



Original Article

Assessment of Effective Learning Transfer at Workplace after a Formal Faculty Development Program

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ABSTRACT

Higher education institutions use Faculty Development Programs (FDPs) as organized learning opportunities to improve the abilities, knowledge and skills of its faculty members. **Objective:** To evaluate the faculty development program using Kirkpatrick Model and acknowledging the program's importance in medical education. **Methods:** A non-probability purposive sample of 27 faculty members was used in the quantitative quasi-experimental design. Pre- and post-tests or intervention were conducted as part of the CBL facilitation skills training included in the faculty development program after three and six months, with a particular emphasis on CBL facilitation skills comprising four domains: teaching skills, teacher knowledge, student happiness, and environmental factors. **Results:** The analysis revealed that participants demonstrated significantly higher mean scores across all four domains in the second evaluation (post-test/ intervention) compared to the first evaluation (pre-test/ intervention). Each domain showed a $p < 0.05$, indicating statistically significant improvements. These results suggest that the CBL facilitation skills training program was effective in enhancing participants' skills. Moreover, the evaluation reached level 3 of the Kirkpatrick model, signifying a positive transfer of learning to the workplace, with observed improvements in teaching skills and behavior change among participants. **Conclusions:** Faculty development programs were mandatory for learning transfer and improving teaching skills at workplace. Proper program evaluations were equally important to see whether learning transfer was actually happening at workplace or not.

INTRODUCTION

There has been a notable increase in medical faculty development programs in the past ten years. Many educational organizations and medical schools today provide a range of activities and programs to assist faculty members enhance their abilities as instructors and educators in response to emerging educational trends in teaching and evaluation [1]. These programs are very effective in making the faculty more competent. They tend to learn a lot from these programs and most of the institutions in Pakistan are now having regular workshops to train the faculty. The ideas for educational development

are most often generated by the Individuals who take part in faculty development programs and they also carry out educational development projects [2]. Still, there hasn't been much acknowledgement of the efficacy and influence of FDPs on participation in academic activities. As a result, assessing how these FDPs enhance faculty members' capacity for measuring student learning, technology adaptations, research efficacy, and teaching efficacy has become imperative [3]. When faculty members regularly complete FDPs, the institution's overall performance—both in terms of their own teaching and students' learning is

dramatically enhanced. When an FDP achieves institutional objectives, it is considered fully resourced from an institutional perspective. From an individual perspective, the level of faculty commitment to institutional values and objectives determines how much an institutionally responsive FDP will involve them [4]. During faculty development programs there should be more prominence on individual needs and evaluating them to institutional priorities. If the needs of participants are not compromised they may not have enough motivations to transfer back to the workplace whatever they have learned through the journey [5]. Once these needs are met and all criteria are achieved then the FDP starts the uphill journey of the institution. A deeper comprehension of the effects of FDPs on teachers, students, and institutions can be attained through program evaluation. Numerous evaluation methods can be used to assess the impact of these initiatives, but Kirkpatrick's model of program evaluation is the most widely employed [6]. This model's features include its ease of use, assessment of a small number of variables, evaluation criteria that are simple to understand, independence of individual and environmental variables, and the absence of the requirement to gather baseline data and learner performance. Kirkpatrick's model evaluates training programs' efficacy on four levels: (a) trainee response to the training experience (including the training experience); (b) learner learning outcomes and increases in knowledge, skill, and attitude toward the attendance experience (i.e., the extent to which attendees learned the content following training). This level is often assessed by the use of a pretest and posttest; (c) behavior changes and improvements made by the students (i.e., if the knowledge was used in the workplace); and (d) outcomes (the training's final influence) [7]. Program evaluation is carried out at all four levels of Kirkpatrick model with more emphasis on level 3 and 4 to see the effective learning transfer and behavior change of faculty at workplace and its long-term results which can be materialized by a dynamic and energetic FDP. It effectively leads to the faculty's skills enhancement in all the five domains, i.e., curriculum support, organizational mentoring, teaching, assessment and organizational leadership [8]. In medical education, teacher professionalization is crucial because only skilled educators can provide outstanding instruction. Curricula are constantly updated in higher education in particular to take into account the growing body of knowledge, innovative teaching methods, and instructional technologies. Additionally, theoretical models were put forth to enhance instructional strategies [9]. Behavioral change model is one of them; it aims to change the way teachers behave in the classroom. Another is the development model, where teachers shift their attention

