Original Article

The Effect of Philosophic Mindedness Training on increasing the Effectiveness of Virtual Training method of the Students' Payame Noor University

Rasoul Pourreza[*1], Mohammad Reza Sarmadi [2], Mehran Farajollahi [3], Marjan Masoumifard[4]

1. Ph.D.Candidate in Distance Education Planning, Payame Noor University, Tehran, Iran
2. Professor, Philosophy of Education, Payame Noor University, Tehran, Iran
3. Professor, Department of Educational Sciences, Payame Noor University, Tehran, Iran
4. Assistant Professor, Department of Education Sciences, Payame Noor University, Tehran, Iran.

Abstract

Virtual training, as an educational approach of the present era, has always faced the complexities related to constructive and effective factors in learning. Therefore, experts in this field have studied different and influential dimensions in it. Based on this, the aim of this research is to investigate the effect of philosophic mindedness training on the effectiveness of students' virtual training method. The current research is experimental in terms of the type of strategy, and in terms of the execution path, it is quasi-experimental, with a pre-test-post-test design with a control group. The important reason for choosing this design is the possibility of maximum comparison with the presence of the control group. The statistical population of this study includes all student's master's degree of curriculum in Payame Noor University, south Tehran center in 1399-1400 academic year. The sample consisted of 32 students who were selected by goal-based random sampling method and randomly assigned into two experimental (n=16) and control (n=16) groups. Due to the nature of the research design, the selection of samples in the experimental and control groups has been as similar as possible. After conducting pre-test on both groups, the experimental group received Smith's philosophical mentality dimensions (Comprehensiveness, Penetration, Flexibility) (1956) in six sessions of sixty minutes and within six consecutive weeks by e-learning method, but the control group received no intervention. The research tool was a 34-item researcher-made questionnaire. The content validity confirmed by judgment of experts and professors, and its reliability was calculated and at an acceptable level. The research findings were analyzed using descriptive (mean and standard deviation) and inferential (univariate analysis of covariance (ANCOA)) methods.The results showed that there is a significant difference between the two groups of experimental and control in the effect of philosophic mindedness training on the effectiveness of virtual training. Therefore, it can be concluded that by training and enhancing the dimensions of philosophic mindedness of students of the target community, it can be increased the effectiveness of virtual training method. Also, the results showed that except for components of the content, teaching-learning activities and organization of educational materials, philosophic mindedness training is significantly effective on the effectiveness of other components of virtual training, such as goals, feedback, support and evaluation methods.

Keywords

*Corresponding Author: rasoulpourreza@yahoo.com.

Introduction

Virtual training as a new teaching method has been able to overcome many problems of face-to-face and traditional training. Increasing the quality of training and achieving the most effective results is one of the important goals that higher education systems compete with each other to achieve. Therefore, each of these systems are looking for new ways to increase the quality of training. The issue of the quality and effectiveness of virtual training is one of the topics of scientific and research circles, and now in its latest form, the application of the "Philosophic Mindedness" paradigm in the effectiveness of virtual training is discussed.

In 1956, Philip J. Smith, [one of John Dewey's students], for the first time studied the variable of philosophic mindedness in a scientific and research way. From Smith's point of view, the fundamental problem of education is thinking. Humans need different tools for thinking and the ability to think correctly, and one of these tools is having a philosophical mind. The philosophic mindedness is the abilities and characteristics of the mind that help a person to think correctly, and make him/ her accustomed to having correct judgments [1]. Smith has given the three dimensions of Comprehensiveness, Penetration and Flexibility to the philosophical mind [1]. The philosophic mindedness helps a person to think logically and act accordingly. In other words, in this systematic process, a person organizes his elements and intellectual powers in the best possible way and uses the resulting power in the direction of the most logical way of behavior and action in life. From Shariatmadari's (2008) point of view, this is the correct scientific way of thinking [2]. According to Mirkamali (2002), logical thinking is the basis of a person's work, and a person should proceed with logical thinking from problem identification to finding suitable solutions to solve problems, and this is not possible unless a person has the characteristics of logical thinking. In fact, "logical thinking is the result of having a philosophical mind" [3]. According to Smith (1956), this philosophical mind is comprehensive, thoughtful and flexible in facing issues and events [1].

This way of thinking is the result of a mental preparation, or in a special way, it is the result of a person's act of "philosophizing" in discovering a truth. In general, the issue that is important in logical thinking or the philosophic mindedness is the existence of a regular mental framework that gives direction to a person's behaviors, opinions and attitudes.

In their research, researchers have tried to specify each function, however limited, of the dimensions of philosophic mindedness in different categories. The results of the conducted research clearly show that the scope of influence of the philosophic mindedness on the educational system is very diverse and wide, and that many issues in this field are still virgin and untouched.

In this article, the effect of philosophic mindedness training on the effectiveness of a new teaching method, i.e. virtual training, will be studied. Despite the importance of the subject, this effect has received less attention from scholars and researchers of education science. Therefore, many questions remain unanswered in this field; does "Philosophic Mindedness" have a meaningful relationship with the virtual training method? Or can having a philosophical mind affect the quality of virtual training and even make it more effective? And... .

Undoubtedly, the presence of characteristics such as openness of mind, breadth of thought, and flexibility are necessary for the intellectual maturity of students, so that based on those characteristics, they can develop the ability to investigate various issues. Therefore, if we consider the subject of philosophy to be thinking and pondering on phenomena, and the student as an explorer and analyst, then in order to analyze and solve educational problems, the student is the first step in acquiring the teachings related to reasoning, judgment and valuation. Since one of the important goals of teaching and learning is the development of mental ability in humans to solve a wide range of complex issues and problems [4], the dimensions of philosophic mindedness training can play a decisive role for an individual. A

student with a philosophical mind will look at solving issues related to education with an all-round, deep and contingent approach. He is constantly reasoning, weighing a number of options in his mind, and tends to act on assumptions that are usually well supported by scientific and practical support. In this research, the basic issue is what effect does the philosophic mindedness training have on the effectiveness of students' virtual training method. Therefore, considering the importance of the topic of philosophic mindedness and its [possible] role in the effectiveness of virtual training, more study and research should be done to adopt a strategy that works and is efficient in the teaching-learning process of students. Based on this, the current research aims to investigate the dimensions of Philip Smith's philosophic mindedness in the effectiveness of the students' virtual training method and tries to answer the following basic question: Is a person's philosophical mentality effective on the effectiveness of his virtual virtual training method? Or can teaching philosophic mindedness make this method of education more effective? And...

