

## *Original Paper*

# Investigating the Impact of Modern Educational Technology on Improving Human Resources with the Mediating Role of Information Literacy of Physical Education Teachers in the 2nd District of Karaj

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### **Abstract**

*The aim of the research was the effect of modern educational technology on the improvement of human resources with the mediating role of information literacy of physical education teachers in the 2nd district of Karaj. The descriptive-analytical research method was field method. The current research community is 265 physical education teachers of Karaj District 2. The sample size of the present study was determined to be 265 people. The measurement tools included modern educational technology questionnaires (Yavuz, 2005), human resource improvement questionnaire (Volba & Jansen, 2010) and information literacy questionnaire (Siamak & Daverpanah, 2015). The content and form validity of the questionnaires were confirmed by the professors, and then Cronbach's alpha reliability of the modern educational technology questionnaire was 0.70, Cronbach's alpha reliability of the human resource improvement questionnaire was 0.81, and Cronbach's alpha reliability of the information literacy questionnaire was 0.76. In order to analyze the data of the present research, structural equation modeling method was used. The entire process of analysis was done using spss19 and Amos23 software. The findings of the research showed that information literacy plays a mediating role in the impact of modern educational technology on the improvement of human resources. Therefore, it can be concluded that if human resources have sufficient information literacy, modern educational technology can create an environment that enriches the educational environment, skills, behavior, learning style*

*and improvement of human resources.*

### **Keywords**

*new educational technology, improvement of human resources, information literacy, Karaj*

## **1. Introduction**

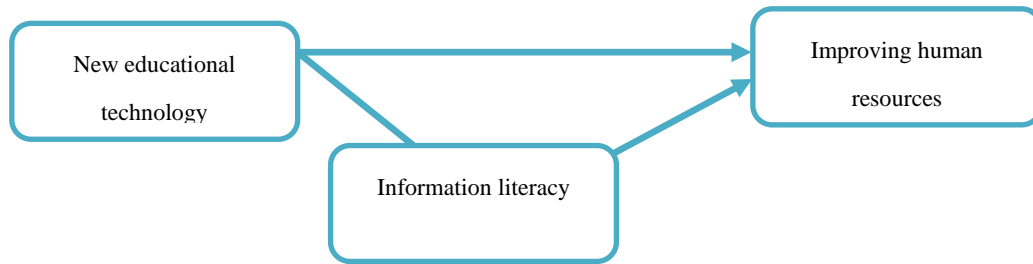
Learning is one of the basic rights of every human being, from the side of this basic right; It is not compulsory, because the nature of learning arises from a kind of internal need and motivation, and it is opposed to compulsion (Mahdavi, 2022). On the other hand, learning is not exclusive to a specific time and place, and in the new educational conditions, the form is lifelong. In this attitude, the whole sphere of a person's life, both public and private, is instructive, and learning does not know time or place (Niromand & Bakhavar, 2023). New media affect various aspects of education. The use of new technologies in schools creates a potential ability in the teaching-learning process; Including: individualizing education, improving the quality of teaching, creating equal educational opportunities, providing continuous education, strengthening the role of the teacher, emphasizing the human aspect of education, having a wide capacity to store and manipulate information, repeating the time of teaching skills and concepts, increasing the competition of students to come to school, Providing students with reliable instruction, controlling student learning by themselves, and helping to reduce performance gaps between student groups (Rezaei et al., 2020). Therefore, the use of new media in the current situation (coronavirus situation and non-attendance education) is necessary and mandatory for teachers and other educators (Bagherianpour, 2022). New educational technologies can be used as a tool and method to increase the quality and efficiency of education, which changes the traditional methods of education and helps teachers to improve the teaching and learning situation (Ghaznavi, 2018). Many innovations in education are dependent on the professional qualification of the teacher. The most basic goal of educational technology is better and deeper learning, and one of the ways to achieve this goal is the full use of the senses, in which teachers have a role to play. Will perform because they can use new technologies in the best way for their teaching (Ahadian & Mohammadi, 2022). Before the teacher uses the new educational technology in teaching, they must be fully proficient in the skills of using technology, so training in this direction should be considered for elementary teachers. Researches have shown that teachers' perceptions and attitudes towards technology affect their effective use of these technologies in the teaching and learning process (Mehdizadeh et al., 2020). Also, in schools where new educational technologies are used, a new role will be imagined for the teacher, and this new role is the task that is placed on the teacher's shoulder to produce the content of the teaching materials (Ghalavandi, 2020). Improving human resources is the activities of the organization to improve the capabilities and capabilities of employees through optimizing the conditions, facilities and overall atmosphere of their work environment. The performance of human resources is the cornerstone of the success of any organization. The performance evaluation of the organization should be designed and implemented in order to improve the capability of human resources (Boekhorst & Horton, 2009). The

