



Exploring the Effectiveness of Faculty Development Program on Medical and Health Related Sciences Education

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Abstract

The professional development of faculty is progressively noticeable in both higher and health profession education. The monitoring of faculty development activities could enhance their effectiveness and contribute to the education quality. This study aimed to address a faculty development program regarding four active learning-based approaches and their impact on three undergraduate medical and health-related programs. **Methods:** Following the implementation of the faculty development program, it was evaluated based on the first three levels of Kirkpatrick's Model. The program development was underpinned by the training needs assessment of the faculty. **Results:** The results of the evaluation using the Kirkpatrick model (reaction, learning, behaviour, and actions) were informative. The response rate by faculty was 100%. Overall, faculty satisfaction with their development activities (Kirkpatrick 1st level) was 91%. The results of the T-tests of the Faculty Development Programs (FDPs) were statistically significant ($p < 0.05$). The gain and transfer of knowledge in the workplace were ensured. **Discussion and Conclusion:** This research provided valuable information regarding the impact of faculty development activities on the faculty from various perspectives. The current study endorses the faculty development program's positive impact on the performance of the faculty, teaching effectiveness, and increased the increased student satisfaction about active learning-based teaching.

Keywords: Active Learning, Faculty Development, Monitoring, Professional Development

1. Introduction

In higher education, change becomes a ceaseless phenomenon¹. Several global changes led to numerous challenges affecting the academics' performance effectiveness. Faculty need to cope with these challenges, to ensure their best teaching standards^{2,3}.

Active learning-based approaches help Students, as adult learners, actively engage, critically think, and successfully achieve their learning outcomes^{4,5}. These approaches include interactive lectures, Small-group discussions, Flipped Classes^{6,7}, Team-Based Learning (TBL), and Problem-Based Learning (PBL)⁸. Researchers are progressively investigating factors associated with teaching quality to improve student achievement⁹.

In health professional schools, the faculty, who are holders of degrees that necessitated years of experience in the specific content area, often lack the evidence-based teaching knowledge

and skills^{10,11}. Hence, there are genuine inquiries for faculty development programs to foster teaching quality and improve the educators' performance^{12,13}.

Faculty Development Programs (FDPs) described a range of planned and carried out activities that upgrade the faculty's professional teaching, research, and management skills¹⁴. However, many challenges still hinder staff development program's success¹⁵. An in-depth understanding of FDPs would reinforce authentic professional development and provide a piece of evidence for how teachers might change via these activities¹⁶. The purpose of this study was to address the faculty development program regarding four active learning-based approaches and their impact on various undergraduate medical and health-related programs (Medicine, Nursing, and Medical Laboratory Sciences).

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2. Materials and Methods

In a private higher education institution for medical sciences in Saudi Arabia, the Staff Development Unit (SDU) as a part of the Medical Education Department supported the faculty in confronting the evolving higher education challenges. SDU develops a comprehensive yearly FDP to enhance their professional skills in various perspectives. The program was mainly hybrid, highly interactive, based on active learning principles, and implemented by senior and experienced medical educationists. This program aims to encourage staff to improve their job performance through implementing new teaching strategies that address different learning domains, Enhance the capability of staff to engage in research and community activities, Support staff to improve their competencies, and Enable staff to contribute effectively to the achieving of the college's strategic priorities.

2.1 First: Phases of Development of a Staff Development Program

2.1.1 Pre-Training Phase (Planning)

The staff development unit assessed and identified the learning and development needs of the staff in the beginning of each academic year.

Problem identification, problem analysis, and Training Needs Analysis (TNA) are useful in the assessment of organizations' training needs. This was based on gap analysis (the gap between the knowledge, skills, and attitudes that the people in the organization currently possess and the knowledge, skills, and attitudes that they require to meet the organization's objectives). The Staff Development Unit conducted TNA through organizational analysis, job or task analysis, and target-group analysis.

Planning and designing of training programs include:

- Formulation of learning goals.
- Formulation of testing and evaluation criteria.
- Program development.