from themselves to the material and then back to the students (first facilitating passive learning, then encouraging active learning). Subsequently, the Conceptual Change Model was presented, which holds that instructors' beliefs about education mirror their goals and methods. All activities that improve teachers' skills, Knowledge and behaviors are part of faculty development. Teachers improve their skills and learn to put their knowledge into practice to help students develop [10, 11]. Learning is a complex process for teachers and professionals. For implementation of appropriate alternatives to improve or change teaching practices the cognitive and emotional engagement is mandatory. Researchers attempt to identify when and how transfer occurs and to offer strategies to improve transfer. The primary aim of education and learning is to enable individuals to gain knowledge and abilities in formal, structured settings such as classrooms or training sessions. Transfer effectively happens when the program occurring environment is same as the setting in which new knowledge and skills will be applied [10]. The simulation and related approaches can be used by Effective faculty development to facilitate in-situ learning. Programs should be developed that stimulate learning and reflection among faculty, raising their self-awareness as teachers [12]. The ongoing self-directed development are completely dependent on it rather than the need to primarily have "teacher-directed" interventions. The process of applying previously gained knowledge and skills to new FDPs are designed keeping in mind the theories of learning transfer. It is tried to keep the FDP atmosphere as close to workplace atmosphere as possible, secondly hands on activities like role playing almost mimics the actual situation. It is also kept in mind while planning an FDP, is to keep the content of the FDP as per the caliber of the participants. Hence, teaching skills developed by FDPs play a vital role in learning transfer. Better the training programs better will be learning transfer.

The study's aim is to assess faculty development program using Kirkpatrick Model and acknowledging the program's importance in medical education.

METHODS

The study was carried out at the Islamic International Medical College in Rawalpindi. A non-probability purposive sampling technique was used for data collection. Inclusion criteria was that participants must be current faculty members, completed the formal faculty development program, currently engaged in teaching, and provide informed consent. Exclusion criteria was participants who did not complete the formal faculty development program, and without teaching role. 27 faculty members were enrolled in the quantitative quasi-experimental study design, after ethical clearance from the college's ethical

review committee. Using the G-power sample calculator, 27 faculty members were selected for this research. The sample size calculation formula in GPower differs based on the particular test were doing. The formula for calculating sample size for a two-sample t-test (independent groups) is: $n = (Z_{\alpha/2} + Z_{\beta}d)^2 2n =$ Where: $n =$ sample size per group, $Z_{\alpha/2} =$ Z value corresponding to the significance level (e.g., 1.96 for a two-tailed test with $\alpha = 0.05$). $Z_{\beta} =$ Z value corresponding to the desired power (e.g., 0.84 for 80% power) and $d =$ effect size (Cohen's d). The study conducted for six months, from January 2023 to June 2023. In January a workshop as a part of FDP was conducted on CBL facilitation skills. Consent forms were signed by all participants and their willingness to participate in research was taken after explaining the research process. After that a pre-test (14 questions) was taken on CBL facilitation skills and at the end of the workshop a post-test (14 questions) was also taken. Participants then went to their workplace and after 03 months of the workshop participants were assessed at their workplace while they were taking CBL session at their workplace (phase 1) CBL facilitation skills evaluation checklist was used, the checklist was derived from center for community health and development at the University of Kansas. Checklist was mentioned as, open for use for all. Some modifications were made in checklist according to the CBL facilitation skills format and it was then sent to a group of senior medical educationists and they validated the checklist and then the checklist was used. Checklist was divided into 4 domains for the evaluation of facilitators at workplace. These domains were teaching skills (7-questions), teachers' knowledge (6-questions), students' satisfaction (5-questions) and environmental factors (3-questions). Same process was again repeated after 06 months of workshop at the workplace. This study was approved by Islamic International Medical College Institutional Review Board (IRB) "Ref No. Riphah/IIMC/IRC/23/3009. Making ensuring the informed consent procedure was understandable and transparent for each and every participant. Data entry and analysis was carried out with SPSS version 25.0. The statistical analysis was carried out in accordance with the ethical guidelines as follows: Over the course of two rounds, descriptive statistics, such as averages and standard deviations, were computed for every domain on the Case-Based Learning (CBL) checklist. For non-normally distributed data, Paired t-tests were used to compare the mean scores of each domain between the two rounds. A significance threshold of 0.05 was chosen.

