

Evaluation of the effectiveness of in-service courses implemented in the year 1396, on the reaction, learning, behavior and results of managers and staff of Dezful University of Medical Sciences based on the Kirk Patrick model

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Abstract:

Every organization needs adroit and skilled human resources to carry out its activities and achieve its predetermined goals; The purpose of the present study was to evaluate the effectiveness of in-service training courses on the reaction, learning, behavior and outcomes of managers and staff of Dezful University of Medical Sciences based on Kirk Patrick's model. The statistical population of the study consisted of all staff and managers participating in in-service training courses in Dezful University of Medical Sciences in 1396 with a population of 4,00 and according to Cochran's formula, 382 people (322

learning-reaction stages — 60 managers of the results behavior stage) were selected as sample. Sampling was stratified. Data gathering tool is curriculum impact assessment questionnaire of Abbas Arab (2014) based on Kirk Patrick's evaluation model and guidelines. Statistical analysis of this study was performed using two software SPSS, EXCEL. One-sample T-test and analysis of variance were used to analyze the data. The results showed that according to the Kirk Patrick model the held training courses had a positive effect on the four stages of reaction, learning, behavior and results on the staff.

Keywords: in-service courses, reaction, learning, behavior, outcomes, and Kirk Patrick's model.

Introduction:

Every organization needs sophisticated and skilled human resources to carry out its activities and achieve its predetermined goals; which, after being designated by the organization, the staff education must be such a way as to prepare them for entering into the organizational hierarchy. Undoubtedly, education has a unique and specific place in the growth and excellence of individual life and in human society and in the transformation of man and his vital evolution and can be the motive force throughout human life. All segments of society need education to achieve growth and excellence and in this regard, employees as the main agents in organizations in order to adapt to the

constant changes and evolving needs of society, need continuous and frequent training. (Moradi et al., 2014). Therefore, human resources training is not only desirable, but also an activity that every organization must consider resources to always have efficient and up - to - date human resources. This training is cost-effective when it takes us toward predetermined goals and corrects skill, knowledge and attitude deficiencies and leads to quantitative and qualitative improvements in performance and productivity levels. Since the large costs of the organization's budget are spent on these courses, this is one of the reasons for the need to evaluate the effectiveness of the courses. Today, it is proven that the success of a country in cultural, social, political and economic fields depends on a coherent and dynamic education system and only with such a system it can keep pace with social and industrial developments and prosperity among the world's successful countries. It can never be claimed that education itself is beneficial unless evaluation training is provided. As stated in most educational and management books and articles, there are several models and patterns available to determine the value of courses, that the most important of these can be referred to the Kirk Patrick evaluation model (Derry et al., 2016).

Employee attention as the largest and most important asset and capital of the organization is a phenomenon that has grown tremendously in the last two decades. Today, the importance of staff training has also increased with the growth of information and the complexity of jobs. Toffler views education as the most important activity and way of coping with the great changes in future life to accept change. Effective and useful training helps people to achieve the growth and ability in their jobs and work more effectively. The more knowledgeable and educated people are about their work, the better their

learning process is and provide more useful ideas and theories for improving work (Al-Husseini, 2000).

Nowadays, human resources education and improvement is considered as one of the main strategies of organizations to adapt positively to changing conditions. Organizations' life depend largely on the knowledge and skills of their employees, the more timely these areas are, the better the organization's adaptability to a changing environment (Sam Khanian, 2005).

If we are to define in-service training, it should be said that its main essence in all organizations is to increase the efficiency of staff and to create adaption with the environment and as a result increase of services. In-service training is nothing but an effort to promote the knowledge, awareness, and technical skills, professional and occupational as well as the establishment of desirable behavior within the staff of an institution or organization and prepares them for efficient performance of their duties and responsibilities (Chaichi, 2002).