Therefore, the Staff Development Unit assessed and identified the learning and development needs of the academic and administrative staff at the beginning of each academic year through staff survey to:

- Identify the areas for faculty development (e.g., teaching and learning, assessment, mentoring, research, leadership and personal development skills).
- Address development areas required by administrative staff (e.g., time management, meeting management and team building).

- Categorize the target audiences (e.g., junior faculty members, all faculty levels, preceptors, instructors and other employees).
- Assign trainers/instructors for each training program as per their qualifications interests and expertise.
 - The final program is submitted to the College Council for approval, and then it will be circulated to all staff.
 - Media and public relations unit is responsible for the organization, and the announcement of the activity.
 - A flyer is developed by the media and public relations unit and will be distributed to all FCMS departments two weeks before the event.

2.1.2 Training Phase (Implementation)

The implementation of the activities is arranged by the supervisor of the staff development unit. Attendance record and documentation for each activity was prepared by the planner of the activity, and to be submitted to the supervisor of the staff development unit.

2.1.3 Post-Training Phase (Evaluation)

In this phase, the impact of the faculty development program is measured and evaluated through program evaluation, impact assessment, implementation, and transfer of learning outcomes and follow-up. Evaluation of any training programs is conducted according to Kirkpatrick's Four Levels of Evaluation:

Level 1 Evaluation (Reactions): this level measures how participants react to the training program. The participants are asked to answer questions regarding their perceptions.

Level 2 Evaluation (Learning): this level determines the amount of learning that has occurred. Participants take the test or assessment before the training (pre-test) and after training (post-test).

Level 3 Evaluation (Transfer): this level measures the transfer that has occurred in learners' behaviour due to the training program. As described by personal evaluation reports, peer evaluations of teaching and evaluation reports focused on one or more aspects of faculty effectiveness.

Level 4 Evaluation (Results): at this level, the final results of the training are assessed and analyzed. These include outcomes that the organizations have determined to be good. This analysis is multifaceted and needs to be agreed upon early in the process of developing a program impact on teaching. For instance, the number of courses changed the number of activities initiated, changes in course evaluations, and impact on learning (e.g., student retention, grade point averages).

2.2 Second: Research Designs

The design selected for this research study was quantitative in nature using a Satisfaction survey, Pre and post-test, and Identification of the percentage of implemented student-centered teaching strategies.

2.3 Third: Data Collection and Analysis

The data collection techniques used in this study consisted of surveys, tests, and documentation reviews. These documents included study guides, course specifications, and teaching materials. Most of the documents received from the participants were soft copies from each participant's course.

Data collection and analysis were conducted according to Kirkpatrick's Levels of Evaluation²¹ as follow:

The first evaluation level gauged participants' reactions to the program, using survey questions regarding their perceptions about the content, Resources, and venue of the workshop, and speakers on a Likert scale from 1-5 (1 strongly disagree - 5 strongly agrees).

The instrument used for this level is 15 items evaluation survey with a Likert scale (5 strongly agree - 1 strongly disagree).

The second evaluation level assessed the learning and knowledge acquisition using Pre-& Post-tests and assignments.

The third evaluation level determined the transfer occurrence in learners' behaviour due to their professional development and training with the following evidence of transfer and application. The medical education department generated monitoring worksheets. These worksheets demonstrated the percentage of all teaching strategies in each course in each of the three programs through documentation review. All faculty teaching in the three programs were requested to complete documents and study guides for the teaching strategies' proportions in their courses. The study used a percentage of different interactive teaching strategies implementation in all courses to measure knowledge transfer to the workplace

In addition to that, the study used the course evaluation survey and teaching effectiveness questionnaires as evidence of knowledge transfer to real situations. Students filled these questionnaires to measure their satisfaction with teaching. The questionnaire is 20 items evaluation survey with a Likert scale from 1-5 (5 strongly agree - 1 strongly disagree), where the students evaluate instructor teaching skills. Another questionnaire with a Likert scale from 1-5 (5 strongly agree-1 strongly disagree) is the course evaluation questionnaire that includes five factors which are course orientation, faculty, educational resources, Assessment process, and Course Learning Outcomes (CLOs) achievement.