importance and necessity of improving human resources is not hidden from anyone. It is not the time to talk only about the importance of improving human resources (Topaloglu & Tekkanat, 2015). Rather, practical solutions should be provided for it and used in practice. In order to achieve this purpose, the components and elements of human resource improvement must be identified first. Human resource improvement is defined as improving the skills, knowledge and ability of employees in perceptual and operational dimensions to increase performance efficiency (Noorabadi, 2020). This program is part of the organization transformation management and strategic performance management programs (Bruce & Candy, 2000). Information literacy is the set of capabilities and abilities to recognize when information is needed and when it is not. It is information about concepts that are rooted in information and communication technology topics (Daniel, 2006). By improving this skill and ability in people, we can fight against the category of technology phobia. Having information literacy, which is referred to as reading and writing in cyberspace, sometimes has a negative side and appears as the phenomenon of cyber loafing (internet roaming). In general, media literacy and the ability to use the network are the necessities of the present age. Educational systems and institutions must seriously deal with these challenges of the information age (Stec & Varlejs, 2014). This category includes the restructuring of the educational process in the use of information in the real world. The role of the professor has changed from the provider of prefabricated facts to the active educational facilitator (Pollard & Pollard, 2005). In every period of history, education has tried to meet their needs by using the technology and educational methods of that period that teachers and students were familiar with. Today, students are born in the auditory, visual and kinetic world, so the efforts of teachers to educate them using the methods and educational media of the past period will be ineffective or will not bring much fruit. Therefore, teachers should know well about new educational technology and media and deal with it with a positive attitude, and education has a prominent and sensitive role in educating the new generation. On the other hand, human resources (teachers) have a special position as the main focus of education; In such a way that the accuracy and reflection about each of the mentioned elements and addressing the less known and obscure angles of the educational system can be a small help in improving education and training, the main educational activities are carried out by the teacher. Shaping any action and process requires the existence of special methods for that action, the use of which paves the way to reach the desired goals. The teaching and learning process of the teacher in the classroom, which is one of the main ways to teach students, has its own conditions and methods that transfer experiences and knowledge to learners and arrange learning opportunities for them. Its base should be placed. Therefore, training and improving and having sufficient and up-to-date information literacy of human resources has always been one of the most important concerns of education to achieve higher goals, and this issue is very important in the organizations in charge of education, especially education. It is important. Therefore, by using modern educational technology, it is possible to have a significant impact on the improvement of human resources and information literacy of teachers. Therefore, in this research, the researcher is looking for the question that information literacy

plays a mediating role in the impact of modern educational technology on the improvement of human resources of physical education teachers in the 2nd district of Karaj?

Considering the importance of up-to-date and sufficient training for employees and spending a lot of money to implement face-to-face training courses in organizations and the policies mentioned in their upstream documents in this regard, researchers are trying to find out how to use technologies and investigate new educational approaches to improve the information literacy of the organization's human capital. Although the spontaneous conditions and the development of technology-oriented learning promise the synchronization of public and private organizations to this approach, but the obstacles and factors inhibiting this development can also be considered in their place. The limitation of titles and the quality of educational content is considered an inhibiting factor. This issue can be considered in addition to the limited number of professors and lecturers of the organization who have the technical preparation and motivation to work in this field. These are some of the things that limit the speed and comprehensiveness of the development of new organizational training approaches. It is true that the application of technological organizational training is time-consuming, but the correct design and application of formal and informal (individual and group) technological trainings will improve the information literacy of the organization's human resources. Therefore, according to the mentioned materials, the researcher in this research seeks to investigate the impact of modern educational technology on the improvement of human resources with the mediating role of information literacy of physical education teachers in the 2nd district of Karaj.