Nowadays, the importance and role of in-service training is not covered by any organization, and every organization devotes time and capital to the training of its personnel according to its importance. In-service training that continues with accredited courses and strives to improve the skills and knowledge of employees, and can also help solving workplace problems and issues can ensure the survival of the organization. Therefore, continuous efforts in improving the quality of in-service education can bring considerable benefits. It is important to note that education can never be claimed to be beneficial in itself, unless through the evaluation of presented educations. The first definition of evaluation is called Ralph Tyler. He considers evaluation as a means of determining the level of achieving the plans

to educational goals, Tyler believed that a prerequisite for an accurate evaluation was to set general and specific goals, and it is the task of evaluation whether the goals have been met or not. "Israeli" defines evaluation as a final step in the education process, with the aim of improving education or judging the value and effectiveness of educational programs (Farajad, 2012). Evaluation provides information to justify the effectiveness of the training program, given these information the continuity of training is intended for later times. Many experts believe that evaluation is a systematic process of determining value, purpose, or value of something, or in other words, evaluation is a systematic collection of explanations and information for the decision-making of something. Evaluation as it relates to education means the process of judging aspects of learning behavior. It consists of a set of skills that helps to determine whether the learner has achieved the goals set. Evaluation is an integral part of an educational system. (Kirk Patrick, 1998).

Educational evaluation is the process of interpreting results by measuring information to judge the overall goals of the training or the degree of success of the course participants. Overall, educational evaluation is a systematic approach to data collection that helps managers make meaningful and valuable decisions about the training program. There is no clear definition of the effectiveness of education, because, access to this process is difficult. Evaluating the effectiveness of training means to determine to what extent training has led to developing the skills needed by the organization in a practical and usage way. (Richard & Gundermen, 2015). As noted above, learning about and understanding the results and outcomes of staff training is essential to the training process, and thus completes the training cycle. In fact, evaluating the effectiveness

of training courses on the one hand provides a mirror for managers and staff of the organization to gain a clearer picture of how low and quality educational activities are and on the other hand, it equips the planners and training staff of the organization to find out the positive and negative aspects of the program and thereby help to streamline human resources training programs and activities. As stated in most educational and management books and articles, there are numerous models and patterns for determining the value of training courses, that the most important of these can be described as the evaluation model of Kirk Patrick (Krik Patrick, 1998).

Kirk Patrick outlines three basic reasons for educational evaluation

- 1- Justifying the existential reasons for the training unit by demonstrating its role and importance in fulfilling the goals and missions of the organization;
- 2- Deciding whether to continue the training program;
- 3- Improving education. (Salvatore, 1998).

This descriptive cross-sectional study investigates the effectiveness of in-service training courses in Dezful University of Medical Sciences in 1396 based on Kirk Patrick's model. In this model the effectiveness of educational programs can be evaluated using four important steps: Kirk Patrick defines evaluation as determining effectiveness in a training program and it divides the evaluation process into four levels or steps (Bani Davoodi and Atabi, 2017).

- 1- Reaction: Reaction is the level of counteraction that learners make to all the factors that influence a course. This reaction can be achieved through questionnaires or other common methods. Response measures how participants feel about the training program (satisfaction), these surveys seek to get participants' views on education, curriculum, teaching

materials, equipment or class, value and depth of course content, and so on (Shuja et al., 1986).

2- Learning (knowledge): Learning is to determine the amount of learning, skills, techniques, and facts taught to participants during the course and it has become clear to them that it can be understood through pre, during and after training (Shuja et al., 1986).

3- Behavior: Behavior refers to how and to what extent the changes in participants' behavior because of attending in training courses and that can be clarified by continuing to evaluate in the real work environment. This level is very challenging and sensitive to the previous level, which Kirk Patrick has three reasons for this: First, participants must have an opportunity to change their behavior. Secondly, the time of the change in behavior cannot be truly predicted third, the atmosphere is an organization that can influence the change or not of behavior during the work. (Shuja et al., 1986).

4- Results: Outcome refers to the extent to which goals are directly related to the organization. It is very difficult to measure the fourth level and it looks at evidence of outcomes such as cost savings, relocation or disaster recovery, and increased product quality, profit and sales (Shuja et al., 2017).