Literature review

In the first step of philosophic mindedness studies, Smith [5] showed that there is a direct relationship between persons's philosophic mindedness with favorable human relations and their level of creativity in the educational organization. In one of the conducted researches, Pierra [6] reported a significant relationship between the mean scores of ability, role clarity, organizational support, motivation, decision validity and environmental compatibility of employees with the philosophic mindedness of their managers. Bowlinger [7] also stated that persons who have comprehensive, deep, flexible and critical thinking have a different effect on their colleagues than those who lack these qualities. In the continuation of these researches, the relationship between the dimensions of philosophic mindedness and the method of training was the subject of curiosity and scientific attention of researchers. For example, in the findings of an internal research, Shahbazi Dastjerdi and Mirshah Jafari (2009) state that there is a significant relationship between the philosophic mindedness and its dimensions with the teachers' teaching method [8]. In another research conducted by Sokhanvar and Mahruzadeh (2010), the researchers definitely declare that the relationship between the philosophic mindedness and its dimensions with the attitude towards the active teaching method is meaningful and at the same time ponderable [9]. Subsequently, Sardary (2013) in a research investigated the relationship between the philosophic mindedness and teaching styles among university faculty members and revealed the existence of a significant relationship that had been overlooked between professors' teaching styles and their philosophic mindedness [10]. While the findings of Sarkhanlou (2014) were also consistent with this research and showed that the relationship between the philosophic mindedness and the teaching styles of university professors is significant and strong [11]. In continuation of this research, Hosseini mehr and Emami's research (2013) on the relationship between the philosophic mindedness and the teaching method of middle school teachers determined the existence of a meaningful relationship between the philosophic mindedness of the teachers and their teaching method [12]. A research conducted by Sabzali Jamaat (2012) with the title of studying the effect of philosophic mindedness on the academic progress of gifted high school students in mathematics also revealed that there is a positive and significant relationship between the dimensions of philosophic mindedness and academic progress in mathematics. So that the dimension of comprehensiveness has a stronger relationship with academic progress in mathematics than the dimensions of Penetration and flexibility [13].

The results of an overseas research conducted by Mehta and Whitebread (2005) in India clearly showed that students who participated in the philosophy curriculum performed better than other students [14]. Also, in a similar research conducted by Keng and Binte Mohamad Ibrahim (2007) in Singapore, this result was obtained: the students who participated in the

children's philosophy curriculum showed better performance in the field of creative thinking [15]. They showed the ability to express their thoughts and respect the opinions of others [16]. In this regard, other experts who have reviewed the researches related to the effectiveness of training, have obtained relatively similar results, that the dimensions of philosophic mindedness have had the greatest effect on the training process. For example, as the findings of Lipman (2003) showed, students' intellectual and mental ability (in order to improve solving mathematical problems) is considered one of their most important characteristics, and it can be improved through developing their philosophic mindedness [17].

In general, the results of the conducted research indicated that having philosophic mindedness is effective on different persons's performance (Saif Hashemi and Rajaipour [18]; Ramazani [16]; Damerchili and Rasoolnejad [19]; Taghipour Zahir and Tavakoli [20]; Imani, Abdollahi and Hemmati [21]; Jandaghi, Haghani and Araghieh [22]; Hosseini Mehr and Emami [12]; Kushi and Soltani [23]; Mortazavi and Bagherpour [24]; Bagherpour [25]; Daneshi Lisar and Khosravi Babadi [26].

Considering the existing technological infrastructure and technical, human and organizational support [especially in Payam Noor University, which is in charge of the distance education system], ensuring the effective performance of this method of education or examining the factors that affect its effectiveness can be a basis To do more studies and research.

Here it should be pointed out that virtual training is a new method and approach in the education system. Considering the prevalence of electronic tools in the world, as well as the limitations of traditional training and the advantages of Electronic or combined training, the use of new technologies in educational systems is necessary. Therefore, considering the novelty of this topic, it is important to conduct extensive research studies to evaluate the effectiveness of different methods of providing virtual training [27]. The researchers of this article believe that due to the importance and position of philosophic mindedness and its role in education, more research and investigation should be done in order to have a well-founded view in the field of virtual training.

Methodology

In terms of purpose, this research is among applied designs, and in terms of its execution path or method, it is quasi-experimental design. Among the existing quasi-experimental designs, the pre-test-post-test design with the control group has been used. Table 1 shows the research plan of the groups.

Table 1. Pre-test-post-test design diagram with control group

Re	T_1	X	T_2
Rc	T_1	-	T_2

Participants

The statistical population of the research is all the students of the master's course in the field

Table 2. Distribution of the statistical population in different academic years

Row	Entry academic year	Number of male students	Number of female students	Total
1	1394-1395	-	1	1
2	1395-1396	1	-	1
3	1396-1397	-	1	1
4	1397-1398	2	8	10
5	1398-1399	9	27	36
6	1399-1400	11	35	46
Total		23	72	95

of curriculum of Payam Noor University in the center of South Tehran branch in 2020-2021 academic year, who were trained in a virtual way, i.e. 95 students. The distribution of the statistical population in different academic years is listed in Table 2. In order to select the desired samples, 32 students were selected from the population by random method based on the goal, and they were randomly replaced in two experimental (16 students) and control (16 students) groups in equal proportion for male and female gender.

Instrument

Data were collected based on the "objectives" component and some components of the effectiveness of virtual training by Kearsley [28]. Therefore, the required information was obtained with the help of a questionnaire [Measuring the effectiveness of virtual training]. This questionnaire consisted of 34 items and consists of 7 subscales, which include the components of goals, written content, teaching-learning activities, organization of training materials, feedback, support, and evaluation methods.

