commitment, classroom management, and effective communication was underlined. In the expert panel sessions, the empowerment program was compiled based on six categories of the basic role of a teacher in the medical science education system and finalized by consensus. In the second step, the training program was implemented in four courses from 2019 to 2021. Each course consisted of 20 training sessions lasting at least four

months. Each session also lasted three hours on average. In the pre-COVID-19 period, the training program was held in a blended form based on the flipped classroom (asynchronous, live meetings). During the COVID-19 epidemic, considering the limitations of holding live sessions, a new definition of blended education was provided in which the use of virtual education (asynchronous-synchronous learning) was recommended. In this regard, 80% of the sessions of the empowerment program during the epidemic have been held in a blended form (asynchronous-synchronous learning) and 20% in an asynchronous virtual learning form. The assessment was evaluated using the participants' levels of satisfaction and learning. The learners' satisfaction was performed using a questionnaire (n=9-question). The questionnaire psychometrics has been confirmed in the previous Kashmiri's study (Cronbach's $\alpha = 0.91$) (13). Scoring was based on a five-point Likert scale from 1=strongly disagree to 5=strongly agree (minimum score: 1 and maximum score: 5). The participants' level of learning was measured using modified (scenario-based) descriptive questions (22 questions). The questions were designed by the teachers based on the educational goal, and their validity was approved in the expert panel with the presence of five education experts. The scores of the questions of each area were calculated based on 100 levels and the mean scores by area and total score. The maximum and the minimum scores were considered 100 and 1, respectively.

Data were analyzed using descriptive tests (mean, standard deviation (SD), and percentage) to describe the participants' characteristics and scores and inferential tests (independent t-test) to compare the difference between the scores in each area and the total score in two blended education approaches in SPSS version 19 software (version 19, SPSS Inc., Chicago, IL). $P < 0.05$ was considered the significance level.

Results

One hundred and eighteen faculty members from the faculties of health (n=20, 16.94%), medicine (n=28, 23.72%), allied medical sciences (n=10, 8.40%), nursing and midwifery (n=15, 13.27%), pharmacy (n=10, 8.47%), and dentistry (n=22, 8.64%) participated in the present study. All the individuals who participated in the program were included in the research as a census. Fifty-six people of the samples were female (47.5%), and 62 were male (52.5%). The participants' mean age was 37 ± 4 years, their academic rank was assistant teacher, and their mean working experience was 2 ± 1

years. The training program was designed in seven axes, including professional commitment (Four sessions), educational planning (Three sessions), producer of educational products (Four sessions), teaching-learning methods (Three sessions), communicator (One session), assessor (Three sessions), and classroom management (Two sessions). Each session included one hour of asynchronous training and two hours of synchronous virtual training.

The mean evaluation scores of the participants based on the roles of a teacher in the educational system, using the flipped classroom method and the blended approach, are presented in Table 1. According to the findings, the mean scores were significantly different in the two methods ($P=0.0001$).

The faculty members' satisfaction scores with their empowerment courses were reported as 4.34 ± 0.16 in the blended course with flipped classrooms and 3.26 ± 0.59 in the virtual blended course.

Discussion

One of the duties of educational systems is to design and implement empowerment programs that prepare teachers to play the roles of a teacher in medical science education systems.

In the present research, the empowerment course was designed and implemented based on the national comprehensive training program. The program developed the teachers' educational abilities according to the seven categories of "teachers' roles in the medical science education system". The results showed that the participants' levels of learning and satisfaction with the flipped classroom program and the virtual blended classroom were favorable and average, respectively. This difference in learning and satisfaction from the perspective of faculty members was significant.

The present program was designed based on the roles introduced in Harden and Crosby's model. In their study, they proposed six role categories for faculty members in 2000 (13). In 2018, Harden and Lilley reviewed the roles of teachers in medical science education systems, which involved eight categories (11). In the current study, educational goals were designed based on categories extracted from the basic roles of a teacher in the educational system. Educational planning, teaching-learning methods, evaluation methods, and production of educational products are considered the technical skills that the teachers must be able to acquire necessary skills to play roles at the classroom level and also in the institution/system (14).