According to Kirk Patrick, his four-level model provides a rational framework for evaluation he refers to this pattern in a pyramid and states that all four levels presented in his model are important and should not be overlooked. Because by measuring the results of each level we can have a reliable interpretation of the other levels of this model. In this valuation model, it becomes increasingly difficult to move upwards from reaction level to results level, in addition, the higher levels of this model provide more valuable information. The first two levels of evaluation take place within the learning environment, while the

two final levels are measured in the workplace (Hojati et al., 2013). Educational evaluation is one of the most important programs in any organization that provides managers with good information on designing and reviewing each system. Effective evaluation of training courses leads managers and employees of the organization to get a clearer picture of how quantity and quality educational activities are (Moradi et al., 2014). Human resources training is essential to increase the productivity and growth of the organization. Due to the importance of organizations in meeting the needs of the community, experts place great emphasis on continuing in-service training. Job satisfaction is regarded as a complete emotional response to the work environment and situation therefore, the large gap between the skills required of employees and the skills they possess will result in a lack of job satisfaction and a tendency to quit their jobs, In-service training programs have been implemented in hospitals in various forms so far but unfortunately, despite the long history of these programs, we have not been able to see the positive effects of these trainings on staff job outcome and these programs only meet a small part of the educational needs of individuals and the quality of program delivery is poor. Since in-service training involves outlining missions, goals, and optimal performance in the organization, being aware of the above causes employees to pay more attention to organizational issues and each of them will strengthen the context and motivation needed to grow and develop organizational issues (Imamzadeh Ghasemi et al. 2004).

Organizations spend huge sums each year to train specific skills, without properly measuring their effectiveness, or developing an appropriate feedback of system in the organization. Unfortunately, in many cases the effectiveness system does not exist or is highly dispersed and

disordered. On the other hand, any negligence in the evaluation of training courses will result in the training of staff being an exercise in or seeking to reap the benefits. It is through training that one can increase the speed of the workforce, the decision-making power of choice and the ability to innovate and increase productivity, when the importance and necessity of holding these courses can be better and more emphasized by evaluating the effectiveness of the courses, this was emphasized by the results. But the important point here is how to evaluate the effectiveness of training courses? In other words, which evaluation model should we use to obtain reliable results? Given the variety of training courses in terms of content, audience, results, and so on, it seems that a specific evaluation model for all courses does not work equally and it is appropriate for different levels of training programs to use a suitable template. Therefore, based on the above explanations, the researcher sought to evaluate the effectiveness of in-service courses conducted in the year 2017 on the response, learning, behavior and outcomes of Dezful Medical Sciences Managers and Supporters based on Kirk Patrick's model. The researcher in the present study attempts to answer the question of how in-service courses in 2017 have an impact on the response, learning, behavior and results of staff (support and treatment) of Dezful University of Medical Sciences based on the Kirk Patrick model.

The following aims and assumptions are taken into account in this study:

Research objectives

The main objective:

Evaluation of the effectiveness of in-service courses implemented in 2017, on the response, learning, behavior and outcomes of Dezful University of Medical Sciences employees based on Kirk Patrick's model

Subsidiary objectives:

- 1- Evaluation of changes in the reaction of in-service training participants in Dezful University of Medical Sciences.
- 2- Measuring the Level of Changes in learning in-Service Training Participants in Dezful University of Medical Sciences.
- 3- Evaluation of changes in behavior of in-service training participants in Dezful University of Medical Sciences.
- 4- Evaluation of changes in the results of in-service training courses held at Dezful University of Medical Sciences.

The main hypothesis:

In-service courses in 2016 affect the response, learning, behavior, and outcomes of Dezful University of medical sciences executives based on the Kirk Patrick model.

Subsidiary assumptions:

- 1- Courses based on Kirk Patrick's model have caused a possitive change in staff's respond.
- 2- Based on Kirk Patrick's model, the held training courses have improved staff learning.
- 3- Based on Kirk Patrick's model, the held training courses have improved staff behavior.
- 4- Based on the Kirk Patrick model, the held training courses have improved the results for the staff.
- 5- The held training courses in different fields have influenced the response of individuals.
- 6- The level of education is effective on learners' reactions.

Research background:

Alavi and Namvar (2015) in a study focused on investigation and evaluation of effectiveness of in-service training courses in Ardebil province education system's staff based on Kirk Patrick model and showed that this research is a descriptive and a survey, The statistical population of this study is 620 employees of Ardabil

Education Organization who participated in in-service training courses in May 2015. Sample size According to Morgan table, were 350 people selected by simple random sampling method. A field researcher-made questionnaire including 31 questions was used for data collection. The validity of the questionnaire was confirmed by expert opinion. Its reliability was estimated using Cronbach's alpha coefficient of 0.98. Data analysis was performed in two levels of descriptive and inferential statistics. After verifying the normal distribution of the research data, a one-sample t-test was used to examine the research components. Findings were analyzed by SPSS 20 software. Based on the results of the one-sample t-test, the effectiveness of in-service training courses on four levels of Kirk Patrick's education including response levels, learning, behavior change, and outcomes was confirmed. (Alavi Yingje and Namvar, 2015).