RESULTS

The demographic graph information about the participating respondents, who can be assumed to be faculty members in most cases, by the academic rank, gender, age, and years of experience. To begin with, it was of crucial importance to note that there were 3 associate professors, 12 senior lecturers and 11 lecturers. All the

information gleaned from the graph and other sources was detailed and structured as follows. Associate Professors had 3 female respondents, no male and all of the respondents was over 50 years old and have more than 15 years of experience. Senior Lecturers 12 female respondents, 1 male. All of the respondents were under 45 years old. All of the respondents had more than 10 years of experience. Lecturers had 10 female respondents, 1 male. All of the respondents were under 40 years of age. All of the respondents had more than 5 years of experience. Total participants had 27 people, with 25 females and 2 males, see figure 1.

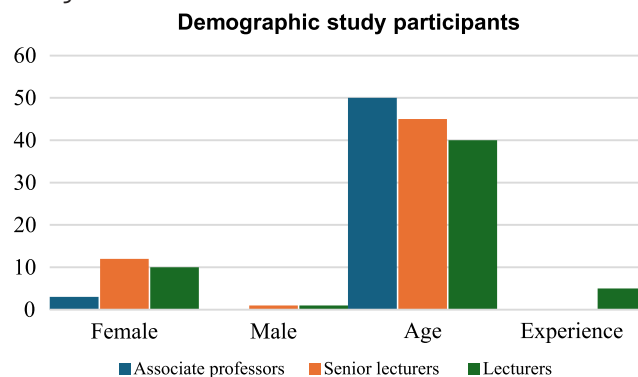


Figure 1: Demographic Study of the Participants

Results show that the intervention has been successful and the participants' knowledge substantially improved after the workshop regarding the subject. The p-value calculated was highly significant and indicated the learning transfer and successful intervention. The difference in mean values and standard deviation calculated for pre and post-intervention were also highly suggestive of successful intervention as shown in table 1.

Table 1: Case-Based Learning (CBL) Facilitation Skills (n=54)

| Intervention | Mean \pm SD | p-Value ^(*) |
|-------------------|-------------------|------------------------|
| Pre-Intervention | 9.92 \pm 2.431 | <0.001 |
| Post-Intervention | 13.28 \pm 0.890 | |

Note(*) Paired sample t-test

Participants in the study were trained on CBL facilitation skills via a workshop as a part of FDP. Later on, at workplace they were evaluated on this skill by a CBL facilitation skill checklist comprising of 4 domains. This evaluation process corresponds to the level 3 (Behavior) of Kirkpatrick model. Each of the participants was evaluated and observed at workplace twice with a gap of three months. Data collected after 3 months of workshop was labelled as group 1 result and after 6 months from workshop collected data were labelled as post-intervention results. Within the individual domains, each and every question's separate mean was calculated and then overall mean of domains were calculated. Means of Pre-intervention and Post-intervention of all 4 domains were compared and p-value was found out by means of paired t-test as shown in table 2.

Table 2: Improvement Skills by Domain of CBL Checklist

| Variables | Pre-Intervention (Mean ± SD) | Post-Intervention (Mean ± SD) | p-Value |
|---|------------------------------|-------------------------------|---------|
| Teaching Skills | 3.50 ± 1.53 | 4.85 ± 0.192 | <0.001 |
| Teacher's Knowledge/ Transfer of Learning | 3.38 ± 1.80 | 4.57 ± 0.567 | 0.004 |
| Students' Satisfaction | 3.60 ± 1.46 | 4.91 ± 0.188 | <0.001 |
| Environmental Factors | 3.47 ± 1.81 | 4.68 ± 0.176 | 0.12 |