Table 1. The mean evaluation scores of faculty members based on the roles of a teacher in the educational system before and after the COVID-19 epidemic

Roles of a Teacher in the Medical Educational System	Educational Goals	Flipped Classroom Education	Blended Education (Asynchronous-Synchronous learning)	P-value
		Aligned Scores Mean (SD)	Aligned Scores Mean (SD)	
Professional commitment	Professionalism	82.61(38.32)	62.22(49.03)	0.0001
	The roles of a teacher in the medical science education system	73.37(39.58)	60.93(49.54)	0.0010
	Educational scholarship	75.54(36.70)	51.11(49.42)	0.0001
	University expectations from faculty members	80.43(38.70)	57.78(49.95)	0.0001
Educational planning	Virtual education design	85.19(30.43)	54.17(50.90)	0.0001
	Virtual education approaches and methods	83.65(36.70)	45.83(50.90)	0.0001
	Instructional design	77.72(33.43)	58.89(48.02)	0.0001
Educational product	Compiling learning guide	72.32(32.16)	53.33(48.15)	0.0001
Teaching-learning methods	Interactive lecture	89.29(31.50)	55.56(50.25)	0.0001
	Active learning-teaching methods	80.78(37.26)	65.12(48.22)	0.0001
Communicator	Effective communication skills with students	96.15(19.61)	60.00(49.54)	0.0001
Classroom management	Management of difficult students	92.86(26.23)	77.78(49.54)	0.0001
Assessor	Assessment methods of cognitive domain	77.68(26.65)	54.44(47.46)	0.0001
	Behavioral and attitudinal assessment methods	71.20(36.50)	61.11(48.72)	0.0010
Total mean		82.16(32.20)	59.23(48.53)	0.0001

One of the considerable characteristics of the current empowerment programs was holding special empowerment courses specific for newcomer faculty members. The organizational structure, values, and expectations of the personal and professional development of faculty members as teachers should be clarified and specified for newcomer faculty members. The newcomer faculty members' ability to guide the first years of their entry into the university is vital for their success and satisfaction.

Using the blended approach has been considered not only because of the attractiveness and increased quality of learning experiences, but also because of the cost-effectiveness (15, 16). The results of a meta-analysis study showed that the blended learning program positively affected the participants' learning (16). In the present research, the empowerment program was implemented using a blended method. In the pre-COVID-19 period, blended programs were held using the flipped classroom method (asynchronous- live meetings). In these sessions, theoretical topics and principles were presented through asynchronous virtual education. In live sessions, the topics as small group discussions provided a proper opportunity for practice and practical application of the learnings. During the COVID-19 period, due to the limitations of attending

the programs, blended training was provided through virtual education as asynchronously and synchronously. A blended approach was used in training programs and courses to integrate and benefit from the best characteristics of blended and live meetings methods. The results of Vaughan and Garrison's research indicated that the participants in blended educational courses preferred live sessions due to creating better communication, but they also recognized online sessions as useful and effective because of participants' more control over the training speed and perceiving the range of conversational concepts (17). Tolks et al. also used the blended approach to empower faculty members at a university in Munich. The use of this approach caused faculty members to further accept live courses (18). In action research, McQuiggan investigated empowerment programs for faculty members in the field of virtual education and concluded that learning how to teach online to faculty members led to changes in their beliefs and attitudes toward virtual education. The faculty members' levels of satisfaction regarding implementing empowerment programs in the field of virtual education were also reported as favorable (19). The results of this research showed that the level of satisfaction of the participants in blended programs using the flipped classroom was significantly higher than the virtual

blended approach, which can be due to interactions and group activities to deal with real issues and sharing experiences between teachers in the flipped classroom.

Based on the results, the participants in both methods gained the highest scores in the field of classroom management. These sessions were held using the scenario-based learning method. To this end, the participants were faced with positive and negative scenarios concerning difficult students and problematic classes and experienced the way of analyzing and the proposed solutions that could cause better learning in this area. In the present study, the lowest scores were obtained by the participants in flipped classrooms in the areas of educational products, compilation of learning guides, and cognitive-attitudinal evaluation. In the virtual blended method, the lowest scores were reported in the areas of virtual education principles, scholarship, and compilation of learning guide in the field of products.

Regarding the learning guide, a lack of previous familiarity with the discussed topics can affect gaining low results. Furthermore, in all three mentioned topics, the participants were supposed to do specific task-based activities, such as designing a learning guide, explaining the educational scholarship process, and designing reasoning questions in scenario-based questions, which could affect their lower scores. These types of task-based questions can affect the difficulty of the questions and participants' lower scores.

One of the important goals of the present program was the growth of the "professional commitment" ability. Professional commitment has been stressed in Stripling and Barrick's study as a general ability (14), also being taken into account in the current program. Professional commitment is one of the most critical roles of a teacher, which emphasizes emotional dimensions and model building for learners (20). The teachers' professional behaviors in the areas of altruism, honesty, justice, excellence, conscientiousness, and respect are discussed in this role (11). According to the results of Steinert et al.'s study, adherence to professional commitment is underlined in different frameworks of teachers' abilities (21).