Table 3. The effectiveness components of the virtual training method and the description of the relevant sub-items

Effectiveness components of virtual training method	Description of the micro-items related to the components
objectives	1. Attention to the purpose of training, 2. Having a plan or mental map, 3. Measuring the goals of virtual training and modifying it.
written content	1. Attention to the knowledge and characteristics of the audience, 2. Content level flexibility, 3. Encouraging content to be active learning, 4. Proportion between content volume and course unit, 5. Logical connection between courses, 6. Adhering to the sequence of the general to partial structure of the lessons, 7. Using sufficient examples in the content.
teaching-learning activities	1. Engaging students in learning activities, 2. Specifying the time to complete and present homework, and the consequences of not doing it, 3. Using various activities to increase interaction, 4. Encouraging students to engage in comprehensive activities, 5. Determining the completion of activities Simultaneously or asynchronously.
organization of training materials	1. Compatibility of subjects and topics, 2. Access to educational materials at any time and place, 3. Adaptation of educational materials to the needs and interests of students, 4. The possibility of using existing educational components and educational materials in new learning, 5. Paying attention to order and logical order and sequence in the selection of educational materials.
feedback	1. Announcing the results of all class activities related to feedback, 2. The possibility of receiving feedback by the student, 3. Sufficient amount of feedback received, 4. Timeliness of received feedback.
support	1. Solving problems related to technology through the professor, 2. Solving problems related to the course content with the possibility of virtual communication with the professor, 3. Possibility of accessing the professor to solve problems, 4. Anticipating face-to-face meetings to solve students' academic problems.
evaluation methods	1. Announcing specific criteria for doing assignments, 2. Clarity and openness of the evaluation method and methods of grading lessons, 3. Taking into account the grade of homework assignments in the final evaluation, 4. Compliance with the criteria and guidelines set in the presentation and delivery of homework assignments, 5. Attention to Students' self-evaluation, 6. Appropriateness of evaluation methods of learning activities with the goals of the educational program.

In this questionnaire, 3 items measure the "objectives" component, 7 items measure the "written content" component, 5 items measure the "teaching-learning activities" component, 5 items measure the "organization of training materials" component, 4 items measure the "feedback" component, 4 items measure the "support" component and 6 items measure the "evaluation methods" component. The components of the effectiveness of the virtual training method and the description of the micro-items related to the components can be seen in Table 3. The items of this questionnaire were adjusted based on the Likert scale and in the form of four options[1]. In this way, the "very little" option gets a score of 1, the "low" option gets a score of 2, the "high" option gets a score of 3, and the "very high" option gets a score of 4. Content validity was used to determine the validity of this questionnaire. The content validity of this questionnaire was checked by experts and professors in this subject. The reliability of this tool was calculated by Cronbach's alpha method to be 77%.

Procedure

According to the type of quasi-experimental design (pre-test- post-test and control group), the statistical sample was randomly selected into two experimental and control groups. In order to collect the required information about the effectiveness of the virtual training before and after the intervention, the mentioned questionnaire (measurement of the effectiveness of virtual training) was used. The explanation is that before applying the experiment, that is, teaching the content of the subject of philosophic mindedness to the students of the experimental group, from the two experimental and control groups, in terms of the effectiveness of seven components of the effectiveness of virtual training, a pre-test was taken using this questionnaire. Then to the experimental group during six training sessions (sixty minutes) and with the presentation of training files, and during six consecutive weeks and based on the topics of philosophy, philosophical thinking and the educational content of Smith's philosophic mindedness [1] (dimensions of comprehensiveness, penetration and flexibility) They were exposed to relevant training. While in the other group of students, no intervention was done as a control group. After that, by the researchers, the effectiveness of all courses that were implemented through virtual training in the desired semester, in the mentioned components, and for both experimental and control groups, was measured again with the help of the same questionnaire. In addition, considering that all students have passed a specific academic course, and the same units and specific courses, therefore they have not been trained in a specific semester or course related to the subject of this research [intervening variable] before the presentation. The content of the training and the organization of the training sessions are specified in Table 4.

Table 4. Educational content and organization of Philosophic Mindedness Training sessions

Session number	subject	The content of the training session
First	Philosophy and philosophical thinking	Introduction- philosophizing and philosophical thinking The importance of having a Philosophic Mindedness
Second	Philosophical mentality and its dimensions	Definition of Philosophic Mindedness Dimensions of Philosophic Mindedness
Third	The dimension of comprehensiveness	Characteristics of people with comprehensive Philosophic Mindedness Using a comprehensive Philosophic Mindedness in the classroom
Fourth	The dimension of penetration	Characteristics of people with a deep Philosophic Mindedness Using deep philosophical thinking in the classroom
fifth	The dimension of flexibility	Characteristics of people with a flexible Philosophic Mindedness Using flexible philosophic mindedness in the classroom
sixth	Conclusion Test	Summarizing the contents of the first to fifth sessions Retest from the training group

The content of philosophic mindedness training in this research was an illustrated textbook, which included topics such as what is philosophy? levels of human thinking and thinking, philosophical thinking and its stages, definition of Philosophic Mindedness and its importance, dimensions of philosophic mindedness and method conclusion, dimensions of comprehensiveness, penetration and flexibility, conclusion and self-examination. This content was compiled by the researcher and after asking expert professors and expert experts and their approval, it was first implemented as a trial among students and after applying the final amendments (in the content and teaching hours) in the form of an educational textbook, and as the content of philosophic mindedness training. Considered, and was used as a statistical sample intervention.

Data Analysis
The Analysis of the raw data obtained from this research was done using descriptive statistics (mean and standard deviation) and inferential statistics, and with the analysis of covariance test as well as the examination of the tests of the normality of the distribution of the variables. SPSS statistical software was used to analyze the data and check the performance of the experimental and control groups. Then, the results of the two groups were compared to determine whether there was a significant difference between the samples that received the philosophic mindedness training and the samples that did not receive this intervention.

