



Comparing the efficacy of school teachers on teaching-learning process on smart and ordinary schools of Bojnourd

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ARTICLE INFO

Article history:

Received: 16 September 2013;

Received in revised form:

28 October 2013;

Accepted: 4 November 2013;

Keywords

Smart schools,
Teaching - learning process,
Information and communication
Technology and
School administrators.

ABSTRACT

The purpose of this paper is comparing the role of teachers on teaching - learning process in ordinary and smart schools of Bojnourd (the center of north-eastern province of Iran). This type of survey and the questionnaire as a data collection tool is a cross-sectional study. This study was based upon descriptive-measuring model and due to its objective is categorized in functional research group. The population of the study including the teachers, girls and boys of middle school and high schools are in Bojnourd during Spring-2013. Cochran's formula for determining the sample size and the method used are stratified random sampling. It was found that the reliability obtained was high. The data was analyzed using descriptive statistics for the analytical tests such as correlation analysis, analysis of variance and Tukey test. The statistical analyses used are SPSS and Microsoft Excel. The effect of variables such as attitudes toward technology, job outlook and teachers' teaching methods in teaching-learning process are also investigated in this paper.

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Introduction

Since teachers are powered by the development of human resources in the educational system, they are the beginning of great changes in science and the future. Therefore, it is essential that the dimensions and angles of the education system to be studied more accurately in order to move towards smart schools. The teachers' skill in using ICT as an important factor to be considered is the use of this technology.

According to WHO data in 2009, the proportion of traditional education and modern education based on technology of information and communication is 25 to 75 percent (ZARE, 1387).

Education experts believe that the traditional methods and subject-based teacher-centered instruction the goal of which is remembering and filling the mind and relying on reserved does not respond to the educational needs.

There are two different approaches on the impact of ICT on education (schools in particular): some believe that it is simply a gradual transfer of new technologies into traditional curriculum and actually making it more efficient, and causing faster access to the information so that log into information technologies will transform not only education but also will strengthen the conservative tradition leads. Another approach believes that logging in ICT in schools makes fundamental changes in education and tools. From this perspective, the information technology is transcending the boundaries of traditional education system. The advantage of this approach over traditional methods of teaching information technology is revealed. But it is important to note that in addition to helping to create a revolution in the education of ICT we must try to change the culture of teaching and learning.

Smart school is a school-based management which controls technologies and computer networks as well as the content of the e-lessons, and is also an intelligent monitoring and evaluation system.

Smart school is designed to create an environment of teaching and learning system of school management and to educate students. In fact, the use of information technology in higher education in the country beside the emphasis on thinking skills and providing an optimal learning environment, teaching school are strategies and policies of smart school students. The responsibility for teaching is the role of smart school students, based on student-centered teaching methods. Emphasis on thinking skills, learning strategies, and teaching environments provide the guidelines of smart schools.

Silverman has presented two emphasized concepts of educational technology: 1) the relative educational technology that relies on the methods and tools 2) the educational technology that analyzes structural issues, education, the product of evaluation and the selection of tools and the means of production, in terms of achieving the desired educational outcomes.

Alan Kay notes that computer is the multimedia tool that can do other the task of other media. He states that "The structure of written material, images, audio, and animated images that traditional media was almost undetectable tampering, now are completely customizable by word processors, desktop printing devices, digital multimedia and imaging systems".

Maness and Olson did research on technology developments in the school and expressed that technology can stimulate teachers and students to engage in more complex tasks and subjects, to support teachers to become information transformers, not just the players. Any definition of ICT is to enable learners to use knowledge, skills and understanding of ICT in other fields as well as in real life (Brown et al).

The use of ICT in teaching-learning process is to improve the quality of teaching and learning practices (Cox -2004). ICT is a tool to facilitate the teaching-learning process, to develop active learning sphere and partnership between learners which

ultimately leads to constant learning (Clary & Shenks, 1995). Pony (2007) states that one of the objectives of ICT, in the educational system, is the acquisition of digital qualification and higher levels of competency; happening in network societies and real life.

