

The Association Between Information Literacy and Job Performance of Primary School Teachers

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ABSTRACT

Background: Information literacy is essential for teachers, enabling them to effectively access, evaluate, and use information in teaching. This study investigated the relationship between information literacy and job performance among primary school teachers in Naqhadah city, Iran.

Methods: The study employed a correlational design using Partial Least Squares Structural Equation Modeling (PLS-SEM). This study aimed to examine the relationship between information literacy and job performance of primary school teachers during the academic year 2021-2022. The target population consisted of all primary school teachers in Naqhadah, Iran. From a total of 512 teachers, the sample size was determined to be 230 using Krejcie and Morgan's table with simple random sampling. A self-administered questionnaire was used, adapted from Chang's information literacy scale and Patterson's job performance scale. The questionnaire included 29 items measuring four dimensions: information perception, information selection, information evaluation, and information utilization. Items were scored on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Content validity was established by reviewing relevant literature and obtaining feedback from experts. The questionnaire's reliability was estimated using Cronbach's alpha coefficient, which was above 0.7 for all the variables. Data were analyzed using SPSS version 26 and SEM with Smart PLS 3.2.8 software.

Results: The results showed that there were significant positive relationships between information perception and job performance ($r=0.84$, $P<0.001$), information selection and job performance ($r=0.15$, $P<0.001$), and information evaluation and job performance ($r=0.09$, $P<0.01$). However, there was no significant relationship between information utilization and job performance ($r=-0.02$, $P>0.05$).

Conclusion: The findings suggest that information literacy skills are positively associated with teachers' job performance. Therefore, it is recommended that teachers' information literacy skills be enhanced through training programs and workshops.

Keywords: Distance, Education, Information Literacy, Work Performance, Schools, Teachers

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Introduction

Today, a modern society is often referred to as the information society (1-3). Development in the context of the information age is one of the major issues that casts a shadow over modern society (4). The unimaginable growth of information and technology in the areas of information storage, organization, and access to information is a defining feature of our time (5). Given that these changes and transformations, influenced by the latest developments in technology, have a rapid and dynamic movement, day by day, they require new possibilities; successful people in this age will be those who can make the best use of this information to achieve their goals (6); therefore, in order to survive, individuals need some relevant capabilities such as identifying information needs, being familiar with different information structures, choosing the best information source and ways to use them, and having the ability to obtain information from sources and evaluate information to benefit them (7, 8).

Today, despite the information technology, the world is like a small village where in a short time you can see the information you need from studies on your computer screen from the farthest corners of the world. Therefore, having information literacy, which is in fact familiarity and knowledge of the means of accessing information, is necessary and inevitable (9).

In educational texts, terms such as lifelong learning, creative thinking, reading expertise, research proficiency, and library skills are used instead of the concept of information literacy (10). Information literacy skills are a must for anyone who wants to learn for a lifetime and be present in knowledge communities (11) existing knowledge in interdisciplinary learning, critical thinking, and interpretive skills (12).

Li, Chen and Yang see information literacy as providing knowledge and skills with information; being able to use information software and hardware; using information in work or daily life; collecting, organizing, evaluating, and using appropriate information

including familiarity with the capabilities of computer software and hardware; using computer networks; and integrating audio-visual media and the concept of information ethics (13).

Grizzle and Calvo define information literacy as a set of abilities that includes the retrieval, discovery, analysis, and use of information. These capabilities enable the learners to search, write, use, and complete step-by-step research, and more importantly, they can turn the learners into lifelong learners (14). The Association of College and Research Libraries defines information literacy as a “set of integrated abilities encompassing the reflective discovery of information, understanding how information is produced and valued, using information in creating new knowledge, and participating ethically in communities of learning”(15).

In recent years, due to the association between information literacy skills and lifelong learning (16), the tendency towards information literacy at all levels of education has grown significantly, so that the prevailing mentality is that without information literacy, learners will have a hard time recognizing the right path (17). Some empirical studies reported that IL competencies enhance lifelong learning approaches (18-20). The lifelong learning and creativity skills also mediated the relationship between information literacy and work performance (21). Information literacy significantly has positive effects on information technology integrated instruction and teaching effectiveness (22). All teachers, from preschool to primary school, need a comprehensive knowledge of information literacy for their knowledge production activities because this knowledge will ultimately affect the students (17).

In today's modern world, the mastery of educators and teachers in information literacy skills is considered a necessity in the education system; it is one of the signs of progress and development. An individual with information literacy feels less dependent on his/her colleagues, and this creates more confidence, motivation, and a sense of success in him/her.

The result of all this will improve the quality of education, teaching, learning and in general, the performance of the teacher (23).

Increasing the level of information literacy plays an important role in increasing independent and lifelong learning skills; since one must control his learning process to succeed in e-learning, he/she must be active and self-directed in the process, utilizing and improving information literacy skills (24). Information literacy and its skills lead to increased performance and effectiveness of the individual and the organization. If teachers are equipped with information literacy and its skills, they will perform their tasks more effectively and successfully, and since teachers are one of the most important pillars of schools, developing their capacity through information literacy will increase their performance and effectiveness (25).

In general, a review of the results of research conducted in relation to the research topic shows that information literacy skills in education can have a positive impact on the effectiveness and performance of teachers. The use of educational technologies, as well as getting up-to-date information by a teacher who has mastered information literacy skills, can influence her or his performance by creating motivation and confidence in her or him. Hence, given the importance of the issue and the fact that no specific research has been conducted on the association between information literacy and job performance, the aim of this study was to determine the association between information literacy and job performance of primary school teachers in Naqadeh.

Methods

Study Design and Setting

This study adopted a correlational design to investigate the relationship between information literacy and job performance of primary school teachers in Naqadeh city, Iran, in the academic year 2021-2022. The data were collected and analyzed using partial least squares structural equation modeling

(PLS-SEM) method, which is a multivariate analysis technique that consists of two sub-models: the measurement model and the structural model.

This study was conducted in Naqadeh city, which is located in the northwest of Iran. Naqadeh city has 12 primary schools with a total of 512 teachers.

Participants and Sampling

The inclusion criteria for the participants were having at least five years of teaching experience in primary school and answering all the questions in the questionnaire. The sample size was calculated to be 230 using Krejcie and Morgan's table and simple random sampling technique using a random number table. Out of 230 questionnaires distributed, 10 were excluded due to incomplete or incorrect responses. The final sample comprised 220 teachers, 89 males and 131 females.