There were two groups indicate Pre-intervention and Post-intervention. The mean values of Post-intervention were much higher as compared to mean values of Pre-intervention indicating the improvement in teaching skills, increased transfer of learning, enhanced students' satisfaction and conducive environmental factors for all these to happen at workplace. Results showed that all the domains of CBL checklist have p-values below 0.005 indicating significant increase in all the domains of CBL. The standard deviation values were also calculated and the lesser standard deviation values of Pre-intervention were highly indicative of improvement in all 4 domains. These results clearly show that the intervention has been successful (CBL workshop) in improving the teaching skills of medical teachers at workplace and in return enhancing the learning transfer. Checklist on the basis of which different domains were graded. The checklist was divided into four domains, each with a specific number of items. Each item was rated on a scale (e.g., 1 to 5), where 1 indicates "needs improvement" and 5 indicates "excellent." The evaluation checklist was built on testing four principal domains such as Teaching Skills, Students' Satisfaction, Teachers' Knowledge/Transfer of Knowledge, and Environmental Factors. The items were rated on the following scale: 1= Not done, 2= Poor, 3= Fair, 4= Good, 5= Excellent. Domain-wise scoring was found below; overall scoring was also provided: Teaching Skills: 7-35, Students' Satisfaction: 5-25, Teachers' Knowledge/Transfer of Knowledge: 6-30, Environmental Factors: 3-15. The minimum total score that can be obtained was 21; the maximum one was 105. This scoring system allows one to determine teachers' performance with references to multiple indicators.

Table 3: Checklist of Testing Four Domains

| S.No. | Teaching Skills | Rating |
|-------|---|-----------|
| 1 | Conduct Sessions as Scheduled in the Timetable | 1 2 3 4 5 |
| 2 | Is Punctual in Starting Sessions | 1 2 3 4 5 |
| 3 | Makes his/her Expectations Clear to the Group and Ensure Pre Reading of Resource Provided | 1 2 3 4 5 |
| 4 | Clarifies Students' Expectations of the Group Activities and the Facilitator's Role | 1 2 3 4 5 |
| 5 | Promotes Efficient Use of Time | 1 2 3 4 5 |
| 6 | Is Flexible and Supportive to Group | 1 2 3 4 5 |
| 7 | Use Body Languages to Communicate (i.e., Nods Head, Leans Forward, etc.) | 1 2 3 4 5 |

| Students' Satisfaction | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Promotes Active Listening (i.e., Listens Attentively; Quotes Students During Discussion) | 1 | 2 | 3 | 4 | 5 |
| 2 | Helps Each Student to Take a Turn at Leading Discussions | 1 | 2 | 3 | 4 | 5 |
| 3 | Gives Each Student a Chance to State his/her Opinion about Case and Makes Sure it is Heard by all by Actively Involving the Learners in the Group Process | 1 | 2 | 3 | 4 | 5 |
| 4 | Clarifies Students' Expectations of the Group Activities and the Facilitator's Role | 1 | 2 | 3 | 4 | 5 |
| 5 | Insists that Only One Person Speak at a Time | 1 | 2 | 3 | 4 | 5 |
| Teachers' Knowledge / Transfer of Knowledge | | | | | | |
| 1 | Deflects Guesses into a Search for Knowledge and Understanding from Learning Resources | 1 | 2 | 3 | 4 | 5 |
| 2 | Helps the Group to Assume Responsibility for Collective and Individual Learning | 1 | 2 | 3 | 4 | 5 |
| 3 | Clears Student's Misunderstandings in Subject and Align the Session with LOS | 1 | 2 | 3 | 4 | 5 |
| 4 | Keeps the Group "on Track" | 1 | 2 | 3 | 4 | 5 |
| 5 | Provides Constructive Positive Feedback | 1 | 2 | 3 | 4 | 5 |
| 6 | Recognizes his/her own Limitations (e.g., "I don't know" will read it and Discuss it Later on) | 1 | 2 | 3 | 4 | 5 |
| Environmental Factors | | | | | | |
| 1 | Creates a Supportive Environment for Open Discussion | 1 | 2 | 3 | 4 | 5 |
| 2 | Facilitates Resolution of Interpersonal Conflicts | 1 | 2 | 3 | 4 | 5 |
| 3 | Helps to Establish Clear Ground Rules at the Beginning of Session | 1 | 2 | 3 | 4 | 5 |