Results
Descriptive findings
The demographic results of this research indicate that 50% of the respondents were male and the other 50% were female. The results of Chi-Square test *(Chi-Square= 0.00, P>0.05)* indicate that there is no significant difference between the two groups in terms of gender. In addition, most of the respondents, equivalent to three quarters, were in the age group of 25 to 35 years. The results obtained from the Chi-Square test *(Chi-Square= 2.240, P>0.05)* indicate that there is no significant difference between the two groups in terms of age.

Table 5. Descriptive statistics of the virtual training variable and its components according to control and experimental groups

Group	Test stage / Indicators / Compone	Pre-test Mean (M)	Standard Deviation (SD)	Post-test Mean (M)	Standard Deviation (SD)
Control	Objectives	5.93	1.91	5.18	1.51
	Content	16.68	5.73	15.87	4.88
	Teaching-learning activities	12	4.56	11.43	3.28
	Organization of training materials	12.31	4.33	11.43	3.66
	Feedback	11.06	2.86	9.93	3.04
	Support	11.62	3.32	10.50	3.24
	Evaluation methods	14.31	4.40	12.18	3.54
	The effectiveness of virtual training	83.93	21.33	76.56	18.40
Test	Objectives	5.93	1.76	6.18	1.60
	Content	15.75	4.55	16.25	4.13
	Teaching-learning activities	11.31	3.78	11.75	3.08
	Organization of training materials	11.37	2.55	10.87	1.82
	Feedback	10.25	3.31	11.25	2.20
	Support	10	2.46	10.68	2.50
	Evaluation methods	12.75	4.17	13	2.75
	The effectiveness of virtual training	78.06	18.05	79.31	13.21

Also, the descriptive indices, including the mean and standard deviation for the research variables, are shown in table 5. The data in this table examines the condition of the subjects of

the two groups in relation to the effectiveness of virtual training and its seven related components.The results of the virtual training measurement are shown in the table above, separately from the two control and intervention groups at two times (pre-test and post-test). As can be seen from the information in this table, in the intervention group, the average effectiveness of virtual training in the pre-test stage was (78.06) and in the post-test stage it was improved to (79.31). In other words, the average effectiveness of virtual training in the experimental group follows an upward trend, so that in the intervention group it has increased by 1.25 from pre-test to post-test. Meanwhile, the average effectiveness of virtual training in the control group has decreased by 7.37 from pre-test to post-test.

Inferential findings
In the inferential data analysis section, considering the nature of the measurement scale which is quantitative and the type of data collection method which is based on quasi-experimental research of the type of pre-test-post-test designs with a control group, in order to investigate the effect of research intervention [philosophic mindedness training] on the effectiveness of virtual training from Univariate analysis of covariance (Ancova) was used. Of course, the use of this test requires checking the normality of the distribution of the variables.
Checking the normality of the distribution of variables
a. Shapiro-Wilk test
In checking the normality of the data distribution, the Shapiro-Wilk test showed that all the scales of the effectiveness of virtual training in the experimental and control groups, as well as the total score of this variable, follow the normal distribution. Checking the normality of data distribution by Shapiro-Wilk method is shown in Table 6.

Table 6. The test of the normality of the distribution of variables

Variable	Significance level
Objectives	0.061
Content	0.824
Teaching-learning activities	0.403
Organization of training materials	0.211
Feedback	0.522
Support	0.180
Evaluation methods	0.254

Explanation that if the significance level of the Shapiro-Wilk test is greater than 0.05, it can be concluded that the distribution of the data related to the component scores variable is not significantly different from the normal distribution. As reported in the above table, the significance level of all variables is larger. So it can be said that the data distribution of research variables is normal.

b. Homogeneity of variances
Considering that one of the assumptions of the covariance analysis test is to establish the equality of variances, therefore, this assumption was checked through the Levene 1 (F) test. The following table shows the result of this test.

Table 7. Levene's test to check variances

Variable	F Levene Statistic	df1	df2	Sig.
Objectives	0.192	1	30	0.665
Content	2.498	1	30	0.124
Teaching-learning activities	0.048	1	30	0.829
Organization of training materials	0.930	1	30	0.343
Feedback	0.640	1	30	0.430
Support	0.079	1	30	0.781
Evaluation methods	0.763	1	30	0.389

The explanation that Table 7 shows, Levene's F is not significant for all research variables at an error level of less than 0.50, in other words, the null hypothesis based on the equality of variances in groups is confirmed for all variables. As a result, the equality of variances in groups was confirmed for all variables. Therefore, the necessary statistical assumptions have been provided to investigate the effect of philosophic mindedness training on research variables. In order to establish the necessary statistical assumptions, in the continuation of the investigation of the effect of teaching philosophic mindedness on the research variables, univariate analysis of covariance test was used, and the detailed results of these calculations are presented separately for each research question in the following section.

    The main research question: "Is the philosophic mindedness training effective on the effectiveness of virtual training?".

    In this part, the results related to the effect of the intervention of the philosophic mindedness training on the effectiveness of virtual training are presented.

Table 8. Results of covariance analysis to investigate the effect of the intervention
on the effectiveness of virtual training

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	3361.146	1	3361.146	22.458	0.001	0.436
Group	271.769	1	271.769	4.816	0.043	0.178
Error	4340.229	29	149.663			
Total	7761.875	31				

According to table 8, the univariate covariance analysis test (Ancova) shows that the F value observed for the control group variable of the pre-test effect is equal to 4.816 and its significance level is 0.043, which indicates the existence of a significant difference between the post-test score in the experimental and control groups. Therefore, the main effect of the group variable is significant, and this shows that there is a significant difference between the control group and the experimental group after the intervention, so it can be said that the answer to the main question about the effect of the philosophic mindedness training on the effectiveness of the virtual training method is positive. According to the results of table 5, the average of the experimental group increased to (78.06) in the pre-test stage and (79.31) in the post-test stage, it can be said that the philosophic mindedness training has had an effect on the effectiveness of the virtual training method, the results of the coefficient Eta square indicates that about 18% of the changes in the effectiveness of virtual training are affected by the philosophic mindedness training.

    The first research question: "Is the philosophic mindedness training effective on the effectiveness of the objectives component of the virtual training method?".

    In response to the first research question, the results of covariance analysis were analyzed to compare the averages. The results are presented in table 9.