Ethics - The study obtained approval from the Research Ethics Committee of University of Tabriz (IR.TABRIZU.REC.1402.056) and collaborated with the primary schools. The study was carried out with the informed consent of all participants and without any organizational financial support. All participants were fully informed of the aim and confidentiality of the study and were assured that the information provided by them would be kept confidential.

Tools/Instruments

The data collection instrument was a self-administered questionnaire that was adapted from Chang's information literacy scale (26) and Patterson's job performance scale (27). The questionnaire consisted of 29 items that measured four dimensions of information literacy (information perception, information selection, information evaluation, and information utilization) and one dimension of job performance. The items were scored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire also included some demographic questions, such as gender, age, education level, and teaching experience.

The content validity of the questionnaire was confirmed by reviewing the relevant literature and obtaining feedback from three university professors who were experts in information literacy and education. The reliability of the questionnaire was assessed by distributing it among 30 teachers. The Cronbach's alpha values for the components of Information Perception, Information Selection, Information Utilization, Information Evaluation, and Job Performance were 0.78, 0.70, 0.71, 0.76, and 0.76, respectively, indicating an acceptable reliability. The EFA showed that five factors accounted for 55.89% of the total variance. The sample adequacy

was confirmed using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (0.730) and the Bartlett's Test of Sphericity ($P < 0.001$). A Scree plot supported the five-factor solution (Figure 1 and Table 1).

The PLS-SEM based confirmatory factor analysis (CFA) was the next step after the EFA to test the measurement and structural models. The CFA aimed to confirm the validity and reliability of the constructs and the relationships among them. The CFA used the Smart PLS 3.2.8 software to estimate the path coefficients and the significance levels of the hypotheses. The CFA results showed that all the constructs had

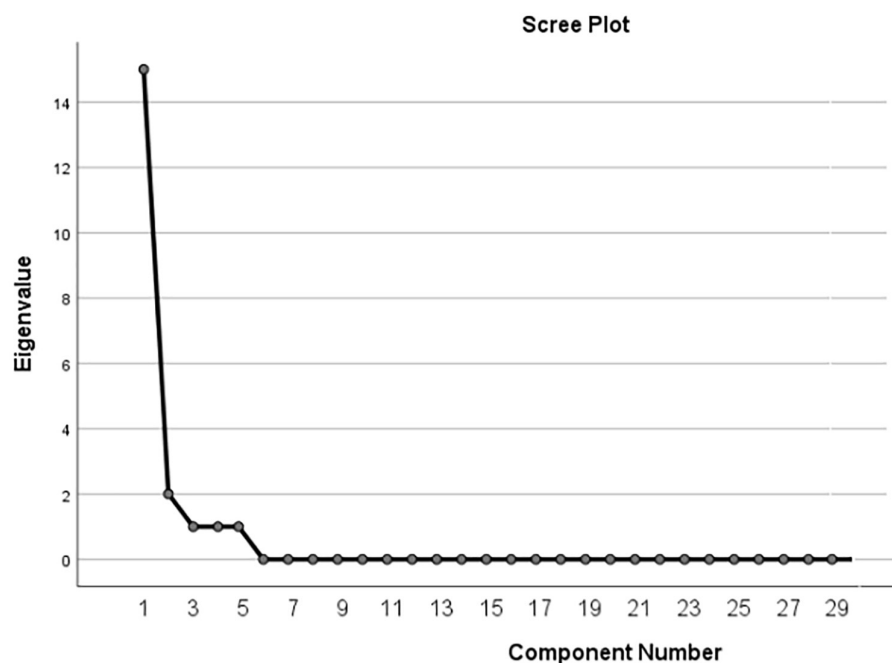


Figure 1: Scree plot for exploratory factor analysis of job performance and information literacy scale

Table 1: Factors extracted from exploratory factor analysis of job performance and information literacy scale

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.633	33.217	33.217	9.633	33.217	33.217	4.514	15.565	15.565
2	2.657	9.162	42.379	2.657	9.162	42.379	4.222	14.560	30.125
3	1.396	4.812	47.191	1.396	4.812	47.191	3.060	10.553	40.678
4	1.360	4.690	51.882	1.360	4.690	51.882	2.513	8.664	49.342
5	1.162	4.009	55.890	1.162	4.009	55.890	1.899	6.548	55.890
6	0.997	3.784	59.674						
7	0.971	3.347	63.021						

Extraction Method: Principal Component Analysis. The scree plot showed a clear break after the fifth factor, supporting the five-factor solution.

acceptable convergent validity, discriminant validity, and composite reliability. The structural model also had a good fit and explained a high percentage of variance in the dependent variable.

Data Analysis

The data were analyzed using SPSS 26 and Smart PLS 3.2.8 software. Exploratory Factor Analysis (EFA) was performed to examine the factor structure of the questionnaire. This study employed a correlational design using partial least squares structural equation modeling (PLS-SEM) method. PLS-SEM is a multivariate analysis technique that consists of two sub-models: the measurement model and the structural model (28). The measurement model specifies the relationships between the latent variables and their indicators, while the structural model specifies the relationships between the latent variables (29, 30). PLS-SEM is suitable for this study because it has fewer stringent assumptions about sample size, normality, and measurement scales than other SEM techniques (31-33). The data were analyzed using SPSS 26 and Smart PLS 3.2.8 software. EFA was performed to examine the factor structure of the questionnaire. The EFA results revealed that five factors accounted for 55.89% of the total variance. The sample adequacy was verified by the KMO Measure of Sampling Adequacy (0.730) and the Bartlett's Test of Sphericity ($P < 0.001$). A scree plot supported the five-factor solution. CFA based on PLS-SEM was conducted to test the validity and reliability

of the constructs and the relationships among them. The CFA results demonstrated that all the constructs had acceptable convergent validity, discriminant validity, and composite reliability.

Results

Demographic Characteristics

A total of 230 primary teachers of Naqadeh schools participated in this study. The participants' age ranged from 25 to 43 years, and their teaching experience varied from 5 to 19 years. After collecting the data, 10 questionnaires were excluded from the analysis due to incompleteness. The final analysis was done with 220 questionnaires using SPSS 26 and Smart PLS 3.2.9. Based on demographic information in terms of gender, 40.4% and 59.5% of teachers were male and female, respectively.