Operational definition of variables

Attitude towards Technology

Today teachers are seen more as an advisor, who has the students find an appropriate response to the needs of their information and to be able to judge about the quality of the data obtained and share their information. To fulfill this role, appropriate new methods of teaching and teacher information literacy skills are required to enable computer application as PC users.

Teaching

It is the interaction or the behavior between the teacher and the students, based on systematic and targeted objectives for change in student behavior. It encompasses the teaching of concepts such as views, attitudes, beliefs, customs and practices, and general behavior of the students we want to change (Mirza Mohammad, 2004).

Lesson Plan

It is a document that plans different components of the educational process of active participation of students to achieve educational goals. Lesson plan is organized for teaching and is the structural map of educational activities for the general guidance and its concepts, objectives, educational opportunities and methods of evaluation of a specific curriculum plan.

The ordinary and smart schools teacher's Characteristics

The smart school teachers' characteristics include: familiarity with modern educational technologies, orientation with new teaching methods, projects, lesson plan efficacy, attitude to the effectiveness of the technology and the amount and the use of computer application during the day and during active learning curriculum. It is stipulated that the type of the recipient's learning during the production of educational concepts have active participation (Journal of Science, 2001). Methods based on the basic and fundamental contributions can be regarded as an effective approach in the process of creating an active learning. Especially, if its new methods in teaching, if necessary, are combined with traditional methods of Q and A (question and answer) which can be considered as an effective academic achievement. This in turn will issue a plan for students' local community and subculture. The viewpoints of the communities towards information technology may pose one of the most important issues in the development of the smart schools. Considering no perceived lightness of a task of information technology in education, and no effect in increasing students' learning provides no support for the smart school concept.

Research Questions

The local community and subculture views on community of information technology can be amongst issues affecting the development of smart schools which needs to be considered. The researchers plan to find new problems in schools in deprived areas with their own culture and tries to find answers to these questions:

Is there a difference between the personal characteristics (attitudes towards technology, teaching methods and Job outlook) of smart school teachers and ordinary school teachers?

Is the teaching and learning process of educational technology as well as its concepts enjoyable for the students?

Can the level of digital literacy and access to technology such as the Internet affect the amount of interest in smart schools?

Are teachers' expectations of pupils worthy of an intelligent response?

Are new trends in the field of education into schools smart?

How effective was the inadequacy of trained manpower on the purpose of educational objectives?

The researchers are trying to consider cases that have been counted and the results obtained after doing this project in Iran, apply the findings in the newly established State which is limited in IT infrastructure and the lack of belief in the usefulness of the training program.

The implementation of the procedure for information technology can be used with the integration of the curriculum and the learning of effective methods in the educational system, as well as curricula and teaching methods and techniques. The efficiency of the educational system will come back. Besides, the education system will focus on smart education in terms of attracting the authorities' attention toward the importance and the necessity of building smart schools in accordance with local needs and conditions. Moreover, the views on smart schools, their policies and objectives will be corrected. I hope that, with regard to the functional goals, suggestions are presented for planning is tapping the county's schools administrators.

Method

The study is a kind of Research survey and research's specific time, a cross-sectional study. The data collection tool is a questionnaire made by the researcher. Its validity and reliability have been confirmed by experts and professionals, its alpha coefficients scores is between 0.69 & 0.8.

The questionnaires is based on Likert Scale that included anthropometric scaling method to common belief, the responses of 5 items on a scale of very high, high, medium, low, very low to measure the respondents attitudes. The population of this research project includes school teachers and girls and boys of middle and high schools in Bojnourd.

To achieve the objectives of the frequency of Cochran's formula for determining the sample size of the method stratified random sampling was used.

This study will be conducted in three levels. At the level of a library the experimental results of previous studies and experiences of other countries are reviewed and in this regard, the experiences of other provinces through the review of the existing literature and research conducted on the Internet through existing sources are investigated to form the theoretical model of the survey.