Table 9. Results of covariance analysis to investigate the effect of the intervention
on the objectives component

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	12.988	1	12.988	6.289	0.018	0.178
Group	8	1	8	3.874	0.050	0.118
Error	59.887	29	2.065			
Total	80.875	31				

The results of this table show that the F value observed for the pre-test effect control group variable is 3.874 and its significance level is 0.050, which indicates the existence of a significant difference between the post-test score in the experimental and control groups. This shows that there is no significant difference between the control group and the experimental group after the intervention. Therefore, the main effect of the group variable is significant and this shows that there is a significant difference between the control group and the experimental group after the intervention. In this way, the answer to the first question is positive based on the effect of the philosophic mindedness training on the effectiveness of the objectives component of the virtual training method. According to the results of table 5, the average of the test group increased to (5.93) in the pre-test stage and (6.18) in the post-test stage. Therefore, the philosophic mindedness training has had an effect on the effectiveness of the "objectives" component of the virtual training method. The results of the eta squared coefficient indicate that about 12% of the changes in the effectiveness of the "objectives" component are affected by the philosophic mindedness training.

   The second research question: "Is the philosophic mindedness training effective on the effectiveness of the written content component of the virtual training method?".

      In response to this question, to compare the averages, the results of covariance analysis were examined, the results of which are presented in table 10.

Table 10. Results of covariance analysis to investigate the effect of the intervention
on the written content component

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	221.771	1	221.771	16.366	0.001	0.361
Group	5.965	1	5.965	0.440	0.512	0.015
Error	392.979	29	13.551			
Total	615.875	31				

The results of the above table show the observed F value for the pre-test effect control group variable; It is equal to 0.440 and its significance level is 0.512, which indicates no significant difference between the post-test score in the experimental and control groups. Therefore, the main effect of the group variable is not significant and this shows that there is no significant difference between the control group and the experimental group after the intervention. In this way, it can be said that the answer to the second question regarding the effect of the philosophic mindedness training on the effectiveness of the "written content" component of the virtual training method is negative.

   The third research question: "Is the philosophic mindedness training effective on the effectiveness of the teaching-learning activities component related to the virtual training method?".

   In response to this question, the average data were compared, and the results are presented in table 11.

Table 11. Results of covariance analysis to investigate the effect of the intervention
on the teaching-learning activities component

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	129.402	1	129.402	21.378	0.001	0.424
Group	3.387	1	3.387	0.560	0.460	0.019
Error	175.535	29	6.053			
Total	305.719	31				

The results of this table show that the F value observed for the pre-test effect in the control group variable is equal to 0.560 and its significance level is 0.460, which indicates that there is no significant difference between the post-test score in the experimental and control groups. Therefore, the main effect of the group variable is not significant and this shows that there is no significant difference between the control group and the experimental group after the intervention. In this way, it can be acknowledged that the answer to the third question regarding the effect of the philosophic mindedness training on the effectiveness of the "teaching-learning activities" component related to the virtual training method is not positive.

The fourth research question: "Is the philosophic mindedness training effective on the effectiveness of the organization of training materials component related to the virtual training method?".

In response to the fourth question, the results of covariance analysis were analyzed to compare the averages, the results of which are presented in table 12.

Table 12. Results of covariance analysis to investigate the effect of the intervention
on the organization of training materials component

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	86.936	1	86.936	15.303	0.001	0.345
Group	0.101	1	0.101	0.018	0.895	0.001
Error	164.752	29	5.681			
Total	254.219	31				

The results of the above table show that the F value observed for the pre-test effect in the control group variable is equal to 0.018 and its significance level is 0.895, which indicates that there is no significant difference between the post-test score in the experimental and control groups. Therefore, the main effect of the group variable is not significant and this shows that there is no significant difference between the control group and the experimental group after the intervention. In this way, it can be stated that the answer to the fourth question regarding the effect of the philosophic mindedness training on the effectiveness of the "organization of training materials" component related to the virtual training method is negative.

The fifth research question: "Is the philosophic mindedness training effective on the effectiveness of the feedback component provided in the virtual training method?".

In response to this question, the average data were compared, and the results are presented in table 13.

Table 13. Results of covariance analysis to investigate the effect of the intervention
on the provided feedback component

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	56.957	1	56.957	10.658	0.003	0.269
Group	22.011	1	22.011	4.119	0.048	0.224
Error	154.981	29	5.344			
Total	225.719	31				

The results of the above table show that the F value observed for the pre-test effect in the control group variable is equal to 4.119 and its significance level is 0.048, which indicates the existence of a significant difference between the post-test score in the experimental and control groups. Therefore, the main effect of the group variable is not significant and this shows that there is a significant difference between the control group and the experimental group after the intervention. In this way, it can be said that the answer to the fifth question regarding the effect of the philosophic mindedness training on the effectiveness of the feedback component in the virtual training method is positive. According to the results of table 5, the average of the experimental group in the pre-test stage (10.25) and in the post-test stage has increased to (11.25), it can be said that the philosophic mindedness training has an effect on the effectiveness of the "provided feedback" component in the virtual training method. The results of the squared eta coefficient indicate that about 22% of the changes in the effectiveness of the provided feedback component are affected by the philosophic mindedness training.

The sixth research question: "Is the philosophic mindedness training effective on the effectiveness of the support component for students in the virtual training method?".

To answer the sixth research question, the results of covariance analysis were analyzed to compare the averages, and the results are set in table 14.

Table 14. Results of covariance analysis to investigate the effect of the intervention
on the support component

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	71.916	1	71.916	11.581	0.002	0.285
Group	5.325	1	5.325	2.238	0.049	0.142
Error	180.084	29	6.210			
Total	254	31				

The results of the above table show that the F value observed for the pre-test effect in the control group variable is equal to 2.338 and its significance level is 0.049, which indicates the existence of a significant difference between the post-test score in the experimental and control groups. Therefore, the main effect of the group variable is significant and this shows that there is a significant difference between the control group and the experimental group after the intervention. In this way, it can be said that the answer to the sixth question regarding the effect of philosophic mindedness training on the effectiveness of the component of supporting students in the virtual training method is positive. According to the results of table 5, the average of the experimental group increased to (10) in the pre-test stage and (10.68) in the post-test stage, it can be said that the philosophic mindedness training has an effect on the effectiveness of the "support" component of students in the virtual training method. The results of the squared eta coefficient indicate that about 14% of the changes in the effectiveness of the support component of the course are affected by the philosophic

mindedness training.