Mehdizadeh Rostam et al. (2019) concluded in their research that the use of these technologies in education, in addition to the fact that it can solve a part of the educational needs of the applicants, is definitely an effective factor in creating job and skill fields. It will be innovative at the community level. In her research in 2019, Noorabadi came to the conclusion that there are defects in the educational system of our country that prevent the achievement of the high goals of the educational system. Rezaei Siros et al. (2019) concluded in their research that organizational culture and professional competence had an effect on return on investment in training and improvement of human resources in Tehran municipality. According to the findings of the research, the components of organizational culture and professional competence are predictors of return on investment in education and improvement. Ahmad et al. (2021) concluded in their research that information literacy of employees plays an important and fundamental role in organizational innovation and improving human resources performance. In their research, Esfandiari and Kaviani (2020) concluded that organizational flexibility has a positive and significant effect on organizational performance. In other words, the more organizational flexibility increases, the performance of managers increases. Therefore, the results showed that exogenous variables such as organizational flexibility and organizational literacy can predict changes in managers' performance. Inan et al. (2018) concluded in their research that the use of computer software to provide lessons makes the classroom student-centered and the teacher only assumes the role of a facilitator, and learning is based on research and an independent process. takes place.



**Figure 1. Research Conceptual Model**

## 2. Methodology

The purpose of this research was to investigate the effect of modern educational technology on the improvement of human resources with the mediating role of information literacy of physical education teachers in the 2nd district of Karaj. Considering the fact that it examines the effect of modern educational technology on the improvement of human resources with the mediating role of information literacy of physical education teachers in the 2nd district of Karaj, this research is of an applied type, and in terms of the data collection method, it is descriptive-survey. It was implemented in the field. Also, considering the criterion of time, the current research is a cross-sectional type of research because this research was done only at one point in time. The target population of the present study includes physical education teachers. The accessible population of the current study includes physical education teachers working in education and training schools of Karaj district 2, according to the education statistics and information center of Karaj district 2, the number of teachers in Karaj district 2 is 265. According to the size of the statistical population, the sample size of the current study was determined as 265 people. The sampling method of the above research was stratified random to collect information, several tools and methods were used, and in the current research, library and internet resources, articles, theses and questionnaires were used to collect information. The measurement tools included modern educational technology questionnaires (Yavuz, 2005), human resources improvement questionnaire (Volba & Jansen, 2010) and information literacy questionnaire (Siamak & Daverpanah, 2015). In order to analyze the statistical data, descriptive statistics methods such as calculating the mean, standard deviation, and in the inferential statistics section, the Kolmogorov Smirnov test was used to determine the normality of the statistical population. To analyze the research hypotheses, the structural equation model was used using Imus and SPSS software.

### 2.1 Analysis of Findings

The distribution of respondents according to gender showed that 147 people, i.e., 55.5%, are men and 118 people, i.e., 44.5%, are women. The distribution of respondents according to their marital status showed that 72 people, i.e., 27.2%, are single and 193 people, i.e., 72.8%, are married. The distribution of respondents based on age showed that the lowest age range is less than 30 years old with a frequency of 7 people, i.e., 2.6%, and the highest age range is between 35 and 40 years old with a frequency of 105 people, i.e., 39.6%. The distribution of the respondents according to the level of education showed

that a doctorate with a frequency of 9 people, i.e., 3.4%, and a bachelor's degree with a frequency of 139 people, i.e., 52.5%, respectively, are the lowest and the highest level of education of the respondents. The distribution of the respondents according to the teaching level showed that the elementary teaching level with a frequency of 107 people is 40.4, the elementary level of the second period is 96 people, which is 36.2 percent, and the secondary level is with a frequency of 62 people, which is 23.4.

Descriptive analysis of research variables based on central parameters (mean, median, mode) and dispersion parameters (standard deviation, variance and range of changes) for the main research factors is presented in Table 1.