The frequency of participants can also be seen in Table 2 based on their education level and teaching experience. The highest number of participants had a bachelor's degree (40.45%) and the lowest with a Ph.D. degree (3.63%). Also, the highest mean age was 40 years and above (44.09%) and the highest teaching experience was 15 years and above (48.63%).

Assessment of Measurement Models

The assessment of measurement is essential and necessary as it provides thorough testing for the reliability and validity of the scale used to measure the latent constructs and their indicators and items (12).

Table 2: Demographic and occupational characteristics of the teachers

	Factor	Number	Percentage
Gender	Male	89	40/45
	Female	131	59/54
Degree of education	Diploma	45	20/45
	Bachelor	89	40/45
	Master	78	35/45
	Ph.D.	8	3/63
Age	25 to 30 years	42	19/09
	30 to 35 years	81	36/81
	More than 40 years	97	44/09
Teaching experience	5 to 10 years	46	20/90
	10 to 15 years	67	30/45
	More than 15 years	107	48/63

Discriminant validity: It is the extent to which the measure is unique and not simply a reflection of other variables (31). It is evaluated by examining the cross loadings of each item in the constructs and the square root of average variance extracted (AVE) calculated for each construct and the heterotrait-monotrait (HTMT) ratio results.

Cross loadings: All items loaded more highly on their respective constructs than other constructs. Therefore, the constructs demonstrate adequate discriminant validity (Table 3).

The results of Table 3 show, according to the cross-loading criteria, the information literacy and teachers' job performance variables have a good diagnostic validity, and the items correctly explain their variables.

HTMT: The HTMT result indicates that all HTMT values are significantly different from 1, and the HTMT ratio of correlation shows that all values are below the threshold of .90., thereby establishing the discriminant validity of the reflective constructs (Table 4).

The Fornell-Larcker criterion: Fornell and Larcker (32) suggest that the square root

Table 3: Criteria of cross-factor loadings of information literacy and teachers' job performance

Item	Construct				
	Job Performance	Information Evaluation	Information Perception	Information Selection	Information Utilization
JP1	0.807	-	-	-	-
JP2	0.756	-	-	-	-
JP3	0.704	-	-	-	-
JP4	0.680	-	-	-	-
JP5	0.642	-	-	-	-
JP6	0.527	-	-	-	-
IE1	-	0.632	-	-	-
IE2	-	0.679	-	-	-
IE3	-	0.715	-	-	-
IE4	-	0.592	-	-	-
IE5	-	0.795	-	-	-
IP1	-	-	0.679	-	-
IP2	-	-	0.659	-	-
IP3	-	-	0.824	-	-
IP4	-	-	0.779	-	-
IP5	-	-	0.643	-	-
IP6	-	-	0.509	-	-
IP7	-	-	0.819	-	-
IS1	-	-	-	0.842	-
IS2	-	-	-	0.620	-
IS3	-	-	-	0.474	-
IS4	-	-	-	0.456	-
IS5	-	-	-	0.423	-
IS6	-	-	-	0.816	-
IU1	-	-	-	-	0.717
IU2	-	-	-	-	0.500
IU3	-	-	-	-	0.695
IU4	-	-	-	-	0.771
IU5	-	-	-	-	0.700

Table 4: The Heterotrait-Monotrait (HTMT) Ratio for Discriminant Validity of Job Performance and Information Literacy Constructs

	Information Evaluation	Information Perception	Information Selection	Information Utilization
Information Evaluation				
Information Perception	0.476			
Information Selection	0.653	0.575		
Information Utilization	0.247	0.321	0.378	
Job Performance	0.604	0.897	0.726	0.281

Table 5: Analysis of the Fornell-Larker criterion to assessing discriminant validity of Job Performance and Information Literacy Constructs

Variable	Information Perception	Information Selection	Information Utilization	Information Evaluation	Job Performance
Information Perception	0.670				
Information Evaluation	0.630	0.880			
Information Selection	0.470	0.620	0.720		
Job Performance	0.610	0.560	0.600	0.960	
Information utilisation	0.220	0.200	0.250	0.230	0.680

Numbers on the diagonal matrix are correlations of square root of average variance extracted.

of AVE in each latent variable should be greater than other correlation values among the latent variables. The Fornell-Larcker criterion results are represented in Table 5.

Convergent validity: It specifies that items that are indicators of a construct should share a high proportion of variance (33), or the extent to which a measure correlate positively with alternative measures of the same construct.

The composite reliability scores (ρ_c) for each construct should exceed 0.70 (26). The results are represented in Table 5.

Cronbach's alpha is the coefficient of reliability of the construct. Cronbach's alpha values between .70 and .95 are considered satisfactory for internal consistency (34). The results are represented in Table 5.

The Average variance extracted (AVE) for each construct should be above the recommended cut-off 0.50 (30). All constructs AVE exceeded the 0.50 cut-off and ranged from 0.68 to 0.94 (Table 6).

Cronbach's alpha of all construct is more than 0.7, which indicates that measuring instruments and components are acceptable. The composite reliability scores (ρ_c) for each construct should exceed 0.70 (34). Average Variance Extracted (AVE) is used to check the convergent validity (33). Fornell and Larcker recommend AVE values of 0.5 and more, which means that the construct in question explains about 50% or more of the variance of its indexes. The results are represented in Table 3.

The first criterion of the structural fit model

Table 6: Summary of PLS Quality (Cronbach's Alpha, Composite Reliability and AVE) of Job Performance and Information Literacy Constructs

Construct	ρ_c	AVE	Cronbach's alpha
Information Perception	0.84	0.55	0.78
Information Evaluation	0.81	0.56	0.76
Information Selection	0.78	0.57	0.70
Information Utilization	0.81	0.58	0.71
Job Performance	0.83	-	0.76

pls: Partial least squares structural equation modeling; AVE: Average variance extracted