In the second level the existing statistical sources are applied to study the existing status of schools. In this phase, through a visit to the offices and schools in Bojnourd, existing data can be collected in the field of educational potential.

In the next phase, the required data of 313 teachers are collected and analyzed. The population of this study was the teachers of smart and normal schools of middle and high schools in Bojnourd during spring of 2013.

It seems that the main problem of this study is the obtaining of data. It includes the provinces of North Khorasan which was recently established facing fundamental weaknesses in the field of data and information.

Conceptual Model

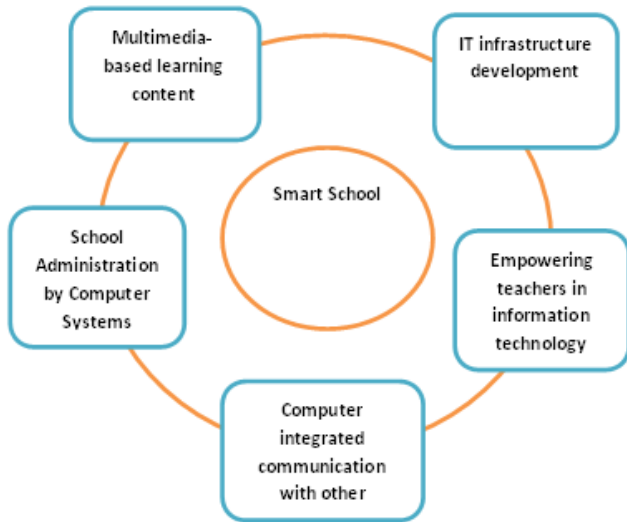


Figure 1. Smart school's Conceptual Model

1. Multimedia-based learning content
2. IT infrastructure development
3. Empowering teachers in information technology
4. Computer integrated communication with other
5. School Administration by Computer

I investigated the three main components namely the environment and learning of students based on multimedia content of smart schools, school management and teachers themselves in the field of information technology in the form of research assumptions. The other two cases, not always feasible, have the basic problem of being non-existent infrastructural technology and facilities, and the use of technology.

Genesis History Project of Smart Schools

In 1984, David Perkins and his colleagues presented the idea of the smart schools project as a new experience in the education program, with the use of information and communication technology. The term teaching and learning in their pervasive application, the first time appeared in Malaysia in 1997 with emphasis on preparing students for entry into the information age. In England, the first smart school was founded in 1996 and today France can be cited as a successful country in this field. Countries like Ireland Egypt and Australia have set off efforts for smart schools.

After the entrance of computer industry to Iran and the growth and influence of the personal computer among different groups of people, activity in the field of computer-based training began, not more than 10 years ago. Besides, with the production of educational CDs, new movement in education has started.

From the second half of the year 2000, more serious approaches to this concept initiated and operational activities in the field of Internet education began to provide training courses in the corners of the country's education. So the fact that according to the legislation of the Ministry of communications & information technology training in 2004 pilot smart schools started to delegated education organizations in Tehran.

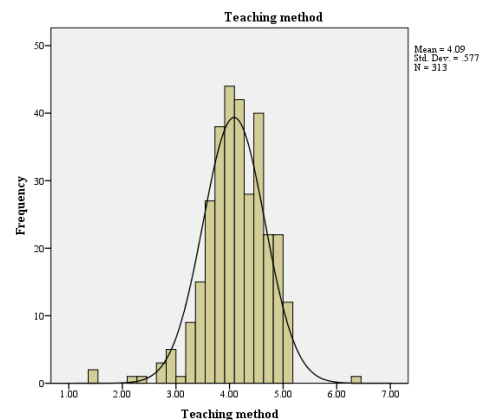
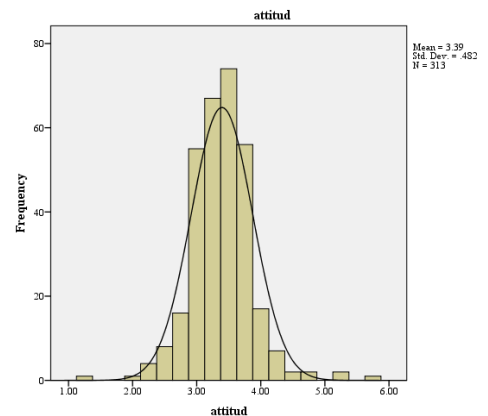
In accordance with the operational plan for the implementation of the fifth developmental plan in Iran by the ministry of education, all schools in the country must, by the end of the year 2015, be set in the five stages of the smart education and schooling.