**Table 1. Descriptive Analysis of Research Variables**

Variable	Num	Mean	Middle	Mod	S.D	Variance	V.R	Min	Max
New educational technology	265	3.12	4.01	4.00	0.533	0.276	3.55	1.18	4.88
Improving human resources	265	3.78	3.67	4.13	0.564	0.515	3.51	1.08	4.76
Information literacy	265	3.91	3.56	3.54	0.553	0.319	3.02	1.32	4.62

Based on this table, it is clear that 265 correct answers to all research questions have been collected. Also, the highest average belongs to information literacy with a value of 3.91, which is higher than the high value of the Likert scale. The median and mode show that most of the respondents chose options 4 and 5, which means a lot and a lot.

**Table 2. Skewness and Kurtosis Test**

Research variables	Number	crookedness	Elongation
New educational technology	265	-1.634	0.502
Improving human resources	265	1.065-	0.519
Information literacy	265	-1.328	1.692

In general, if the skewness and kurtosis are not in the interval (2, -2), the data does not have a normal distribution. Based on the results of Table 2, in all cases, the value of skewness and elongation has been obtained in an acceptable range.

The primary measurement model of the research, which examines the relationship between latent and manifest variables, was implemented in the Imus version 23 software, and it can be seen in the three modes of non-standard estimation, standard estimation and the significance of the coefficients in three Figures 1 and 2.

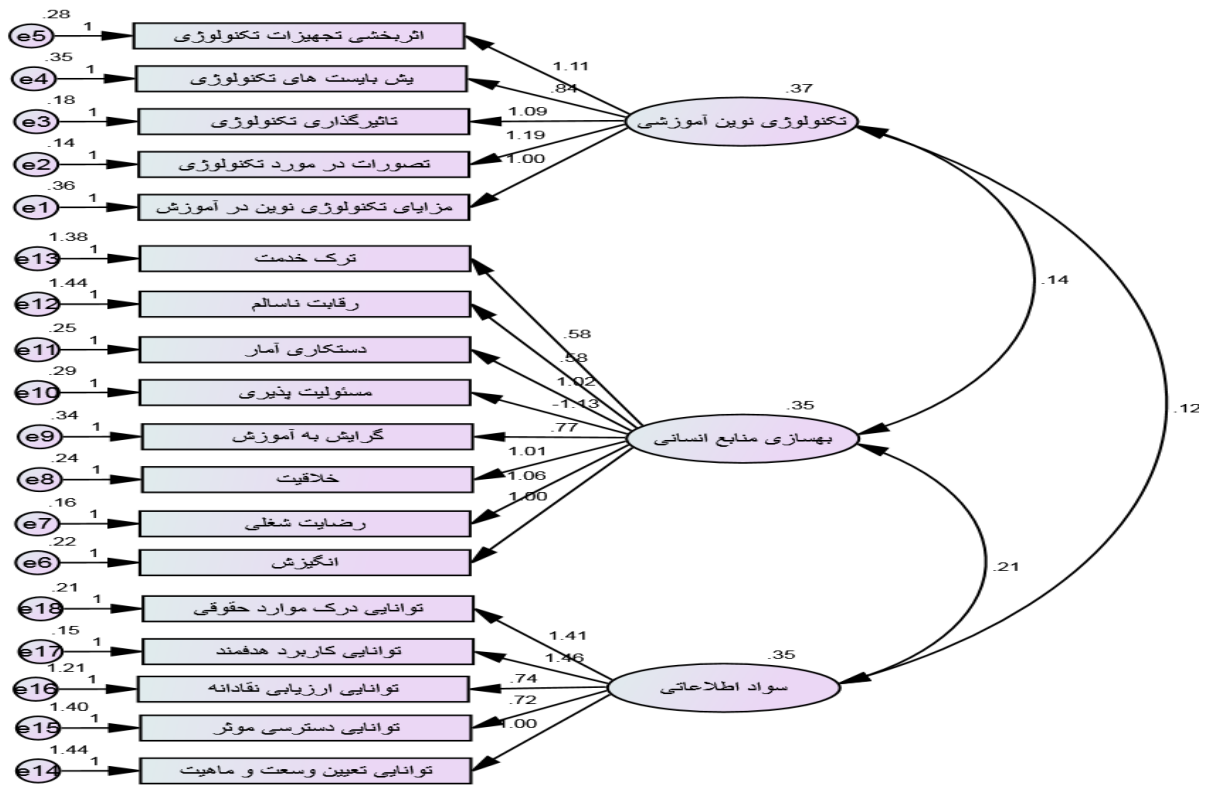


Figure 1. Primary Measurement Model in the Mode of Estimation of Unstandardized Coefficients