2.4 Fourth: Sampling and Sample Size

Participants: The sample for this research study were thirty-six Ph.D. holder academic staff in different programs in FCMS (Nursing Program, Medical Laboratory Sciences Program, and Bachelor of Medicine Bachelor of Surgery Program). The participants attended all SDU workshops related to student-centered teaching strategies.

2.5 Sampling

The sample was a comprehensive convenient sample.

3. Results

FCMS faculty were interested in completing all the required questionnaires, pre-test and post-tests, as evidenced by the response rate of 100%. The number of participants was thirty-six Ph.D. holder academic staff in different programs in FCMS (Nursing Program, Medical Laboratory Sciences Program, and Bachelor of Medicine Bachelor of Surgery program (MBBS)) as shown in Table 1.

Table 1. Number and ranking of participants in each program

Number of participants (36 PhD)									College
MBBS program (14)			MLS program (10)			Nursing program (12)			
Males	Females		Males	Females		Males	Females		Fakeeh College for Medical Sciences (FCMS)
6	8		5	5		7	5		
MBBS program (14)			MLS program (10)			Nursing program (12)			
Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.	
2	5	7	2	4	4	2	2	8	

The Kirkpatrick model's first evaluation level (reaction) revealed that the participants' satisfaction was excellent as all the workshops' evaluation survey results were above 4 out of 5. The overall scores are 4.4 for Team-Based Learning (TBL) and this was distributed as follows: the first factor that was related to the speaker scored 4.2. And the content factor score was 4.4 and the score of resources and the venue was 4.5. Also, the overall of the Problem-Based Learning (PBL) workshop evaluation survey was 4.7 and as shown in table one the highest score in this evaluation survey was for the speaker however for effective teaching strategies, the highest score factor was the program content and the overall score was 4.6. In addition to that the Flipped classes workshop evaluation survey score was 4.6 (Table 2).

Table 2. The first evaluation level scores of the provided workshop sessions

	The Speaker	The program content	The venue and resources	Overall
TBL workshop	4.2	4.4	4.5	4.4
PBL workshop	4.9	4.7	4.3	4.7
Flipped classes workshop	4.7	4.6	4.6	4.6
Effective teaching strategies	4.7	4.8	4.6	4.7

*participants rated scores of the 15 items of the workshop evaluation survey. The Scale (5 strongly agree - 1 strongly disagree).

The Kirkpatrick model’s 2nd evaluation level (Learning): Pre- and Post-tests and assignments were distributed to faculty staff before and after all workshops. The results of the T-tests of the FDPs were statistically significant (p<0.05).

The results showed that the three workshops’ T-tests were statistically significant, and these results indicated an improvement in faculty’s knowledge after workshop conduction (Table 3).

For the 3rd evaluation level (behaviour and actions), the monitoring worksheets indicated that all the instructors used the new interactive teaching strategies, which ensured the transfer of the knowledge in the workplace. These adopted new teaching strategies were reported in their study guides and documents. The teaching effectiveness survey and course evaluation survey indicated a high degree of students’ satisfaction regarding staff teaching skills and their usages of various teaching strategies in all three programs.

The percentage of flipped classes’ implementation in the Medicine program was 25% however it was lower in MLS and Nursing program to be 15% and 20%, respectively. Also, the TBL implementation percentage was equal in all three programs, and it was 25%. However, PBL implementation was 25% only in the MBBS program. In addition to that, the average score for the teaching effectiveness survey were 4.3 in

Table 3. The knowledge acquisition by faculty staff

		t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
PBL workshop	Pre-test scores	6.889	35	.0000	3.23077	2.2090	4.2525
	Post-test scores	9.467	35	0.000	4.61538	3.5532	5.6776
TBL workshop	Pre-test scores	7.359	35	.000	3.30000	2.2855	4.3145
	Post-test scores	13.116	35	.000	5.80000	4.7996	6.8004
Flipped classes workshop	Pre-test scores	9.052	35	.000	2.03846	1.5747	2.5022
	Post-test scores	14.351	35	.000	3.38462	2.8989	3.8703

the Medical Laboratory Sciences (MLS) program, 4.8 in the Medicine program and 4.6 in the Nursing program. Also, the average score in the Course Evaluation Survey in the Medicine program was 4.6 and 4.5 in both MLS and Nursing programs (Table 4).