Table 1. Descriptive Statistics (Teachers 313 people)

Percent	Groups	Variable
37.4	male	Sex
62.6	female	
10.2	Diploma	Session
72.5	Bachelor	
16.6	MA	
0.6	PhD	
43.8	Humanities	Field of Study
34.8	Science	
14.1	Engineering	
2.6	Art	
4.8	English.	
2.9	Less than 5 Years	Experience
4.5	From 5 to 10 years	
6.7	From 10 to 15 years	
31.0	From 15 to 20 years	
55.0	years and over20	
13.7	Less than 6 computers (non-smart)	Type of school
33.2	6to 12 computers (semi-smart)	
53.0	More than 12 computers (smart)	

Table 2. Frequency distribution tables were based on the research variables

	Number	mean	Standard deviation	Minimum	Maximum
Use of Technology	313	3.1470	1.21323	1.00	5.00
Job outlook	313	3.3939	48156	1.25	5.85
Score of teaching methods	313	4.0851	57668	1.45	6.27
Attitudes to Technology	313	3.8470	59429	1.38	5.00



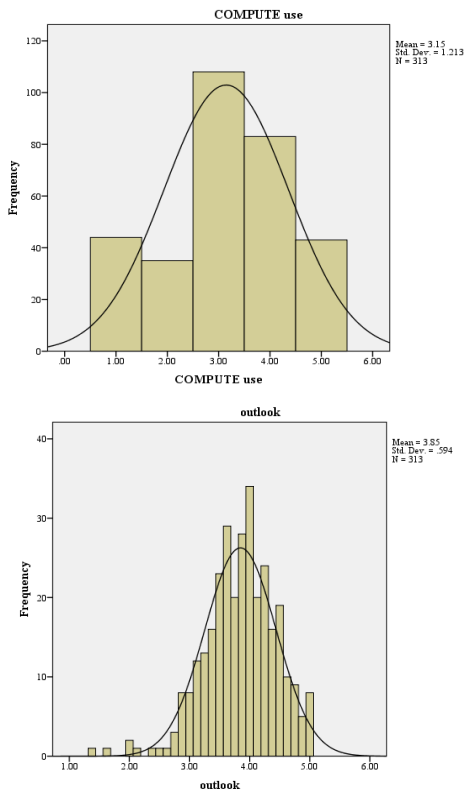


Figure 1. Histograms of the distribution in terms of the variables

Hypothesis 1: The use of technology has a significant relationship with job attitudes

Table 3. Table Pearson correlation test between job attitudes and the use of technology

		Job outlook
Use of Technology	Pearson	0.193
	significant	0.001
	Number	313

Note that the minimum amount is less than 0.05 significance level test, Pearson correlation is confirmed. The job outlook is significantly associated with the use of technology. It can be said that the correlation is weak in direct relationship with severity. The use of technology correlated with teachers' attitudes.