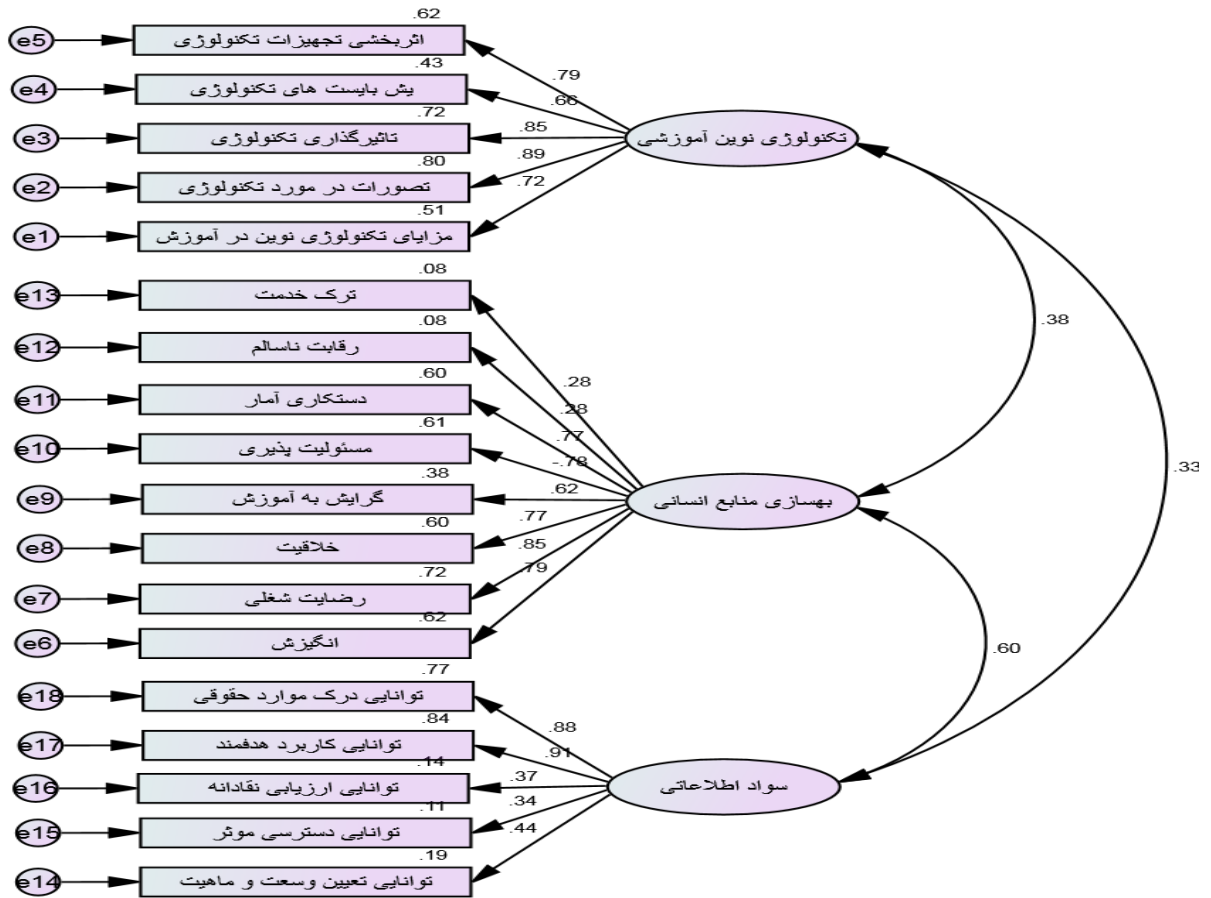


Figure 2. Primary Measurement Model in Standard Coefficient Estimation Mode

Initial measurement model fit

Fit means matching the observed model in the research sample with the expected model in the real society.