DISCUSSION

Teaching skills were crucial when one was working as an educator. These skills enable teachers to keep their classrooms engaged and interested in learning. Faculty development programs include all activities that improve teachers' knowledge, skills and behavior thus improving teaching skills [12, 13]. In this study the teaching skills of the participants were improved by using the training program. Improvements in teaching skills including the teacher's knowledge were evaluated by CBL facilitation checklist domain results which showed marked increase in each domain mean values indicating the improvement in teaching skills at workplace. These results were taken after the Training program. Efficient and skillful teachers make better nations. It was very important for teachers to improve their teaching skills as well so that they can deliver their best at the workplace. The previous study findings indicate that, framework dominated by informal learning, faculty development may be best seen as all "actions, planned and undertaken by faculty members themselves or by others working with faculty, aimed at enhancing teaching [14, 15]. The concept of transferability in learning has different aspects. Effective practice and mindful abstraction can increase learner's transfer. The process of examining one's experiences for similarities was known as Abstraction. Methods used for abstracting knowledge include, what was learned. In this study the learning transfer was observed at the workplace by researcher and recorded through the CBL facilitation checklist results. Participants were observed and evaluated twice at their workplace on CBL evaluation checklist domains to see the

transfer of learning, results clearly showed that the learning transfer has occurred and the faculty development program has been successful. After careful analysis, we categorized these influencing factors included learner characteristics, programme design characteristics, and educational environment characteristics. The literature that was currently in publication uses a similar classification system, which was congruent with our thematic analysis results [16]. Regardless of the setting or reasons for participation, the faculty development program aim was for participants to leave with and apply new information and perspectives. While producing faculty development episodes that were effective was vital, achieving maximum impact calls for a methodical strategy that includes establishing a supportive practice environment where participants may apply what they have learned [17, 18]. "Finding out what it would need for learning to obtain utility value throughout transitions to different contexts or learning spaces has been essential for as long as learning psychology has existed". We used the concept of past experience (CBL workshop) also referred to as transfer source which affected the learning and performance in a new situation (workplace) also referred to as transfer target [19, 20]. Behavior change at workplace was directly observed by researcher at workplace. CBL facilitation skills checklist was also used to see the behavior change. By behavior change we mean that there was modification of participants' actions, attitudes, and habits to improve their performance productivity and well-being at workplace. This all-in return leads to better workplace environment with increased harmony, employee satisfaction and learning transfer. People were accustomed to seeing emotions and ideas as actions that have the potential to be positive and significant when supporting faculty development in personnel issues. However, when it comes to a scenario involving individuals in an organization, the interactional behavior between the professors and others in their immediate vicinity should be the main focus. Since a faculty member's words or actions have an impact on members of the organization and have implications for the desired outcome. Measuring behavior was meant to determine what has to be adjusted or prepared differently in order to produce a better outcome. In this instance, the training participants were assessed based on several actions to help them become more effective facilitators. In the available literature, the effectiveness of training and transfer intention was usually based on self-reported feedback by faculty, claiming increased teaching effectiveness after faculty training. However, the intervention with the maximum impact on the transfer process was still not well known and remains under-researched [21, 22]. Positive results were seen after the data analysis was completed. Kirkpatrick model level 3 explains the behavior change at workplace corresponds.

The workplace faculty development program leads to learning transfer.

CONCLUSIONS

Faculty Development Programs FDP a highly useful tool for raising student satisfaction and faculty performance at work. By doing this, faculty members may quickly assess their own performance levels and the results of their efforts. In order to determine how beneficial these programs were for both faculty and students, as well as what changes must be made to further enhance faculty teaching abilities and learning transfer, thorough assessments of these programs were also necessary.

Authors Contribution

Conceptualization: SA

Methodology: AQ, WPQ, WH

Formal analysis: AQ, WA

Writing, review and editing: MOS

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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