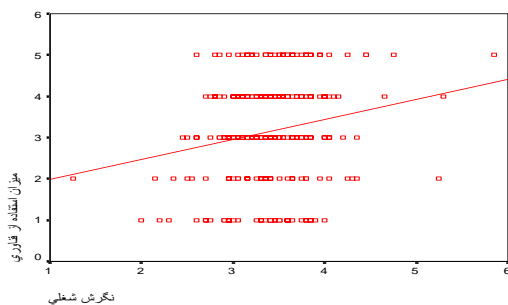


Figure 5. Diagram of distribution and job attitudes of IT

Hypothesis 2: The use of technology has a significant relationship with Teaching Methods.

Table 4. Table Pearson correlation test score teaching methods and use of technology

		Teaching Methods
Use of Technology	Pearson	0.191
	significant	0.001
	Number	313

Note that the minimum amount is less than 0.05 significance level test; Pearson correlation is confirmed. The teaching method has a significant relationship with attitudes toward technology. It can be said that the correlation is weak in direct relationship with severity. So, the higher the score, the greater the attitude towards technology and teaching methods will be.

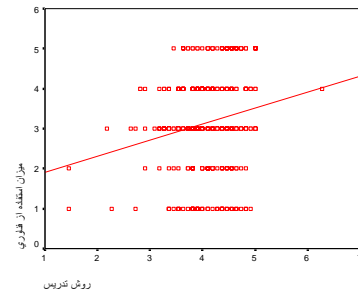


Figure 6. Scatter plot variables, the teaching methods and the use of technology

Hypothesis 3: The use of technology has a significant relationship with attitudes toward technology.

Table 5. Pearson correlation test table with the attitude towards the use of IT technology

		attitudes toward technology
Use of Technology	Pearson	0.532
	significant	0.000
	Number	313

Note that the minimum amount is less than 0.05 significance level test, Pearson correlation is confirmed. The use of technology has a significant relationship with attitudes toward technology. It can be said with regard to the correlation between direct and strong intensity. That is the more the positive attitude towards the use of IT technology, the more the use of IT.

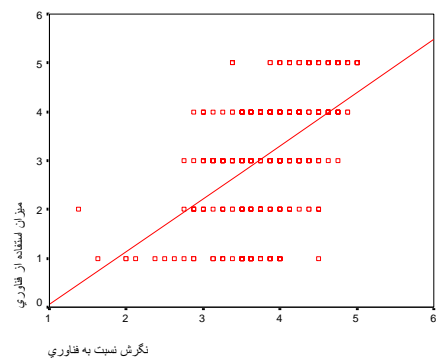


Figure 7. Scatter graphs with variable attitudes toward the use of IT technology

Hypothesis 4: Attitude has a significant business relationship with teaching methods.

Table 6. Table Pearson correlation test between the variables of job attitudes and teaching methods

		teaching methods.
attitudes toward job	Pearson	0.440
	Significant	0.000
	Number	313

Note that the minimum amount is less than 0.05 significance level test, Pearson correlation is confirmed. The teaching method has a significant relationship with job attitudes. It can be said with regard to the correlation between direct and strong intensity. The higher the score, the more professional attitude to teaching methods.

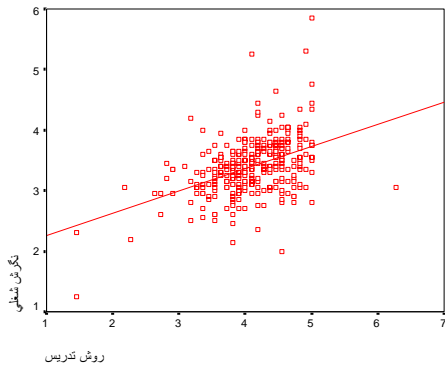


Figure 8. Scatter diagram of job attitudes and teaching methods

Hypothesis 5: Job attitudes are significantly related to their attitudes toward technology.

Table 7. Table Pearson correlation test Job attitudes and approach toward IT career

		attitudes toward technology
Job attitude	Pearson	0.441
	Significant	0.000
	Number	313

Note that the minimum amount is less than 0.05 significance level test, Pearson correlation is confirmed. The attitude towards technology has a significant relationship with job attitudes. It can be said with regard to the correlation between direct and strong intensity. The attitude toward teaching is positively related to professional attitude towards technology.