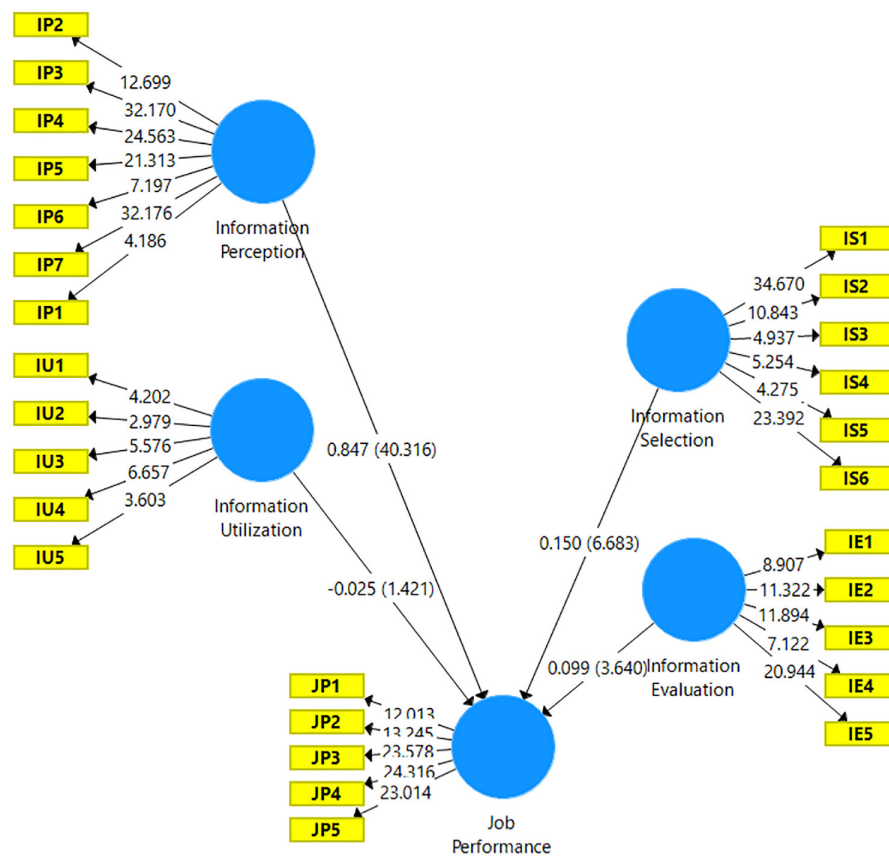


Figure 2: Significance coefficients of items (T-value) information literacy and teachers' job performance

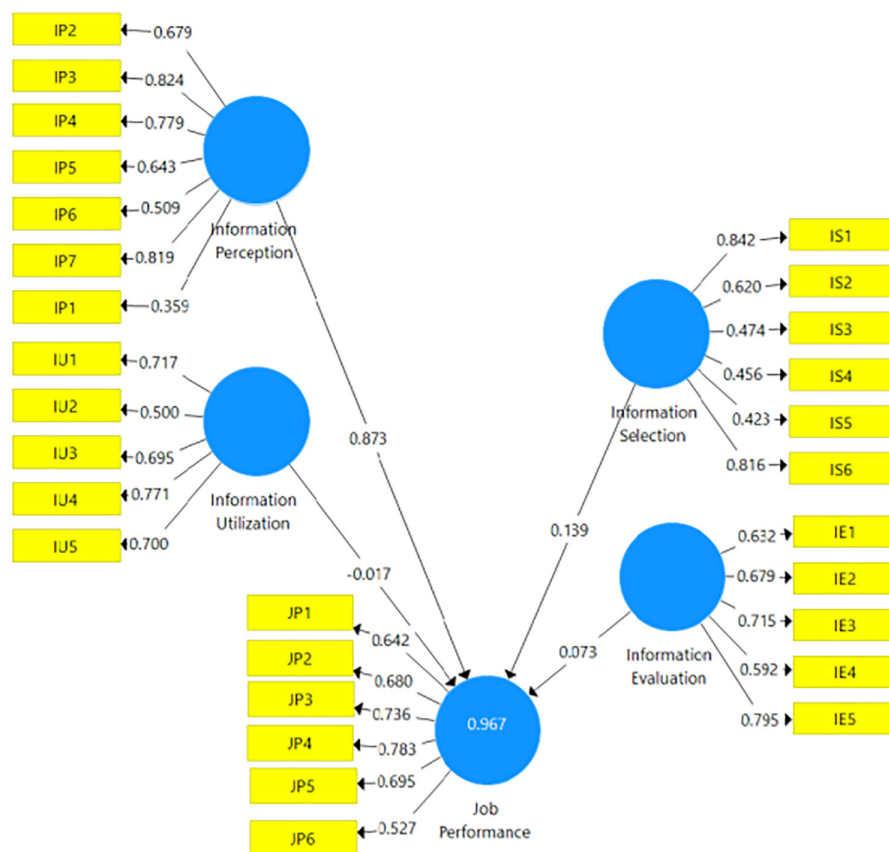


Figure 3: R² value of endogenous variable (teachers' job performance)

is the significance of path coefficients, the result of which is presented in the Figure 2. All significance coefficients of t are greater than 1.96. That is, all items and associations between variables are significant at the 95% confidence level.

According to Figure 3, the value of R^2 is related to the endogenous variable of behavioral tendency 0.96, which indicates the appropriateness of the fit of the structural pattern.

According to the results of Table 7, Information Perception and Information Selection in information literacy had the strongest association. Information Evaluation had an average association and Information Utilization had a weak association with job performance (Figure 4).

The value of Q^2 is equal to 0.434, which means a very good fit of the model and a strong ability to predict the observed variables (27).

Testing Hypotheses

After testing the measurement and structural patterns, we reviewed and tested the research hypotheses. The results are presented in Figure 5 and Table 8.

Discussion

This study aimed to investigate the effect of information literacy components on the job performance of primary school teachers in Naqadeh. Four hypotheses were examined to investigate the association between information literacy components and job performance

Table 7: f^2 value of the association between information literacy and job performance

Exogenous Variable → Endogenous Variable	f^2	Impact Amount
Information Perception → Job Performance	17.15	Strong
Evaluation Of Information → Job Performance	0.07	Medium
Information Selection → Job Performance	0.26	Strong
Information Utilization → Job Performance	0.00	Weak