Table 4. The third evaluation level scores (evidence of knowledge transfer to students)

Survey	MBBS	MLS	Nursing
*Teaching effectiveness survey	4.8	4.3	4.6
*Course Evaluation Survey	4.6	4.5	4.5
Percentage of different interactive teaching strategies implementation in all courses			
Flipped classes	25 %	15%	20%
PBL	25%	0%	0%
TBL	25%	25%	25 %

4. Discussion

The faculty development program at Fakeeh College for Medical Sciences was evaluated for its effectiveness according to the first three- Kirkpatrick levels (reaction, learning, behaviour, and actions). In the First level (Reaction level), the participants expressed high satisfaction in the immediate feedback after the FDPs implementation. This level also included measuring participants’ reactions or attitudes toward the program’s specific components, such as the speakers, the workshop content, the venue, and the workshop’s overall evaluation. The excellent reaction results in this level were underpinned by two key factors. The first factor was that the program was based on the faculty training needs assessment. Such assessment is crucial to realize the educators’ requirements and perceptions before applying new education methods and before creating these programs¹⁷. The second factor was that our FDPs were given by experienced medical educationists, as role models, who adopted interactive strategies and active

learning-based approaches. More experienced faculty can perform as innovation models towards teaching change¹⁸. Health professions' education enhancement depends on role-modelling and faculty development¹⁹. Thus, the faculty perceived training as more creative and innovative²⁰.

Regarding the second Level (learning level), it included evaluating the faculty's assignments or comparing their pre- and post-test results. This level showed increased relevant knowledge following our FDPs. The faculty gained the required knowledge to apply the new and interactive teaching strategies they were trained about. The pre- and post-test comparison aimed to document the changes made due to participating in the FDP¹⁰. Our results were similar to a study conducted in the School of Medicine, Marmara University, Istanbul, Turkey, where they evaluated their faculty development training program¹¹.

The final step in our study is the third level of the Kirkpatrick Model (behaviour and action). It is about monitoring actual behaviours demonstrated by the faculty staff after training in the workplace. According to the results, the trained instructors used the new and interactive teaching strategies, which ensured the transfer of knowledge in the workplace. The analysis results showed that the students were satisfied with the instructor's teaching style and skills and the course itself. The professional and academic development of an institution's faculty members significantly affects its capacity and educational achievements¹². FDPs "are powerful organizational mechanisms that can engender the change we need in the academic culture towards recognizing teaching and learning as valuable and worthwhile activities"²⁰.

Similar to our results, in FDPs developed to improve dental faculty's didactic skills, several faculty members reported that these programs helped them in creating an active and communicative learning environment that gained their students' satisfaction²¹.

Also, our results were consistent with a study conducted in Harvard Medical School, USA, and aimed at identifying the long-term effects of a professional development program on physician educators¹⁹.

The current study results generally confirm the positive impact of FDPs on faculty's performance and students' perception. Similarly, Sarikaya *et al.* (2010)¹¹ reported how teachers who attended the workshop-based courses had improved their teaching and assessment methods. The teachers' improvement is evident in interactive teaching, demonstration, coaching, and mentoring. Such improvement was reflected in the students' perception and achievements¹¹. The teaching appreciation via funding, time, information, and faculty development initiatives could positively influence the organizational change and improvement⁸.

5. Conclusions

The current study highlights the faculty development program's positive impact on the performance of the faculty and teaching effectiveness. Additionally, FDPs fostered active learning-based teaching strategies and increased student satisfaction about teaching. Our findings can direct the development of similar FDPs at other Higher education institutions, in particular in the health profession education sector.

6. References

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