The seventh research question: "Is the philosophic mindedness training effective on the effectiveness of the evaluation methods component of the course in the virtual training method?".

In response to this question, average data were compared, and the results are presented in table 15.

Table 15. Results of covariance analysis to investigate the effect of the intervention on the evaluation methods component

Source of Variation	Sums of Squares (SS)	Degrees of Freedom (df)	Means Squares (MS)	F	Significance level	Effect Size (Eta)
Pre-test	96.644	1	96.644	13.619	0.001	0.320
Group	16.607	1	16.607	2.340	0.049	0.155
Error	205.793	29	2.340			
Total	307.719	31				

The results of the above table show that the F value observed for the pre-test effect in the control group variable is equal to 2.340 and its significance level is 0.049, which indicates the existence of a significant difference between the post-test score in the experimental and control groups. Therefore, the main effect of the group variable is significant and this shows that there is a significant difference between the control group and the experimental group after the intervention. In this way, it can be said that the answer to the seventh question regarding the effect of philosophic mindedness training on the effectiveness of the evaluation methods component of the virtual training method is evaluated positively. According to the results of table 5, the average of the experimental group increased to (12.75) in the pre-test stage and (13) in the post-test stage, it can be said that the philosophic mindedness training had an effect on the effectiveness of the "evaluation methods" component of the virtual training method. The results of the squared eta coefficient indicate that about 15% of the changes in the effectiveness of the evaluation component are affected by the philosophic mindedness training.

Discussion and Conclusion
The present study was conducted with the aim of investigating the effect of philosophic mindedness training on the effectiveness of the virtual training method of Payam Noor University students. Students who receive the philosophic mindedness training see specific cases in relation to a broad context with comprehensiveness and holism. They seek to organize facts and have patience in deep theoretical thinking, to see the parts in relation to each other and in relation to a wider context. The students who take the philosophic mindedness training question the issues and what is assumed to be certain in the contemplative dimension of the philosophic mindedness. For such a person, nothing is accepted in advance. After knowing the basics of a situation, this person analyzes and explains the implicit meanings of situations [4]. Students who have high flexibility, in dealing with issues, especially conflicting issues, observe and examine phenomena from different angles. They are calm in ambiguous situations, and are interested in acting in ambiguous situations. When faced with issues, they greatly influence their interpretation of the world and related situations. Students who have been trained in philosophic mindedness, when faced with issues and problems, try to choose the best way of working for the created problems [24] (quoted by Hadizadeh Moghadam and Tehrani, 2011). In the philosophic mindedness training, one gets the opportunity to predict the

result and consequences of each solution before choosing a solution, and then choose the best solution by comparing the consequences and results of different solutions. Therefore, if the philosophic mindedness training is implemented correctly, it can produce positive results in the virtual training system. Creating and strengthening the philosophic mindedness with the help of its training can make the results of the effectiveness of virtual training better and richer.

In this regard, the findings of this research in relation to the general purpose of the research, i.e. "Investigating the effect of philosophic mindedness training on the effectiveness of the virtual training method of students", showed that the philosophic mindedness training affects the effectiveness of the virtual training method. The intensity of the effect of philosophic mindedness training on the effectiveness of virtual training method was also estimated at 18%. General findings regarding the effect of philosophic mindedness training on the effectiveness of virtual training showed a significant difference. In other words, the effectiveness of the virtual training method of the students who have received the philosophic mindedness training was more than the students who had not received this training. In explaining the findings of the main hypothesis of the research, it should be stated that philosophic mindedness training and paying attention to its dimensions of comprehensiveness, penetration and flexibility can increase the fields of comprehensiveness, deep thinking and the spirit of flexibility in students. In other words, through observing specific issues in the field of general issues of education, the ability to systematically observe and understand events, as well as discover the basic issues and the cause of virtual training system phenomena, and free oneself from extreme (and fleeting) mental states in When thinking [25], it will be able to increase the positive effects of logical thinking on the effectiveness of virtual training. Although the findings of this research regarding the effect of teaching philosophic mindedness on the effectiveness of students' virtual virtual training methods, are contrary to the results of researches conducted, such as Bahari [29] and Komili Asl [30], but with the results of researches that have been carried out in educational organizations, such as Salehi [31], Saif Hashemi [32], Mir Mohammad Migouni [33] and Keikhanejad [34] which indicate the existence of a positive relationship between the two variables of "philosophic mindedness" and "performance" of people, is consistent. are consistent. The reason for this strong relationship between these two variables can be seen due to the importance and valuable role that is given to the element of reasoning and thinking of the human factor in educational organizations. In addition, the findings of the current research are consistent with the results of internal research by Hashemi [35], Bandli zadeh [36], Nouri, Fayaz and Saif [4], Ahmadi Fard [37], Nazari, Jafari and Nouri [38], and the results of external research, such as Smith [5], Lipman [39], Bowlinger [7] and Pierra [6] [who showed that a strong philosophic mindedness has an effect on people's performance]. In their research, these researchers found a strong and influential relationship between philosophic mindedness and people's performance in educational organizations. They found out that philosophic mindedness can determine the quality and behavior of different people in such organizations.

According to the findings obtained from this research, because the teaching of philosophic mindedness and its three dimensions, i.e. comprehensiveness, penetration and flexibility, has been effective in increasing the effectiveness of the virtual training method of the students of the target community, therefore it can be used to improve the virtual training method of this Student's benefited. In many ways, the philosophic mindedness training in students is like a process of helping them grow and thus increasing the possibility of effective coping in a wide range of situations [40]. This training affects their philosophic mindedness in correct thinking and having correct and measured judgments and having logical thinking which is the basis of a person's work and increases the performance of virtual training in them.