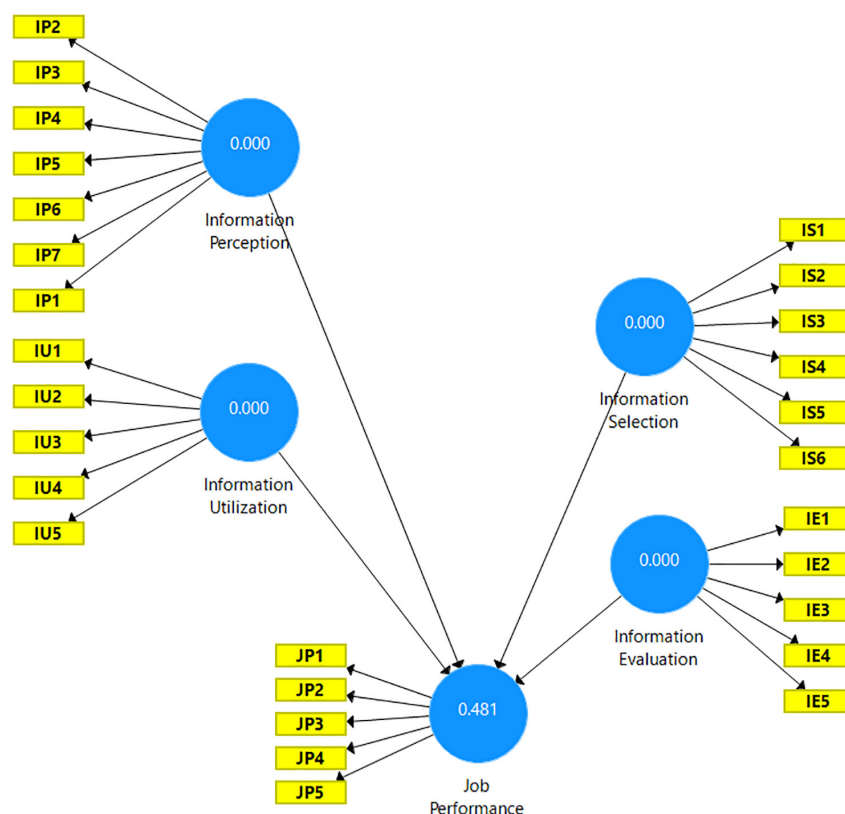


Figure 4: Q^2 value of endogenous variable (teachers' job performance)

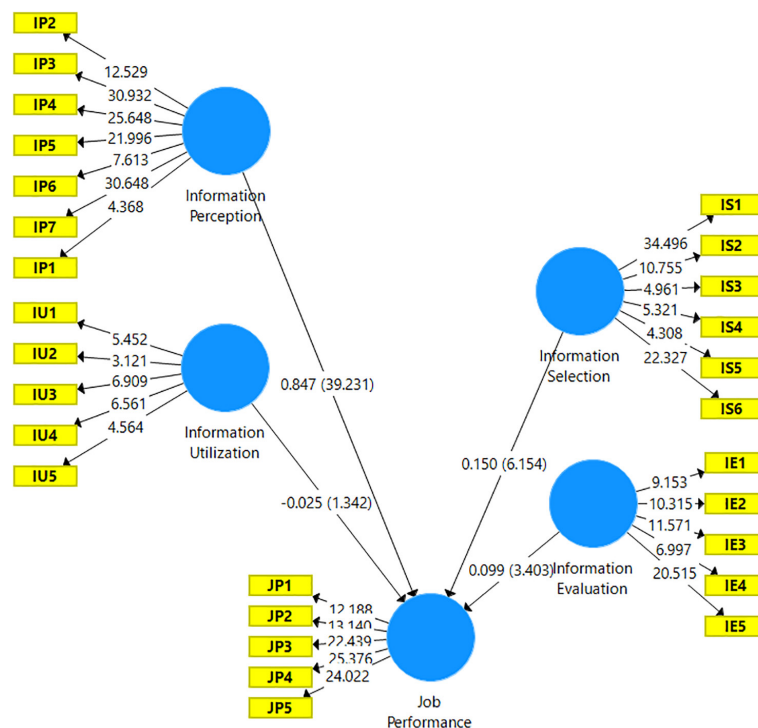


Figure 5: The results of examining research hypotheses

Table 8: Hypotheses, Path coefficient, T-Value and P-Values

Hypothesis number	Hypothesis	Path coefficient	T-values	P-values
1	There is an association between Information Perception and Job Performance of teachers.	0.87	40.23	0.001
2	There is an association between Information Selection and Job Performance of teachers.	0.13	5.69	0.001
3	There is an association between the Information Utilization and Job Performance of teachers.	-0.01	1.10	0.260
4	There is an association between Information Evaluation and Job Performance of teachers.	0.70	2.70	0.008

Hypotheses 1, 2 and 4 are significant due to the significance level of 0.01, and that t-statistic is higher than 1.96, but Hypothesis 3 is not significant.

The results showed that information perception, information selection, and information evaluation had positive and significant associations with job performance, while information utilization had no significant relationship with job performance. These findings suggest that teachers who have higher levels of information literacy tend to perform better in their jobs.

The first hypothesis was “There is a positive and significant association between information perception and job performance of primary school teachers.” This finding is consistent with those of the studies conducted

by Bineshian et al. (25), Kanafchian Langroudi (35), Chang (36) and Hsieh (37-40). Masoom (38) found that information perception was positively related to teacher performance, and teachers who perceived information more effectively tended to design effective lesson plans, implement innovative teaching methods, and assess student learning outcomes. Van der Heijden et al. (39) found that information perception was one of the factors that influenced their job commitment and that teacher who perceived information more critically and creatively tended to perform better in their teaching tasks. Raza

and Ahmed (40) found that information perception was one of the dimensions that measured their self-perception, and that teachers who perceived information more accurately and comprehensively tended to be more confident and proactive in initiating and implementing changes in their schools. These studies suggest that information perception is an important skill for primary school teachers to enhance their job performance and contribute to the improvement of the educational system. According to Jarodzka et al. (41), information perception implies the interpretation and meaning of sensory information, which affects the teacher's behavior and performance in the classroom.

The second hypothesis was "There is a positive and significant association between information selection and job performance of primary school teachers. This finding is in the same line with those of previous studies by Fraillon, Schulz & Ainley (42), Cassell and Hiremath (43), Asaloei et al. (44), and Enrique Hinostroza (45). The literature also supports the idea that information selection is a crucial skill for teachers to enhance their job performance and lower their work stress. Asaloei et al. (44) reported that work-related stress had a negative impact on teachers' job performance and advised that teachers should select relevant and reliable information sources to handle their work demands. In the same way, Enrique Hinostroza (45) claims that the 21st century skills, which comprise information selection, are vital for teachers to deal with the challenges of the K-12 program and the Basic Education. Moreover, Looney (46) stressed the role of teacher appraisal and feedback in improving teachers' information selection and use, as well as their learning and innovation skills. Thus, it can be concluded that information selection is positively and significantly related to job performance of primary school teachers. Wolomasi et al. (47) suggested that information selection should be an important skill for elementary school teachers to succeed in their profession.