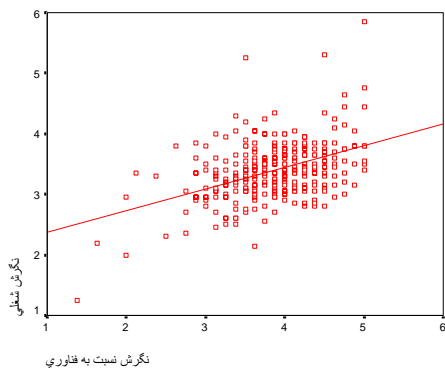


Figure 9. Scatter diagram approach and attitude toward IT career

Hypothesis6: Attitude toward teaching with technology is a significant relationship.

Table 8. Table Pearson correlation test attitudes toward technology with teaching method

		attitudes toward technology
teaching method	Pearson	0.611
	significant	0.000
	Number	313

Note that the minimum amount is less than 0.05 significance level test, Pearson correlation is confirmed. That is a significant relationship between attitudes toward teaching with technology. It can be said with regard to the correlation between direct and strong intensity. The higher the score, the more teaching attitude towards technology.

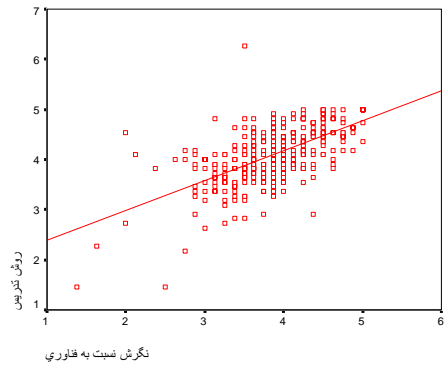


Figure 10. Scatter plot of variables on attitude toward technology with teaching methods

Hypothesis 7- teachers' use of technology in schools is significantly different in ordinary and smart schools

Table 9. Descriptive Statistics and Analysis of Variance Table use of technology in smart schools.

use of technology	Number	Mean	Standard deviation	TestF	significant
Less than 6 computers (non-smart)	43	3.1628	1.41304	7.171	0.001
6to 12 computers (semi-smart)	104	2.7981	1.14383		
More than 12 computers (smart)	166	3.3614	1.15552		
Total	313	3.1470	1.21323		

As the amount of the lowest significance level is 0.05 and F-test is less than assumed equality of teachers in the usage of different schools is rejected, i.e. it can be said that teachers used technology at smart and normal schools differently and there are significant differences. To check the type of the difference between the uses of technology, Tukey test was applied.

Table 10. Table Tukey test of the intelligent use of technology in schools

	Number	Subset for alpha = 0.05	
		1	2
6to 12 computers (semi-smart)	104	2.7981	
Less than 6 computers (non-smart)	43	3.1628	3.1628
More than 12 computers (smart)	166		3.3614
Significant		0.139	0.554

Tukey interpreted test shows the level of technology used by teachers of schools revealing that having between 6-12 computers at schools or more than 12 is significant and that the level of computer technology for schools is not significant with less than 6 computers and with two other groups.

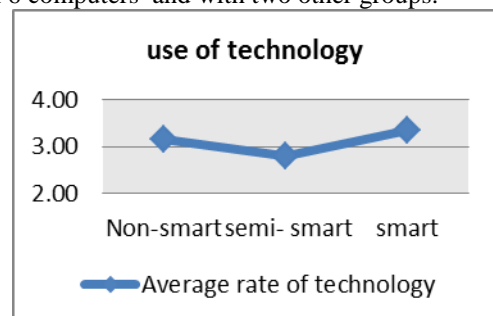


Figure 11. Diagram of a broken line of use of technology in smart schools

Hypothesis 8 - Job Attitudes of teachers in different schools in terms of intelligence is significant.