Lotfi (2014), in a study titled Evaluating the Effectiveness of In-Service Courses of Physical Education Teachers in Azerbaijan gharbi Province using the Kirk Patrick Evaluation Model revealed, the discussion of evaluating a program as the last stage of planning seems important because it explores the various stages behind a program to provide information to justify the effectiveness of the training program in view of this information to allow for the continuation of training for later times. The purpose of this study was to evaluate the effectiveness of in-service physical education teachers in Azarbaijan gharbi province using Kirk Patrick evaluation model. This study was a descriptive-survey. The population of the study consisted of all physical education teachers in Azarbaijan gharbi province who were 1500 people. The sample size was estimated to be 306 people using the standard Krejcie and Morgan table which was selected at cluster random. The face validity and content validity of the

questionnaire were confirmed by the professors and the reliability of the questionnaire was calculated as 0.975 using Cronbach's alpha coefficient. The results showed that in terms of physical education teachers in West Azarbaijan, the content and level of learning from in-service courses is in the intermediate level and the quality of teachers and the level of learning from the courses is below the average. Also, there was no significant correlation between the number of hours of in-service training with research performance, professional knowledge, and different teaching methods but the variability of teachers decreased with the increase in the number of in-service hours (Lotfi, 2014).

Hojati (2013) in a study entitled Effective evaluation of in-service nursing courses based on Patrick's model: A case study showed, this cross-sectional descriptive study was performed on 50 nurses of Hakim Jorjani Hospital in Gorgan, Iran, who participated in the patient education course in 2012, that the study was performed in a full-scale manner. Data were collected through self-made questionnaires and checklists to evaluate the effectiveness of the training course based on Kirk Patrick's model in four levels (reaction, learning, behavior and conclusion). Data analysis was performed by Spss16 software and descriptive statistics (mean and standard deviation). The results showed that the mean and standard deviation of the level of reaction is $(95.6 + 17)$, learning $(85 + 7)$, behavior $(81 + 2.4)$ and conclusion $(85.7 + 11)$ and overall effectiveness index of period 14 / 85% that compared to the hospital accreditation index (85%), it shows that the course is desirable and effective. At the end of each in-service training course, one can evaluate its effectiveness by applying the Patrick model, because it well reflects the changes in education at the level of learning and behavior of nurses and nursing managers can plan in the same direction to achieve a higher index (Hojati

et al., 2013). Bahramkhani (2011) in a study titled Evaluating the effectiveness of in-service training courses by Qazvin University of Medical Sciences staff based on Kirk Patrick evaluation model showed, this is a descriptive cross-sectional study and the statistical population of the study includes all staff and managers participating in in-service training courses of Qazvin University of Medical Sciences in 2011, which numbered 850 people. Sampling was enumeration. The research is based on the Kirk Patrick model. In this model, the effectiveness of educational programs is evaluated using four important steps: Levels of reaction, learning, behavior and outcomes, that the present study only measures levels of reaction and behavior. To assess the level of reaction, learners' satisfaction with the courses (course content, instructor, facilities, and organization) was measured by a researcher-made questionnaire with closed-ended questions and a 4-point Likert scale. In assessing the level of behavior, the impact of the course on learners' work behavior was measured by examining the views of supervisors or directors observing the learner's behavior in the workplace (through a questionnaire). The superficial and content validity of the questionnaires were evaluated by educational pundits and experts. The reliability of the questionnaire was investigated and Cronbach's alpha was 0.86 and acceptable. Data were analyzed by SPSS software and using descriptive statistics methods (frequency, mean and standard deviation). Finally, based on the mean scores obtained, the courses were divided into three categories: Effective (mean scores ≥ 3) - Effective conditional ($3 < \text{mean scores} \leq 2$) which required a retraining course and ineffective courses ($2 < \text{Average scores}$) 39.5% of the subjects were male and 60.5% were female and mean age was 75.35 ± 43.7 . A total of 292 courses were evaluated in the context of specialized, general and managerial training held in 23 university affiliated