The third hypothesis suggested that there was a positive and significant relationship

between evaluating information sources and job performance of primary school teachers. The results agree with the studies by Nemati et al. (48), Feng et al. (49), Pinto, Escalona-Fernández, Pulgarín (50) and Lloyd and Bassett-Jones (51). Pinto, Escalona-Fernández, and Pulgarín (50) found that information literacy skills, such as evaluating information sources, improved the performance of participants in Hong Kong. The study of Lloyd and Bassett-Jones (51) showed that information literacy helped the participants to evaluate the reliability and validity of information sources, such as maps, weather reports, and radio communications, which were essential for their decision making and problem solving in emergency situations. These studies indicate that evaluating information sources is a key aspect of information literacy that can boost the job performance of professionals in various fields. Information evaluation means the ability and power of the teacher to analyze, evaluate and correct information, and use it to solve problems and challenges in the classroom (52, 53). The complexity and diversity of information sources demand teachers with a high quality of information evaluation as they need to assess the validity, reliability, relevance, accuracy, timeliness, and bias of the information they use (54-57).

The fourth hypothesis states that there is no significant association between information utilization and job performance of primary school teachers. The findings are consistent with previous studies carried out by Pa-alisbo (58), Murithi and Yoo (59), and Sánchez et al. (60), who also found no significant relationship between teachers' skills in using ICT and their job performance. These studies suggest that the use of ICT in education is not sufficient to improve the teachers' performance, and that other factors such as pedagogical abilities, training, and support are also essential. Information utilization refers to the process of applying and communicating information, which affects the teacher's creativity and innovation in the classroom. However, the lack of association

between information utilization and job performance may be influenced by various factors, such as teacher's attitude, motivation, self-efficacy, or contextual barriers (61, 62). Information utilization is a crucial skill for primary school teachers as it can help them to enhance their job performance and contribute to the improvement of the educational system (63). One way to facilitate information utilization is the use of ICT in education. ICT can provide access to diverse and updated information sources, support constructivist and collaborative learning, and foster 21st-century skills among teachers and students (64). However, the effective use of ICT in education also faces some challenges and barriers, such as lack of ICT facilities, lack of teacher training and support, lack of time, and lack of pedagogical integration (65, 66). These factors need to be addressed to maximize the benefits of ICT for information utilization in education.

Limitations and Suggestions

This study has some limitations that need to be acknowledged and addressed in future research. Firstly, this study used a self-administered questionnaire to measure the information literacy and job performance of primary school teachers, which may introduce some biases, such as social desirability, acquiescence, or recall errors. Future studies may use other methods, such as observation, interview, or test, to assess the information literacy and job performance of teachers more objectively and comprehensively. Secondly, this study used a cross-sectional design to examine the association between information literacy and job performance, which cannot establish causality or directionality of the relationship. Future studies may use a longitudinal or experimental design to test the causal effect of information literacy on job performance or vice versa. Thirdly, this study focused on primary school teachers in Naqhadah city, which may limit the generalizability of the findings to other contexts or populations. Future studies may replicate this study in other cities, regions, or

countries, or with other levels of education or types of teachers, to compare and contrast the results and explore the possible factors that may influence the relationship between information literacy and job performance.

Conclusion

This study aimed to investigate the effect of information literacy components on the job performance of primary school teachers in Naqhadah. The results showed that information perception, information selection, and information evaluation had positive and significant associations with job performance, while information utilization had no significant relationship with job performance. These findings suggest that teachers who have higher levels of information literacy tend to perform better in their jobs. This study contributes to the literature on information literacy and teacher education by providing empirical evidence on the relationship between information literacy and job performance of primary school teachers. Also, the results have some implications for practice and policy by highlighting the importance of developing and enhancing information literacy skills among teachers to improve their professional competence and quality of education.

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Authors' Contribution

FM and MB conceived and designed the study. MB collected the data and wrote the introduction section. FM wrote the method, result and discussion sections. FM and MB revised the manuscript. All authors approved the final manuscript.

Conflict of Interest

None declared.

Ethical Considerations

This study obtained approval from the

Research Ethics Committee of University of Tabriz (IR.TABRIZU.REC.1402.056) The present study was conducted with the consent of all participants and without any organizational financial support. All participants were fully aware of the nature and confidentiality of the study and were told in advance that the information provided by them would be kept confidential.