Table 11. Descriptive Statistics and Analysis of Variance Table of job attitudes in smart schools

Job Attitudes	Number	Mean	Standard deviation	TestF	significant
Less than 6 computers (non-smart)	43	3.5581	0.61013	3.060	0.048
6to 12 computers (semi-smart)	104	3.3495	0.48289		
More than 12 computers (smart)	166	3.3792	0.43555		
Total	313	3.3939	0.48156		

Regarding the amount of the lowest significance level being less than 0.05 and F-test; the assumption of equality in various schools of attitude rate is rejected, i.e. it can be said that there are significant differences in the rate of job attitudes of teachers in different schools in terms of smartness. Tukey test is used to check the type of the difference.

Table 12. Table Tukey test of intelligence in school, work attitude

	N	Subset for alpha = 0.05	
		1	2
6to 12 computers (semi-smart)	104	3.3495	
Less than 6 computers (non-smart)	166	3.3792	3.3792
More than 12 computers (smart)	43		3.5581
significant		0.921	0.054

Tukey interpreted test indicates the amount of job attitudes of teachers of schools that have between 6 to 12 computers or have less than 6 is significant and the level of computer technology at schools having more than the other two groups with 12 computer showed significant differences.

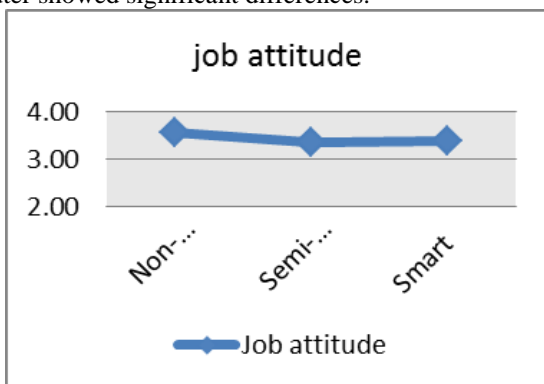


Figure 12. Broken line graph of job attitudes in terms of level of intelligence of school

Hypothesis 9) the way teachers teach in different schools in terms of intelligence is significant.

Regarding that the lowest amount of significance of F-test is more than 0.05, the assumption of equality of teaching method at different schools is not rejected. So it can be claimed that teachers' scores did not show significant differences with regard to their smartness.

Table 13. Descriptive statistics and analysis of variance table of the teaching methods in smart schools.

teaching methods	Number	Mean	Standard deviation	TestF	significant
Less than 6 computers (non-smart)	43	4.2368	0.56500	2.813	0.062
6to 12 computers (semi-smart)	104	3.9965	0.57173		
More than 12 computers (smart)	166	4.1013	0.57647		
Total	313	4.0851	0.57668		

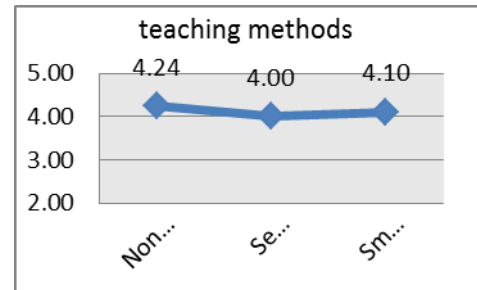


Figure 13. Chart cursive the way teachers teach in different schools in terms of intelligence

Hypothesis 10) teachers' attitudes toward technology in the various schools of intelligence is significant.

Table 14. Descriptive Statistics and Analysis of Variance Table intelligent approach to technology in schools.

teachers' attitudes toward technology	Number	Mean	Standard deviation	Test F	significant
Less than 6 computers (non-smart)	43	3.9651	0.64971	4.060	0.018
6to 12 computers (semi-smart)	104	3.7163	0.58817		
More than 12 computers (smart)	166	3.8983	0.57218		
Total	313	3.8470	0.59429		

Regarding the fact that the amount of the least meaningful level of f-test is less than 0.05, the assumed equality of attitudes toward ICT in schools has been rejected; so it can be said that the amount of attitude toward technology at different schools show significant differences. To study the types of the difference, the Tukey test has been applied.