units. 82%, 76%, 100% and 63% of the training courses were effective in the health, education, and staff units respectively. Results showed that there was no significant difference between the mean scores of the learners rather than effectiveness of the courses considering the effective variables (education level, service history and field of study) in any of the courses. It is important to determine the effectiveness of training courses to orient training and achieving the goals of the organization. The four levels of the Kirk Patrick model provides a rational framework for evaluation. The results showed that although the training courses were not 100% effective, but according to the statistical calculations, it can be claimed that the effectiveness of organizational training in Qazvin University of Medical Sciences was significantly higher than the hypothetical average (60% of courses have been higher). Given that the level of behavior is very challenging and sensitive to the level of reaction and learning, it is recommended that the evaluation be repeated at the appropriate time in order to ensure permanent and permanent behavioral changes (Bahramkhani and Bahramkhani, 2011).

Bijani (2017), in a study titled Evaluating the Effectiveness of a Continuing Education Program prevented occupational injury to myocardial injuries in nursing personnel based on the Kirk Patrick model, the results of the continuing education program showed that by creating educational programs and increasing the awareness of nursing staff, they could be exposed to occupational injuries and acupuncture injuries (18). Rio (2017), in a study entitled Critical Review of Kirk Patrick's Evaluation Model, showed that Donald Kirkpatrick published a series of papers, published in his doctoral dissertation in the late 1950s and described a four-level training evaluation model. From the beginning, it was easily

understood and was one of the most influential models of evaluation in the HRD field. While well accepted and popular, the Kirk Patrick model has been challenged and criticized by scholars and experts that many of them have developed their models using Kirk Patrick's theoretical framework. This paper reviews several evaluation models as well as empirical studies using four levels, generally, showing usefulness, but there are problems with implementing all four levels. Catherine (2017) in a study titled: Has the New Generation of Kirk Patrick Made a Better Hammer for Our Evaluation Toolkit? Showed that although the original model focused on Kirk Patrick's results is widely used to evaluate medical education programs, there are some criticisms. To counter this criticism and complexity of the learning environment, a new Kirk Patrick model has emerged in the world. This article briefly describes the key aspects of the new Kirk Patrick model for program evaluation. Specifically, these three highlight the major criticisms of Kirk Patrick's original model and the ways in which this new model tries to reject them are discussed. In so doing, this article hopes to encourage medical teachers to test the new Kirk Patrick model in evaluating their complex curricula and examining their strengths and weaknesses.

Research method:

This descriptive cross-sectional study was conducted on all in-service staff and managers participating in in-service training courses at Dezful University of Medical Sciences in 1396, the total number of employees is 4000 and according to Cochran formula 382 people (322 experts in reaction and learning stage; 60 managers for results and behavior stage) were selected as sample. Sampling was stratified. The sample size is also divided by proportional assignment between different classes. There are several models and patterns to determine the value of training courses, one of which is the Kirk Patrick

evaluation model. In this study, this model is used to evaluate courses. This model proposes four levels for evaluating education:

First level, reaction: Reaction refers to the degree of reaction that learners make to all the factors that influence the performance of a training course. Response measures how participants feel about the training program.

Second level, learning: Learning is about determining the amount of skills, techniques, and facts learned in the course of training for participants and clarifying them. And they can be found through previous training, during and after training courses.

Third level, behavior: Behavior refers to how and to what extent changes in the behavior of participants result from training and that can be clarified by continuing to evaluate in the real work environment.

Level 4, Results: Outcome is the extent to which goals are directly related to the organization. It is very difficult to measure this level (Kirk Patrick, 1996, quoted by Eidy et al., 2008). Data gathering tool is a training course evaluation questionnaire developed by Abbas Arab in 2014 based on Kirk Patrick's evaluation model and guidelines with 45 questions. This questionnaire is based on a 5-point Likert scale. To determine the apparent validity and the content of the questionnaire, first, it is confirmed by professors, Cronbach's alpha is then used to test its reliability, after a trial run on 50 individuals. If the reliability of levels of the questionnaire is above 0.7, it indicates good reliability of the questionnaire. Statistical analysis of this study was performed using SPSS, EXCEL software. Descriptive and inferential statistical methods were used for data analysis.