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References

- 1 Schement JR. Tendencies and tensions of the information age: production and distribution of information in the United States. UK: Routledge; 2018.
- 2 Webster F. Theories of the information society. UK: Routledge; 2014.
- 3 Černý M. Searching for a definition of information literacy as a socially cohesive component of community: a complementarity of experts and student approach. *Soc Sci.* 2022;11(6):235. doi: 10.3390/socsci11060235.
- 4 Alvarez León LF. Architectures of the information age. *J Cult Econ.* 2017;10(2):217-22. doi: 10.1080/17530350.2016.1242432.
- 5 Mohammadi Zeitouni B. The impact of information and communication technology on improving human performance (case study: Asian insurance company). *J Dev Capital.* 2020;5(1):93-109. doi: 10.22103/jdc.2019.12585.1053.
- 6 Mahmoodi F, Mola S. Assessing the attainment of 21st century basic skills by engineering students of Tabriz University. *Iran J Eng Educ.* 2016;18(69):19-38. doi: 10.22047/ijee.2016.14757.
- 7 Lukinskiy V, Lukinskiy V, Ivanov D, Sokolov B, Bazhina D. A probabilistic approach to information management of order fulfilment reliability with the help of perfect-order analytics. *Int J Inf Manag.* 2023 Jan;68:102567. doi: 10.1016/j.ijinfomgt.2022.102567.
- 8 Khademizadeh S, Faraj Pahloo A, Badenorouz M. Information literacy framework 2016 in assessing information literacy of graduate students (case study: students of Shahid Chamran University of Ahvaz). *Libr Inf Sci.* 2020;10(1):185-204. doi: 10.22067/RIIS.V0I0.81781.
- 9 Amiri J, Zabolizadeh A, Karami Nomivandi S. Solutions for Increasing Teachers' Media and Information Literacy. *Media Stud.* 2020;14(46):21-7. [In Persian]
- 10 Khaleghi N, Siamak M, Khansari J. Information literacy skills training. Qom: Qom University Press; 2013.
- 11 Information for All Program. 2008. Available from: www.UNESCO.org.
- 12 Allen E, Seaman J. Going the distance: online education in the United States, 2011. Babson Survey Research Group; 2011.
- 13 Li LY, Chen GD, Yang SJ. Construction of cognitive maps to improve e-book reading and navigation. *Comput Educ.* 2013;60(1):32-9. doi: 10.1016/j.compedu.2012.07.010.
- 14 Grizzle A, Calvo MCT. Media and information literacy policy and strategy guidelines. Paris (France): UNESCO; 2013.
- 15 Gregory L, Higgins S. Critical information literacy in practice: a bibliographic review essay of critical information literacy, critical library pedagogy handbook, and critical literacy for information professionals. *Commun Inf Lit.* 2017;11(2):10. doi: 10.15760/comminfolit.2017.11.2.10.
- 16 Feng L, Jih-Lian HA. Effects of teachers' information literacy on lifelong learning and school effectiveness. *Eurasia J Math Sci Technol Educ.* 2016;12(6):1653-63. doi: 10.12973/eurasia.2016.1575a. PubMed PMID: 27965554; PubMed Central PMCID: PMC5146985.
- 17 Feast V. Integration of information literacy skills into business courses. *Ref Serv Rev.* 2003;31(1):87-95. doi: 10.1108/00907320310462150. PubMed PMID: 12702453.
- 18 Laverty C, Reed B. Inspired teachers:

- providing a classroom context for information literacy theory and practice. Chicago (IL): Association of College and Research Libraries; 2006.
- 19 Coşkun YD, Demirel M. Lifelong learning tendency scale: the study of validity and reliability. *Procedia Soc Behav Sci*. 2010;5:2343-50. doi: 10.1016/j.sbspro.2010.07.461.
 - 20 Kark R, Van Dijk D, Vashdi DR. Motivated or demotivated to be creative: the role of self-regulatory focus in transformational and transactional leadership processes. *Appl Psychol*. 2018;67(2):186-224. doi: 10.1111/apps.12122. PubMed PMID: 29702954.
 - 21 Solmaz DY. Relationship between lifelong learning levels and information literacy skills in teacher candidates. *Univers J Educ Res*. 2017;5(6):939-46. doi: 10.13189/ujer.2017.050605.
 - 22 Naveed MA, Iqbal J, Asghar MZ, Shaukat R, Seitamaa-Hakkarainen P. Information literacy as a predictor of work performance: the mediating role of lifelong learning and creativity. *Behav Sci (Basel)*. 2023 Jan 12;13(1):24. doi: 10.3390/bs13010024. PubMed PMID: 36646303; PubMed Central PMCID: PMC9854777.
 - 23 Xu A, Chen G. A study on the effects of teachers' information literacy on information technology integrated instruction and teaching effectiveness. *Eurasia J Math Sci Technol Educ*. 2016;12(2):335-46. doi: 10.12973/eurasia.2016.1222a.
 - 24 Rahimi H, Yazdkhasti A, Feizi Z. Status of information literacy among normal and smart school teachers in Kashan. *Inf Syst Serv*. 2014;2(2):91-102.
 - 25 Alinejad M, Sarmadi MR, Zandi B, Shobiri M. The level of information literacy and its role in the process of teaching students e-learning. *Inf Res Public Libr*. 2011;17(2):337-71.
 - 26 Nunnally JC. *Psychometric theory*. 3rd ed. New York: McGraw-Hill; 1978.
 - 27 Vinzi VE, Chin WW, Henseler J, Wang H, editors. *Handbook of partial least squares*. Berlin: Springer; 2010.
 - 28 Bineshian B, Zarahsaz M, Mohammad HN. The role of information literacy in taking advantage of various teaching approaches for primary school teachers. *Libr Inf Sci*. 2020;10(1):223-50. doi: 10.22067/RIIS.V0I0.80586.
 - 29 Black W, Babin BJ. Multivariate data analysis: its approach, evolution, and impact. In: Hair JF Jr, editor. *The great facilitator: reflections on the contributions of Joseph F. Hair, Jr. to marketing and business research*. Cham: Springer International Publishing; 2019. p. 121-30.
 - 30 Zandi G, Shakhim FR, Mohamed Z, Alshargawi AS. Comparison between the conventional partial least squares (PLS) and the robust partial least squares (RPLS-SEM) through Winsorization approach. *J Inf Technol Manag*. 2022;14(4):87-94. doi: 10.22059/JITM.2022.88291.
 - 31 Mohammadi F, Mahmoodi F. Factors affecting acceptance and use of educational wikis: using technology acceptance model (3). *Interdiscip J Virtual Learn Med Sci*. 2019;10(1):5-9. doi: 10.5812/ijvlms.87484.
 - 32 Abbaszadeh M, Amani Sari Begloo J, Khezri Azar H, Pashou G. *Introduction to structural equation modeling by PLS method and its application in behavioral sciences*. Urmia: Urmia University Press; 2012. [In Persian]
 - 33 Davari A, Rezazade A. *Structural equation modeling with PLS software*. Tehran: University Jahad; 2013.
 - 34 Fornell C, Larcker DF. Evaluating structural equations models with unobservable variables and measurement error. *J Mark Res*. 1981;18(1):39-50. doi: 10.1177/002224378101800104.
 - 35 Dijkstra TK, Henseler J. Consistent and asymptotically normal PLS estimators for linear structural equations. *Comput Stat Data Anal*. 2015;81:10-23. doi: 10.1016/j.csda.2014.07.008.
 - 36 Kanafchian M. Investigation of the relationship between information technology (information literacy) and job performance of girls' elementary