Although the results of this research showed that the teaching of philosophic mindedness on the three components of "content", "teaching-learning activities" and "organization of training materials" could not be effective, but to some extent, this can mean the independence of these components from the quality of students' philosophic mindedness. Therefore, for the effectiveness of these components, it is necessary to pay attention to external factors independent of the student and take necessary measures by the professors and educational managers of the university.

- **Written content:** Due to the fact that the content is one of the important elements of virtual training, therefore, the quality of editing and setting the content is important. In developing the written content of e-courses, different things should be considered:

- The written content should be developed on the basis of developing students' analogical and logical reasoning skills, so that the student, while dealing with a new ambiguity or question, hypothesizes in his mind to clarify or answer it. In this case, the training of philosophic mindedness can help the person to meditate more on the written content, consider its different aspects, and with this thinking, the effectiveness of the content component in the person's virtual training will increase.

- In the written content, the purpose of each lesson should be clear at the beginning of each section, the summary of the lesson at the end of each section, the determination of important information sources for each section and the use of tests and exercises to present the lesson [41], It will facilitate the effective flow of logical thinking or philosophical mindset of the individual for the effectiveness of the content component.

- **Teaching-learning activities:** The component of teaching-learning activities is focused on the question of "how students learn". This component is in line with learning conditions. The professor's role in facilitating the teaching-learning process is one of the guaranteeing elements that make virtual training achieve its goals. Therefore, in the effectiveness of this component, two important points should be noted:

- The main indicator of the quality of students' teaching-learning activities should be the amount of curiosity and thinking that is engaged in the course of education by the teacher and the learner. Based on this, teaching-learning activities aimed at exploring and analyzing educational topics should be given more value in virtual training. In this case, the teaching of philosophic mindedness will be able to influence classroom interactions with more power and make the component of teaching-learning activities more effective.

- Giving importance to learner-oriented activities, such as students' participation in online discussions and computer conferences, will help the philosophic mindedness of students to play a more effective role in their interaction with each other and the professor.

- **Organization of training materials:** Undoubtedly, the ease of access to educational materials is one of the most important factors in the effectiveness of virtual training. Therefore, if there is a trend in the process of virtual training that values the individual's thinking and initiative in the ability and facilitation of access to educational materials, then the student will try more seriously in the direction of meditation and logical thinking and voluntarily accept the teachings of philosophic mindedness. And its application will be educational in this area. In addition, in the organization of educational materials, attention should be paid to the quality of educational materials and the possibility of reviewing previous information by the student at the same time. Therefore, teaching a person's philosophic mindedness helps him to follow the ways of accessing educational materials even before or after the education based on his awareness, interest and need [42]. Also, this philosophic mindedness can help a person to adapt his interests and tastes to the conditions of the virtual training system, and to more wisely search for ways that cause initiative and facilitate his access to educational materials.

References

[1] Smith, PH. G. (1956). Philosophic Mindedness in Educational Administration, translated by Behrangi (2012), Tehran: Kamale tarbiat. [in Persian]

[2] Shariatmadari, A. (2008). Philosophy: Philosophical Issues, Philosophical Schools, Foundations of Science. Tehran: Islamic Culture Publishing Office. [in Persian]

[3] Mirkamali, S. M. (2002). Leadership and Educational Management. Tehran: Yastoroon. [in Persian]

[4] Nouri, S., Fayyaz, I., & Seif, A. (2013). "Effect of Philosophical Mentality on Solving Math Problems by Male and Female Third-grade Students in Hamedan Junior High Schools", Tafakkor va Kudak, 4(7), 121-139. [in Persian]

[5] Smith, PH. G. (1956). Philosophic Mindedness in Educational Administration. The Ohio State University Press.

[6] Pierra, J. (2009). Investigations of enhanced relationship between philosophic mind of managers and their employees' work performance in governmental organizations in Western Reserve University. PhD Dissertation, University of Illinois at Urbana Champaign.

[7] Bowlinger, D. (2002). Philosophic mindedness level in educational managers to their employees operations in Chicago schools. [PhD Dissertation Abstract]. Irwin University. Chicago, USA.

[8] Shahbazi Dastjerdi, R., & Mirshah Jafari, S. A. (2009). "Investigating the Relationship between Philosophical Mentation and Teaching of Isfahan Secondary School Secretaries", Journal of Educational Sciences, 5(2), 41-58. [in Persian]

[9] Sokhanvar, N., & Mahruzadeh, T. (2010). "Philosophic Mindedness and attitude to active teaching methods among mathematical teachers (Middle school)", New Thoughts on Education, 6(3), 67-94. [in Persian]

[10] Sardary, B. (2013). The explanation relationship between teaching style and philosophic mindedness university faculty of Islamic Azad University of Khoy. Technical Journal of Engineering and Applied Sciences. 3(17), 2138-2142.

[11] Sarkhanlou, M. (2014). The explanation relationship between teaching style and philosophic mindedness university faculty of Islamic Azad University of Maku. European Journal of Experimental Biology, 4(3), 554-559.

[12] Hosseini mehr, A., & Emami, H. (2013). "The relationship between Philosophic Mindedness and the teaching method of teachers of High Schools in Qazvin City", Educational Psychology, 4 (1), 15-24. [in Persian]

[13] Sabzali Jamaat, F. (2012). "Studying the effect of Philosophic Mindedness on Academic Achievement of Mathematics Lessons in high school students of Alborz province", M.Sc. Thesis, Tehran: Faculty of Humanities, University of Payam Noor. [in Persian]

[14] Mehta, S., & Whitebread, D. (2005). Philosophy for children and moral development in the Indian context. University of Cambridge.

[15] Keng, C. Y., & Binte Mohamad Ibrahim, K. (2007). Philosophy for Children. Proceeding of the   Redesinging Pedagogy: Culture, Knowledge and Understanding conference, Singapore.

[16] Ramazani, M. (2010). "An investigation into the philosophy for children program (p4c) with a view toward the differential attention paid to the different dimensions of philosophical mentality", Tafakkor va Kudak,1(1), 21-35. [in Persian]

[17] Lipman, M. (2003). Thinking in education. 2 nd ed., New York: Cambridge University Press.