A) Descriptive statistics: After data collection, the data was classified in the

B) information table and according to the information obtained, the table and frequency percentage was adjusted.

C) B) Inferential statistics: In this study, one-sample T-test and analysis of variance were used to analyze the relationships between variables.

In the end, it is used for overall validation of the evaluation model.

Reliability of the questionnaires used with 382 samples

The researcher has to evaluate the technical characteristics of the measuring instrument (questionnaire) to ensure the accuracy of the results of his research. Reliability or trustiness determines the extent to which the measuring tool performs equally well under the same conditions. This means that if the researcher executes his or her questionnaire again or in parallel and the results are the same, the tool is completely reliable. Cronbach's alpha method was used to assess the reliability of the questionnaire. Cronbach's alpha values above 0.7 indicate acceptable reliability.

Table 1: Cronbach's alpha coefficient of variables with sample of 382 persons

Cronbach's alpha coefficients (Alpha>0.7)	The number of questions	The number of sample	Variables
0.942	17	322	reaction
0.832	7	233	learning
0.825	8	60	Behavioral
0.843	13	60	Organizational results

Table 2: Frequency distribution of respondents in terms of gender

Frequency	number	gender
66.5	254	Male
33.5	128	Female
100	382	Sum

Results: Table 3. Frequency distribution of respondents in terms of age

Frequency	Number	age groups
32.7	125	Less than 30 years
36.6	140	40 up to 30
17.3	66	40 up to 50
13.4	51	More than 50
100	382	Sum

Table 4. Frequency distribution of respondents in terms of educational status

Frequency	Number	Education status
27.7	106	High diploma
44.8	171	Bachelor
23.8	91	MS
3.7	14	PhD
100	382	Sum

Table 5. Frequency distribution of respondents in terms of status of service history.

Frequency	Number	Years of service
26.7	102	Less than 10
42.7	163	10 up to 20
17.8	68	20 up to 30
12.8	49	More than 30
100	382	Sum

Table 6. Frequency Distribution of Respondents in terms of Status of Management Experience in the Organization

Frequency	Number	Management Experience
84.3	322	Without experience
4.2	16	Less than 5 years
9.7	37	Between 5 up to 15
1.8	7	More than 15
100	382	Sum

Table 7. Frequency distribution of respondents in terms of educational degree status

Frequency	Number	Course
22	84	Course
20.4	78	Therapeutic
18.1	69	administrative and financial
20.2	77	Technical
19.4	74	Others
100	382	Sum

Table 8. Frequency distribution of respondents in terms of location of employment

Frequency	number	location of employment
28.8	110	hospital
16	61	Health Department
15.2	58	Health Center
15.2	58	Deputy of Treatment
11.3	43	Headquarters
13.6	52	Educational Assistant
100	382	Sum

Results:

As shown in the table above, the coefficient of skewness and kurtosis for all the variables studied are within the safe range

(+2 and -2) and indicate that the data are normal.

Hypothesis One: Training courses have led to a positive change in the response of employees.

Table 9. Results of one-sample t-test examining the impact of training courses on changes in staff response

confidence interval for 95% mean difference		Average difference	Significance level	T statistic value	Average
upper limit	Lower limit				
0.76	0.60	0.68	0.00	17.42	3.68

As can be seen, the significance level of the test was calculated with t-value of 17.42 equal to zero. Therefore, since the significance level of the t-test is lower than the 0.05 error level, the null hypothesis of the t-test and its opposite assumption that the mean of the scores of the employees' reaction dimension is 3 (the middle of the five-point Likert scale) is confirmed. On the other hand, since the mean scores of the mentioned variables were calculated to be 3.68 and also the upper and lower limits for

the mean difference of both positives were obtained, it can be stated that the effect of the training courses on the change in the staff response is confirmed. Therefore, based on the data collected and the probability of the first 95 hypotheses of the research regarding the impact of training courses on the response of the staff, it is accepted.

Hypothesis Two: Training courses have improved staff learning.