- school teachers in District 1 of Bandar Abbas [dissertation]. Bandar Abbas (Iran): Islamic Azad University, Bandar Abbas branch; 2015.
- 37 Chang I. The effect of principals' technological leadership on teachers' technological literacy and teaching effectiveness in Taiwanese elementary schools. *Educ Technol Soc.* 2012;15(2):328-40.
 - 38 Hsieh KJ. Preservice teachers' attitudes and opinions towards interactive whiteboards and e-textbooks. In: Lin S, Huang X, editors. *Advances in computer science, environment, eco informatics, and education.* 2011;6(217):362-6. doi: 10.1007/978-3-642-23339-5_66.
 - 39 Masoom MR. Teachers' perception of their work environment: evidence from the primary and secondary schools of Bangladesh. *Educ Res Int.* 2021;2021:4787558. doi: 10.1155/2021/4787558. PubMed PMID: 34462661; PubMed Central PMCID: PMC8390157.
 - 40 Van der Heijden HR, Beijgaard D, Geldens JJ, Popeijus HL. Understanding teachers as change agents: an investigation of primary school teachers' self-perception. *J Educ Change.* 2018 Aug;19(3):347-73. doi: 10.1007/s10833-018-9320-9.
 - 41 Raza SA, Ahmed N. Measuring employees' commitment through job satisfaction: perception of public primary school teachers. *Bull Educ Res.* 2017;39(1):129-44.
 - 42 Jarodzka H, Skuballa I, Gruber H. Eye-tracking in educational practice: investigating visual perception underlying teaching and learning in the classroom. *Educ Psychol Rev.* 2021 Mar;33(1):1-20. doi: 10.1007/s10648-020-09565-7.
 - 43 Fraillon J, Schulz W, Ainley J. *International computer and information literacy study: assessment framework.* Amsterdam: IEA; 2013.
 - 44 Cassell KA, Hiremath U. *Reference and information services.* 3rd ed. Chicago: Neal-Schuman; 2013.
 - 45 Asaloei SI, Wolomasi AK, Werang BR. Work-related stress and performance among primary school teachers. *Int J Eval Res Educ.* 2020;9(2):352-8. doi: 10.11591/ijere.v9i2.20335.
 - 46 Enrique Hinostroza J. New challenges for ICT in education policies in developing countries: the need to account for the widespread use of ICT for teaching and learning outside the school. In: *ICT-supported innovations in small countries and developing regions: perspectives and recommendations for international education.* 2018:99-119. doi: 10.1007/978-3-319-67657-9_5.
 - 47 Looney J. Developing high-quality teachers: teacher evaluation for improvement. *Eur J Educ.* 2011 Dec;46(4):440-55. doi: 10.1111/j.1465-3435.2011.01492.x.
 - 48 Wolomasi AK, Asaloei SI, Werang BR. Job satisfaction and performance of elementary school teachers. *Int J Eval Res Educ.* 2019;8(4):575-80. doi: 10.11591/ijere.v8i4.20264.
 - 49 Nemati Anaraki D, Ziaieparvar H, Sadeghi J. Assessing the information literacy of radio news employees in the digital age audiovisual media. *J Audiovis Media.* 2021;2(34):167-90. doi: 10.22085/javm.2020.204104.1411.
 - 50 Feng L, Jih-Lian HJ. Effects of teachers' information literacy on lifelong learning and school effectiveness. *Eurasia J Math Sci Technol Educ.* 2016;12(6):1653-63. doi: 10.12973/eurasia.2016.1575a. PubMed PMID: 27965554; PubMed Central PMCID: PMC5146985.
 - 51 Pinto M, Escalona-Fernández MI, Pulgarín A. Information literacy in social sciences and health sciences: a bibliometric study (1974–2011). *Scientometrics.* 2013;95(3):1071-94. doi: 10.1007/s11192-012-0899-y.
 - 52 Lloyd GC, Bassett-Jones N. Does Herzberg's motivation theory have staying power? *J Manag Dev.* 2005;24(10):929-43. doi: 10.1108/02621710510627064.
 - 53 Fitzgerald MA. Evaluating information: an information literacy challenge. *Sch*

- Libr Media Res. 1999;2:1-23.
- 54 Pierce R. Evaluating information: validity, reliability, accuracy, triangulation. *Pierce: Research Methods in Politics*; 2008. P. 79-99.
 - 55 Grizzle A, editor. *Media and information literacy curriculum for teachers*. Paris: UNESCO; 2011.
 - 56 Van Der Schaaf M, Slof B, Boven L, De Jong A. Evidence for measuring teachers' core practices. *Eur J Teach Educ*. 2019;42(5):675-94. doi: 10.1080/02619768.2019.1652903.
 - 57 Peña-López I. Creating effective teaching and learning environments: first results from TALIS. In: OECD. *Creating effective teaching and learning environments: first results from TALIS*. Paris: OECD Publishing; 2009. p. 13-36.
 - 58 Pa-alisbo MA. The 21st century skills and job performance of teachers. *Online Submission*. 2017;8(32):7-12.
 - 59 Murithi J, Yoo JE. Teachers' use of ICT in implementing the competency-based curriculum in Kenyan public primary schools. *Innovation Educ*. 2021;3(1):1. doi: 10.1186/s42862-021-00012-0.
 - 60 Sánchez J, Salinas A, Harris J. Education with ICT in South Korea and Chile. *Int J Educ Dev*. 2011;31(2):126-48. doi: 10.1016/j.ijedudev.2010.03.003.
 - 61 Kozma RB. Learning with media. *Rev Educ Res*. 1991;61(2):179-211. doi: 10.3102/00346543061002179.
 - 62 Piper B, Jepkemei E, Kwayumba D, Kibukho K. Kenya's ICT policy in practice: the effectiveness of tablets and e-readers in improving student outcomes. *FIRE Forum Int Res Educ*. 2015;2(1):3-18. doi: 10.18275/fire201502011025.
 - 63 Murithi J, Yoo JE. Teachers' use of ICT in implementing the competency-based curriculum in Kenyan public primary schools. *Innovation Educ*. 2021;3(1):1. doi: 10.1186/s42862-021-00012-0.
 - 64 UNESCO Institute for Information Technologies in Education. *ICT in primary education: analytical survey*. 2nd ed. Paris: UNESCO; 2012.
 - 65 Clark RE. Reconsidering research on learning from media. *Rev Educ Res*. 1983;53(4):445-59. doi: 10.3102/00346543053004445.
 - 66 Tonui B, Kerich E, Koross R. An investigation into implementation of ICT in primary schools, in Kenya, in the light of free laptops at primary one: a case study of teachers implementing ICT into their teaching practice. *J Educ Pract*. 2016;7(13):12-16.