Table 3. Fit Indices of the Primary Measurement Model

Amount obtained	Limit	Fit index rate	Fit indices
1.625	smaller than 3	Thrifty indicators	CMIN/DF
0.048	smaller than 0.08	Thrifty indicators	RMSEA
0.562	Greater than 0.5	Thrifty indicators	PNFI
0.853	Greater than 0.8	Absolute indices	GFI
0.878	Greater than 0.8	Absolute indices	AGFI
0.911	Greater than 0.9	Comparative indicators	NFI
0.922	Greater than 0.9	Comparative indicators	NNFI=TLI
0.963	Greater than 0.9	Comparative indicators	CFI



0.971	Greater than 0.9	Comparative indicators	RFI
0.958	Greater than 0.9	Comparative indicators	IFI

Among the 5 comparative indices mentioned in the table of main sources of structural equations, at least three indices must be greater than 0.9. The structural model has a good status in all three indicators, absolute, absolute and comparative.

In order to establish the reliability and validity of the structure, the following 9 conditions must be met. Failure to establish even one condition will destroy the construct validity and the results will be discredited because the researcher's results in a quantitative survey must be reliable and generalizable as well as valid or valid.

**Table 4. Checking the Reliability and Validity of the Structure**

	CR	AVE	MSV	ASV
New educational technology	0.709	0.837	0.454	0.316
Improving human resources	0.813	0.882	0.166	0.091
Information literacy	0.760	0.768	0.454	0.244

**Table 5. Fornell and Larcker's Divergent Validity Analysis**

	New educational technology	Improving human resources	Information literacy
New educational technology	0.713		
Improving human resources	0.408	0.776	
Information literacy	0.676	0.378	0.748

Considering that it was found in the initial measurement model that it has two necessary conditions for the implementation of the structural model, i.e. the validity and reliability of the structure and the fit, so there is no need for a modified measurement model and we directly carry out the structural model of the research.

The structural model of the research, which examines the relationship between implicit and explicit variables, was implemented in the Imus version 23 software and can be seen in the two modes of non-standard estimation and standard estimation in the form of Figures 3 and 4.