Table 10. Results of one-sample t-test examining the impact of training courses on improving staff learning

confidence interval for 95% mean difference		Mean difference	significance level	T statistic value	Average
upper limit	Lower limit				
0.53	0.38	0.46	0.00	11.61	3.46

As can be seen, the significance level of the test is calculated with t-value of 11.61 equal to zero. Therefore, since the significance level of the t-test is lower than the error level of 0.05, the null hypothesis of t-test and its opposite assumption that the mean of the learning improvement scores is 3 (the middle of the five-point Likert scale) is confirmed. On the other hand, since the mean scores of this variable were calculated to be 3.46, as well as the upper and lower limits for the mean difference of both

positives, it can be stated that the effect of the training courses on staff learning is confirmed. Therefore, according to the data collected and with the probability of 95 second hypothesis of research on the effect of training courses on improvement of staff learning is accepted.

Hypothesis 3: Based on the Kirk Patrick model training courses have improved behavior in employees.

Table 11. Results of one-sample t-test examining the impact of training courses on improving staff behavior from the managers' perspective

confidence interval for 95% mean difference		Mean difference	significance level	T statistic value	Average
upper limit	Lower limit				
0.62	0.29	0.46	0.00	5.558	3.46

As can be seen, the significance level of the test with t-statistic value of 3.46 equals 0. Therefore, since the significance level of the t-test is lower than the 0.05 error level, the null hypothesis of t-test and its opposite assumption that the mean of the behavioral dimension of the mean of employees is disagreeable with the managers' opinion is confirmed by the number 3 (the middle of the five-point Likert scale). On the other hand, since the mean scores of managers' behavioral dimension were calculated to be 3.46 and also the upper and lower limits for the mean difference of both positives were

obtained, it can be stated that the effect of training courses on the improvement of employee behavior is confirmed by managers. Therefore, according to the data collected and with the probability of 95 third hypothesis of research on the effect of training courses on improvement of staff behavior is accepted.

Investigation of Hypothesis Four: Based on Kirk Patrick's model of training courses, the results have improved the performance of the staff.

Table 12. Results of the single sample t-test to evaluate the impact of training courses on improving results as assessed by managers

confidence interval for 95% mean difference		Mean difference	significance level	T statistic value	Average
upper limit	Lower limit				
0.47	0.19	0.33	0.00	4.86	3.33

As can be seen, the significance level of the test was calculated as t value of 4.86 equal to zero. Therefore, since the significance level of t-test is less than 0.05 error level, the null hypothesis of the t-test and its opposite assumption that the mean scores of the results on the performance of the employees are disagreeable according to the managers opinion and is confirmed by the number 3 (the middle of the five-point Likert scale). On the other hand, since the mean scores of this variable were calculated to be 3.33, as well as the upper and lower limits for the mean difference of both positives, it can be stated that the effect of the training courses on improving the performance of the employees is confirmed by the managers. Therefore, according to the data collected and with the probability of 95 fourth research hypothesis that the

effect of the training courses on improving the results of the staff performance is accepted.

Investigation of Hypothesis 5: Training courses held in different areas have influenced the response of individuals.

One-way ANOVA was used to perform this test and the workplace variable is selected as the factor or independent variable and the response variable is selected as the dependent variable and considering the significance level of test sig = 0.362 > 0.05 the test assumption is rejected and assumption of zero is accepted. That is, the impact of training courses at different centers did not have an impact on staff response.

Table 13 ANOVA.

Reaction					
	Sum of Squares	df	Mean Square	F	Sig.
Intra group	2.877	5	.575	1.165	.326
Inter group	156.099	316	.494		
Total	158.977	321			

Hypothesis 6: Academic level is influential in learners' reaction.

One-way ANOVA was used to perform this test and the educational degree variable is selected as the variable or independent and

the response variable as the dependent variable. And considering the significance level of test sig = 0.026 > 0.05 test assumption is accepted and assumption zero is rejected. That is, the educational

level of the individuals was influenced by their reaction.

Table 14. ANOVA

Reaction					
	Sum of Squares	df	Mean Square	F	Sig.
Intra group	4.572	3	1.524	3.139	.026
Inter group	154.404	318	.486		
Total	158.977	321			

Tukey's test is used to compare the reaction of different groups of students and according to Table 14, there is a significant

difference in the type of response between the undergraduate and the doctoral degree.