[18] Saif Hashemi, F., & Rajaipour, S. (2010). "Investigating the Relationship between

Philosophical Mentation and Creativity of Isfahan School Principals in the academic year 2002-2003", Quarterly Journal of Education, 20(1), 31-64. [in Persian]

[19] Damerchili, F., & Rasoolnejad, A. (2010). "Investigating the relationship between philosophic mindedness and degree of creativity among faculty members of Islamic Azad University (IAU), Zanjan Branch", Higher Education Letter, 3(12), 125-144. [in Persian]

[20] Taghipour Zahir, A., & Tavakoli, R. (2011). "The Relationship between the Philosophic Mindedness of the High School Managers and the Performance of the Teachers in District 4, Ministry of Education and Training of Tehran", Biennial Journal of Management and Planning in Educational Systems, 4(6), 63-80. [in Persian]

[21] Imani, M. T.; Abdollahi, M., & Hemmati, M. (2012). "The Relationship between philosophical mindedness of managers with performance of managers", Educational Adminstration Research Quartery, 4(1), 57-71. [in Persian]

[22] Jandaghi, F., Haghani, M., & Araghieh, A. R. (2012). "Relation between philosophical subjectivity and creativity of teachers of high schools of city of Robatkarim", Journal of Managing Education in Organizations, 1(1), 83-103. [in Persian]

[23] Kushi, Z. & Soltani, A. (2015). "Forecasting Teaching Quality of Faculty Members Based-on Their Philosophical Mindset and Occupational Motivation", Training & Learning Researches, 12(2), 29-48. [in Persian]

[24] Mortazavi. E. S., & Bagherpour, M. (2016). "The Effect of the Problem-Solving Education based on the Spirituality on the Philosophical Mindset and the Decision-Making Styles of the Nursing Students". Quarterly Journal of Research in School and Virtual Learning, 4(2), 33-40. [in Persian]

[25] Bagherpour, M. (2018). "The Effects of Philosophical Mindset Training on Religious Attitudes and Life Skills of Elementary School Teachers", Applied Issues in Islamic Education, 3(2), 7-28. [in Persian]

[26] Daneshi Lisar, F., & Khosravi Babadi, A. (2018). "The relationship between spiritual intelligence, philosophical and religious beliefs mentality of high school female students in Tehran", Research in Curriculum Planning, 2(30), 163- 173. [in Persian]

[27] Eslami, K., Kouti, L., & Noori, A. (2016). "Different Methods of Medical Sciences Virtual Education in Iran and Assessment of their Efficacy; a Review Article", Educational Development of Judishapur, 7(2), 128-137. [in Persian]

[28] Kearsley, G. (2000). Online Education: Learning and Teaching in Cyberspace. New York: Wadsworth Publishing.

[29] Bahari, S. (2006). "The relationship of the Philosophic Mindedness of managers with their performance", Journal of New thoughts in educational sciences, 1(4), 45-54. [in Persian]

[30] Komili Asl, A. (2002). "Investigating the Philosophic Mindedness of Subsidiaries and Affiliated with the Ministry of Energy on the Performance of their Employees", M.Sc. Thesis, Educational Management, Rudehen: Islamic Azad University of Rudehen Branch. [in Persian]

[31] Salehi, Sh. (2001). "Comparison of the Philosophical Minds of Male and High School Education Region 15", M.Sc. Thesis, Islamic Azad University of Tehran Branch. [in Persian]

[32] Saif Hashemi, F. (2009). "Investigating the Relationship between Philosophical Mentation and Creativity of Isfahan School Principals in the academic year 2001-

2002", M.Sc. Thesis, Faculty of Education and Psychology, University of Isfahan. [in Persian]

[33] Mir Muhammad Migoni, F. S. (2006)."Investigating the Relationship between Managers' Philosophical Mentation and Job Satisfaction of Girls' High School Secretaries District 10 Tehran", M.Sc. Thesis, Faculty of Education and Psychology, Islamic Azad University of Khorasgan Branch. [in Persian]

[34] Keikhanejad, M. (2008). "Investigating the Relationship between Philosophical Mindfulness and Dimensions with Management of Zahedan Secondary School Principals", M.Sc. Thesis, Educational Sciences Field, Zahedan: Tarbiat Moalem University in Zahedan. [in Persian]

[35] Hashemi, S. A. (1995). "Investigating the effect of the Dimensions of Philosophic Mindedness of Educational Managers on Management Duties in Middle Schools and High Schools in Mamasani County", M.Sc. Thesis, Tehran: Tarbiat Moalem University in Tehran. [in Persian]

[36] Bandli zadeh, N. (1997). "The effect of Philosophic Mindedness on the efficiency of schools administrators of Damghan City", M.Sc. Thesis, Islamic Azad University, Central Tehran Branch. [in Persian]

[37] Ahmadi fard, H. (2004). "Comparison of the Philosophic Mindedness of Isfahan University's last year's students in the academic year 2003-2004", M.Sc. Thesis, Isfahan: Isfahan University. [in Persian]

[38] Nazari, H.; Jafari, M., & Nouri, A. (2018). "The survey on the effects of virtual training courses on promoting Naja manpower deputy employees performance", NAJA HUMAN RESOURCES, 9(52), 83-106. [in Persian]

[39] Lipman, M. (1986). Can education for thinking take place in high schools too?. Administrators Journal, 3(2), 14-19.

[40] Shamsi khani, S., & Farmahini Farahani, M. (2009). "Investigating the effect of Problem Solving Skills Training on Arak Nursing Students' Depression", M.Sc. Thesis, Arak: Islamic Azad University of Arak Branch. [in Persian]

[41] Rastegarpour, H., & Gorjizadeh, S. (2012). "Evaluation of the Effectiveness of E-Learning Courses in Tarbiat Modares University from the Users' Perspectives". Information and Communication Technology in Educational Scince, 2(3), 5-30. [in Persian]

[42] Yasini A. & Taban, M. (2015). "Study of the effectiveness of virtual education course from the perspective of professor and student (Case study: University of Tehran)". Iranian Higher Education Association Quarterly, 7(4), 175-198. [in Persian].