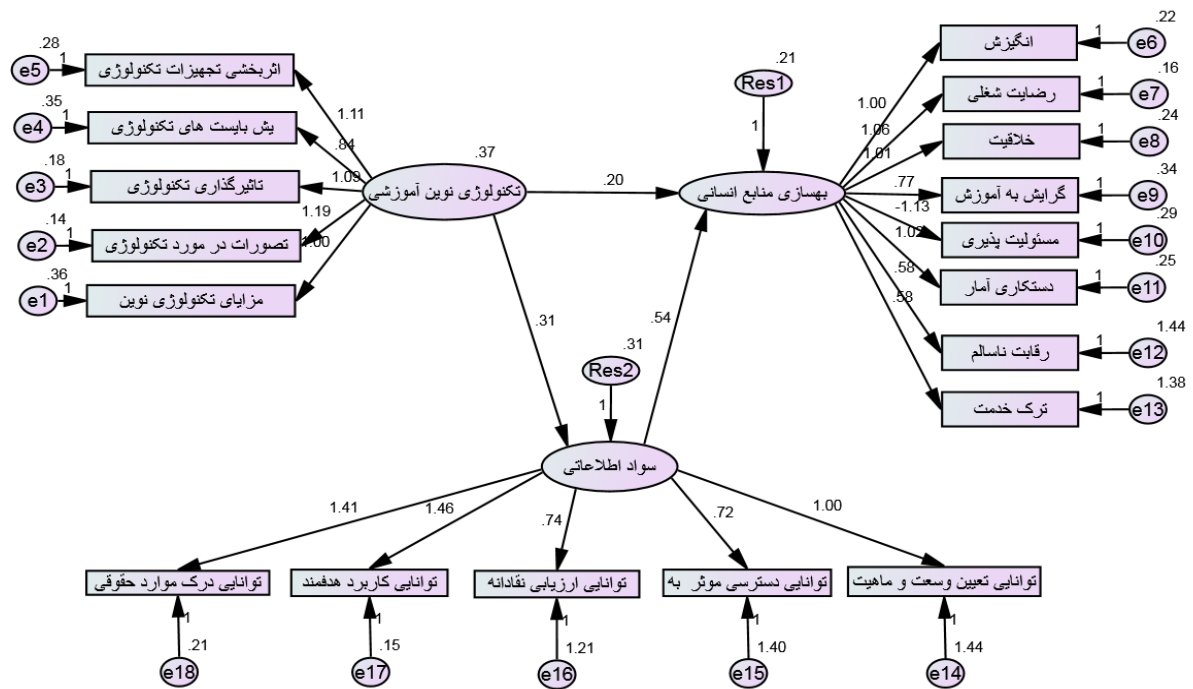


Figure 3. Structural Model in Non-Standard Coefficient Estimation Mode

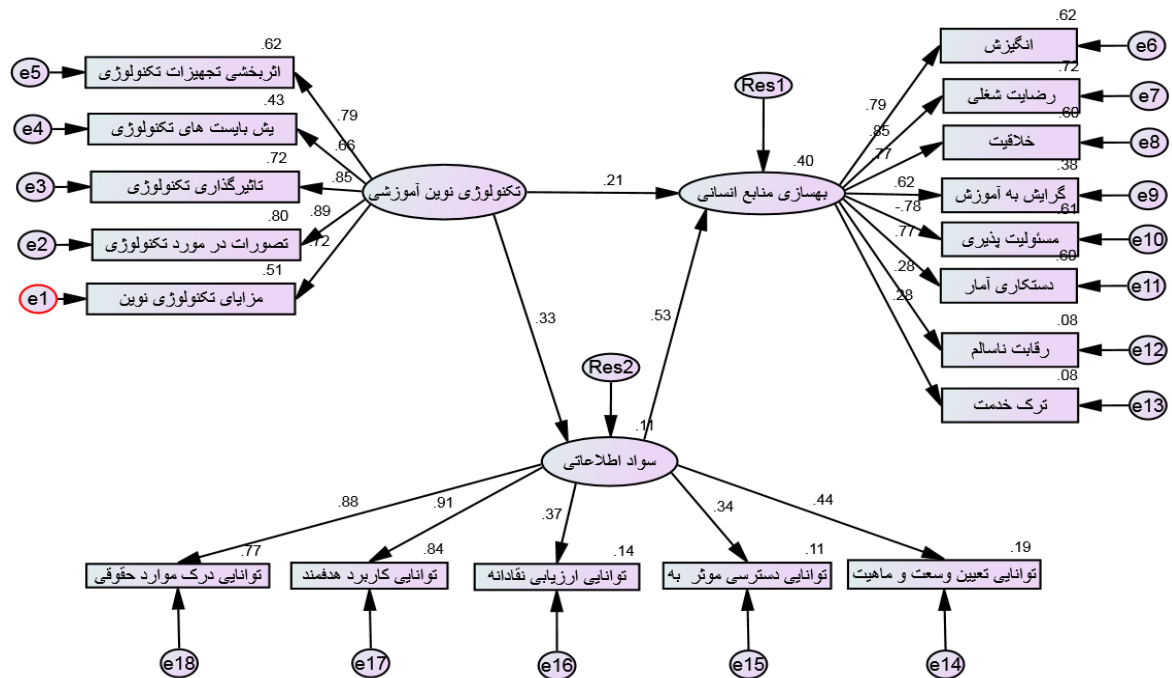


Figure 3. Structural Model in Standard Coefficient Estimation Mode

**Table 6. Structural Model in Non-Standard Mode**

Current variable		Current variable	T-VALUE	P
Improving human resources	<---	New educational technology	3.615	0.000
Information literacy	<---	New educational technology	4.311	0.000
Improving human resources	<---	Information literacy	5.941	0.000

**Table 7. Structural Model in Standard Path Coefficient Estimation Mode**

Current variable		Current variable	path coefficient (beta)
Improving human resources	<---	New educational technology	0.21
Information literacy	<---	New educational technology	0.33
Improving human resources	<---	Information literacy	0.53

The effect of modern educational technology on the improvement of human resources and information literacy, as well as the effect of information literacy on the improvement of human resources of physical education teachers in the 2nd district of Karaj, because the t-value is outside of (1.96 and -1.96) at the confidence level of 0.99, hypothesis H0 is rejected and hypothesis H1 It is confirmed that modern educational technology has a significant effect on the improvement of human resources and information literacy and information literacy has a significant effect on the improvement of human resources of physical education teachers in the 2nd district of Karaj. On the other hand, according to the coefficient of the beta path in Table 7, which shows the intensity and direction, for the impact of technology on the improvement of human resources (0.21), modern educational technology is on the improvement of information (0.33) and information literacy is on the improvement of human resources (0.53).