Educational grade	Educational grade	Mean Difference (I-J)	Std. Error	Sig.	confidence interval 95%	
					Lower limit	Upper limit
Technician	BS	-.16826	.09495	.289	-.4135	.0770
	MA	-.07550	.11001	.902	-.3596	.2086
	Ph.D	.37375	.20098	.248	-.1453	.8928
BS Technician	BS	.16826	.09495	.289	-.0770	.4135
	MS	.09277	.09845	.782	-.1615	.3470
	PhD	.54202*	.19490	.029	.0387	1.0454
MS Technician	MS	.07550	.11001	.902	-.2086	.3596
	BS	-.09277	.09845	.782	-.3470	.1615
	Ph.D	.44925	.20266	.121	-.0742	.9726
PhD Technician	PhD	-.37375	.20098	.248	-.8928	.1453
	BS	-.54202*	.19490	.029	-1.0454	-.0387
	MS	-.44925	.20266	.121	-.9726	.0742

Table 16. The final results of ranking the impact of training courses on the studied variables

Average rating	Agents rank	Studied factors	Groups
1.70	1	Reaction	Employees
1.30	2	Learning	
1.64	1	Behavioral	Managers
1.36	2	Organizational	

As you can see in Table 13, in the statistical group of employees the most influential part of the training courses related to the reactive part and in the statistical group the managers' opinions on the results and behavior stages are the most influential part of the training courses related to the behavioral part.

Discussion and conclusion:

The results of the study indicate that the learners of the courses have evaluated the effectiveness of the training courses in all four levels of reaction, learning, behavior and outcome as desirable, and there is a significant difference between undergraduate and doctoral degrees in their response. But the reaction and learning of the training courses did not have any effect on the place of the training in different areas (department of Health, department of Education, etc.).

Alavi and Namvar (2015) in a study on the evaluation and assessment of the effectiveness of in-service training courses of Ardebil province education staff based on Kirk Patrick model showed, the effectiveness of in-service training courses at four levels of Kirk Patrick's education including response levels, learning, behavior change, and outcomes was confirmed, Lotfi (2014) also showed in a study on evaluation of effectiveness of in-service physical education teachers in Azerbaijan gharbi province using Kirk Patrick evaluation model.

The results showed that in terms of physical education teachers in Azarbaijan gharbi, the content and level of learning from in-service courses is at a moderate level and the quality of teachers and the level of learning from courses is lower than average. Also, there was no significant correlation between the number of hours of in-service training with research performance, professional knowledge, and different teaching methods but the variability of teachers declined with an

increase in the number of in-service hours. Hojati (2013) in a study entitled Effective evaluation of in-service training courses based on Patrick's model: A case study showed, The results showed that the mean and standard deviation of the level of reaction ($95.6 + 17$), learning ($85 + 7$), behavior ($81 + 2.4$) and conclusion ($85.7 + 11$) and overall effectiveness index of period is $14 / 85\%$. Bahramkhani and Bahramkhani (2011) in a study on evaluation of effectiveness of in-service training courses by Qazvin University of Medical Sciences staff based on Kirk Patrick Evaluation model showed although the training courses were not 100% effective, but according to the statistical calculations, it can be claimed that the effectiveness of organizational training in Qazvin University of Medical Sciences was significantly higher than the hypothetical average (60% effective courses). As the level of behavior is very challenging and sensitive to the level of reaction and learning, it is therefore recommended to repeat the evaluation at appropriate times in order to assure permanent and continuous behavioral changes. Bijani (2017), in a study titled Evaluating the Effectiveness of a Continuing Education Program to Prevent Occupational Injury to Myocardial Injury in Nursing Personnel Based on the Kirk Patrick Model showed, the results of continuing education program showed that by creating educational programs and increasing the awareness of nursing staff, occupational injuries can be exposed to acupuncture injuries. Also Catherine (2017) and Rio (2017) show in a study titled Critique of Kirk Patrick's Evaluation Model, Donald Kirk Patrick In the late 1950s, a series of papers published in his doctoral dissertation showed, overall usefulness, but difficulties in implementing all four levels.

It is suggested to evaluate the effectiveness of training courses in other organizations, universities and medical centers in Iran

based on the model used in this study and other models. It is also suggested to do this research by training courses (specialized technical, business-administrative, financial, management). One of the limitations of this study is the inability to control for unwanted factors (thoughts, tastes, desires, etc.) that can affect the research results.

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