Lu et al. planned and implemented the empowerment program with the subject of professional behavior using objective structured experiences. The results showed the faculty members' satisfaction and positive attitude toward observing the principles of professional behavior after implementation of the training course (22). Cruess emphasized that gaining adequate experience regarding professional behavior will be possible by establishing a relationship between the

values and attitudes of faculty members, which will result in encouraging rethinking and self-evaluation of professional behavior among teachers (23). The current results showed that the participants in the flipped classroom obtained higher scores than those in the virtual blended method, which could be due to the opportunity to analyze and apply learnings to solve the problem in the flipped classroom method.

The role of teachers in producing educational products, especially in virtual education, was considered in this program. Faculty members need to acquire skills regarding interactive teaching methods and the use of new educational technologies in the virtual education process and new approaches. Reilly et al. introduced the role of faculty members in virtual education, including facilitation, course design, coordinator, and expert in educational technologies. They stated that paying attention to multiple roles for teachers in virtual education was necessary and believed that they should design learning activities, proportionate evaluation methods, and appropriate educational content (24). Mastery of these skills can improve teachers' attitudes and acceptance of virtual education (24). In a study, Vaill and Testori used a three-step approach of faculty members' training, counseling, and permanent support to acquire the required skills regarding virtual education for them. Eighty-four percent of the faculty members participating in this course reported their readiness to design and implement the virtual education process; 76% of them reported the received educational content as valuable and effective. The participants also declared the highest level of satisfaction with the course (25). An interesting point was that the participants' learning scores regarding virtual education in the flipped classroom method were higher than those in the virtual blended method. It seems that the teamwork opportunity has led to the participants' learning more than the experience of learner-centered in the virtual education environment.

The results of the present study showed that the mean scores of participants' level of learning in all the investigated areas were reported as medium to high. Investigating the trend of the results reveals that during the COVID-19 period, when live sessions were not held, the learning scores were significantly lower than the flipped classroom method in the pre-COVID-19 period, when live sessions and group interactions were emphasized. Providing opportunities for discussion, analysis, and rethinking in the process of the flipped classroom education was effective in increasing the participants' learning. The results of Safavi and

Sadeghi's research based on analyzing the empowerment programs for faculty members indicated that designing long-term and short-term educational interventions led to maintaining and promoting the teachers' educational abilities. Applying educational strategies can influence the efficiency and usefulness of empowerment programs for faculty members and mainly affects their cognitive-scientific field (26). The results of the empowerment workshop of faculty members using an interactive approach in Salerno et al.'s study showed that their levels of learning increased after the workshop; also, the interactive approach improved the participants' functioning in using interactive approaches and written feedback (27). Chappell et al. held seven empowerment workshops for faculty members using an interactive approach in four regions of America, Europe, Asia, and the Middle East and concluded that the participants' scores of knowledge and skills increased significantly, and no difference was observed in the results obtained in different communities. This finding reveals the significant effect of the interactive approach in small groups and the effect on faculty members' learning and skills (28). In a systematic review, 37 studies on empowerment programs for faculty members were investigated, and the results showed that the effects of empowerment programs for faculty members in increasing their knowledge and professional abilities were significantly positive (1). According to Salih et al.'s study on implementing empowerment programs regarding new teaching-learning methods, such as problem-based learning, team-based learning, interactive lectures, case-based learning, and seminars and their effects, more than 80% of the participants believed that the empowerment program was beneficial and guided them in academic matters; it was also a rich educational experience and helped them in designing high-quality tests (29). Qazvini et al. showed that the faculty members' levels of knowledge and attitude increased after empowerment workshops (7). Thus, the use of interactive approach and analysis and reflection-based methods played an effective role in the development of teachers' educational abilities in empowerment programs.

Strengths and limitations

The small sample size and conducting the intervention in one university can limit the generalizability of the results. The non-equivalent control group was also another limitation of the research. The evaluation of scenario-based questions was reviewed by two people; however, scoring in

descriptive questions can be one of the limitations of the present study.

Conclusion

The results showed that the levels of learning and satisfaction of the participants in the program with the flipped classroom approach were at a favorable level and in the virtual blended classroom were at an average level. This difference in learning and satisfaction from the perspective of faculty members was significant. Therefore, it is recommended to design and implement empowerment programs based on the faculty members' expected roles using a blended approach with an emphasis on making training sessions practical and interactive.

Supplementary Material(s): is available here [To read supplementary materials, please refer to the journal website and open [PDF/HTML](#)].

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