### 3. Conclusion

The main hypothesis showed that information literacy plays a mediating role in the impact of modern educational technology on the improvement of human resources of physical education teachers in the 2nd district of Karaj. The findings of this hypothesis are in line with the findings of Mehdizadeh Rostam et al. (2019), Noorabadi (2019), Khaef Elahi et al. Therefore, in the above explanation, it can be said that today any development and progress in organizations depends on the correct and strategic training of the human resources of that organization. In fact, the improvement of human resources is considered as one of the main strategies to achieve the human capital of organizations. With the

advancement of science and technology and the increase in the effects of information technology in human life, the process of teaching and learning has also undergone many changes. The development of information technology has revolutionized educational methods and moved them towards electronicization, and in this sense, it has brought many benefits to organizations. That this expansion of information technology and the use of new educational technologies can have a great impact on the improvement of human resources, which requires having appropriate information literacy in the relevant fields. Therefore, the use of modern educational technologies is considered one of the important and fundamental infrastructures in doing any task, and human resources in any society constitute the most key components of that society, therefore, all organizations in order to achieve development and survival they must have strong and capable human resources to achieve their goals and policies.

The first sub-hypothesis showed that the new educational technology has an effect on improving the human resources of physical education teachers in the 2nd district of Karaj. The findings of this hypothesis are consistent with the findings of Mehdizadeh Rostam et al. (2018), Khaif Elahi et al. (2018), Ghaznavi et al. Based on the above explanation, it can be said that the training and improvement of human resources allows people to effectively continue their activities and increase their efficiency in accordance with organizational and environmental changes. Therefore, training and improvement is a continuous and planned reconstruction by means of modern educational technology to improve the levels of employees' capabilities and organizational efficiency, and it is a guarantee of proper performance, especially in educational organizations, especially education and training that, if organized and implemented regularly and purposefully in line with the real needs of the organization's employees, will not only increase the performance of the employees and the organization, but also improve the skills and increase the satisfaction of teachers and clients or parents and students. Therefore, it is necessary for the Ministry of Education to pay great attention to this category because the improvement and reconstruction of human capital depends on the use of new and up-to-date methods that developed countries have used for years. Otherwise, in addition to wasting resources, it will lead to low effectiveness of education results and as a result lack of faith in education.

The second sub-hypothesis showed that the new educational technology has an effect on the information literacy of physical education teachers in the 2nd district of Karaj. The findings of this hypothesis are in line with the findings of Salehi et al. (2016), Ghaznavi et al. (2016), Divani et al. Therefore, in the above explanation, it can be said that new educational technologies can be used as a tool and method to raise the level of literacy and information of teachers, which changes the traditional methods of education by teachers and helps teachers to improve the state of education and Learning helps. Therefore, the role of modern educational technology has a significant impact on the efficiency and information literacy of teachers, and they acquire the knowledge and skills needed to achieve the desired goals, which also have the greatest impact on students' learning. Modern educational technology not only transforms the traditional concepts of teacher, student and classroom, but also

transforms the nature of education and knowledge acquisition from teaching to learning. The use of new educational technology has led to the transformation of teaching methods and teacher-student interaction, as well as increasing the level of information literacy.

The third sub-hypothesis showed that information literacy has an effect on the improvement of human resources of physical education teachers in the 2nd district of Karaj. The findings of this hypothesis are in line with the findings of Rezaei Siros et al. Therefore, in the above explanation, it can be said that information literacy is one of the important environmental factors in today's era that affects human resources and organizations. Therefore, the development of information literacy skills in employees can provide the basis for increasing their skills and improving their productivity. Therefore, the Ministry of Education can help teachers to improve their job skills by training information literacy skills. So that they are able to recognize their information needs well, identify and retrieve reliable information sources, make more effective use of information, and share their information with other colleagues if necessary. Therefore, in this regard, having information literacy of teachers helps them to have more up-to-date information and knowledge resources in order to achieve organizational goals and policies, which leads to the improvement of the teaching and learning process in the education system.

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