Table 15. Table Tukey test of attitudes toward technology in Smart School

Level of intelligence	N	Subset for alpha = 0.05	
		1	2
6 to 12 computers (semi-smart)	104	3.7163	
More than 12 computers (smart)	166	3.8983	3.8983
Less than 6 computers (non-smart)	43		3.9651
Significant		0.135	0.761

The Tukey interpreted test reveals that the attitudes scale is meaningful between schools which have between 6-12 computers and schools which have fewer than 6 computers. And the rate of computers use among schools which have more than 12 computers is different with the two other groups.

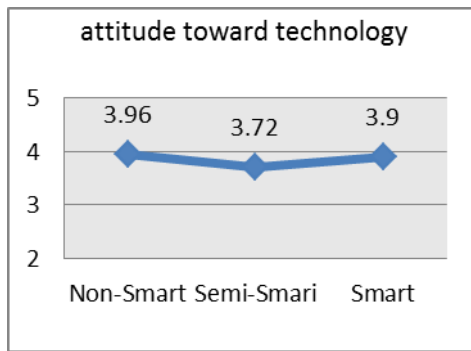


Figure 14. Chart of cursive attitude of intelligent technology in schools

The findings in the case of H1 implies that the more the amount of the use of IT, the more job attitude. The findings about the hypothesis two imply that the more positive the attitude, the higher the scores of teaching methods will be. The findings in the case of H3 imply that the higher the attitude toward IT, the more use of technology is enhanced, in accordance with the findings of Samari and Atashak (2009), showing that the more knowledgeable and cognizant teachers are in the application of IT, the more their use of educational technology will be.

The findings on H4 show that the more the job outlook, the higher the teaching scores will be. Perkin states the factors that affect the teachers’ performance believing that interest, motivation, and sense of duty to job have a meaningful relationship with their scores.

The findings in the case of H5 show that the higher the job attitude, the more positive attitudes towards technology. The findings on H6 shows that the more the teaching scores, the higher the attitude toward technology will be.

The findings in the case of H7 imply that the amount of IT usage is significant among schools having between 6 to 12 PCs and schools having more than 12 PCs, meaning that more facilities and tools can affect teachers application of IT.

The findings in the case of H8 show that the attitude of teachers in schools having between 6-12 PCs and schools having fewer than 6 PCs reveals significant relationship which means that teachers who have more facilities at school have higher attitude scores.

The findings on H10 show that the amount PCs and teachers’ attitude are interconnected. Schools having 6-12 PCs, and schools having fewer than 6 PCs, both have positive attitudes toward the use of IT at schools. This is in accordance with the findings of Alwani and Karimi (1998); they have stated that human weaknesses in the application of technology are effective in teaching-learning process. Negative attitudes or others’ disbelief towards the effectiveness of technology is influential in teaching-learning process.

Table 16. Table approving or rejecting the hypothesis

Hypotheses	Reject	confirmation
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Suggestions

In this process, in addition to all the vital and basic issues, the other subjects like the application of learning-teaching theories in the material design for teaching as well as e-learning, boosting teachers’, students’ and even headmasters’ motivation need to be considered. In other words, all the effective elements in the success of a smart educational system including the infrastructure, human resources, procedures and emotional prospective, etc. need to find a systematic view in relation to other elements and think of suitable preparation. To this end, we count important issues:

- a) Planning and provision of educational resources and teaching materials, and tailored designing to the needs of students by teachers in each region
- b) Establishment of the necessary skills for teachers to search for and organize information resources (use of the educational system, the use of e-books, e-test, use of the site, determine the position of the environmental control systems, and familiarity with IT through periodic in-service training
- c) encouraging teachers to handle specialized tasks in teaching-learning process and constructive communication with other partners and parents of students

Resources

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