Investigating the Impact of Automation on the Increase of High School Students' Motivation in Isfahan in 2014

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Abstract

Today, academic success is the origin of the education system of any country and in this regard, the use of modern methods of teaching seems inevitable. Educational system automation is very important, as an important educational dimension, in creating intrinsic and extrinsic motivation of students. This study aimed to evaluate the effect of automation on the increase of high school students' motivation in Isfahan in 2014, the method of this study is descriptive-survey in casual comparative type and it's a kind of field study. The statistical population under study includes high school students of Isfahan area 4. 360 people were selected as the sample. Data was obtained through Harter's academic motivation scale (1981).

Face validity of the questionnaire was approved by a number of high school students in a preliminary implementation, and reliability of measuring tools was calculated as 0.742 using Cronbach's alpha. Data was collected using multistage cluster sampling and it was analyzed using spss software. The results showed that in general, automation has been very effective on the increase of students' motivation and it's effective on female and male students' motivation so that the mean of male students' motivation of smart schools is more than the female students in smart schools. Also automation has not been effective on motivation of students in different fields of study (mathematics, science, literature).

Introduction

One of the main concerns of any community is its matter of education, because training the new generation will affect the future of each country and would be followed by the backwardness or achievement of the country. Considering the proper education has been always headed in the training programs of countries and to achieve the ideal education, the authorities have been always attempting so much. But one of the issues may be less noted is how students reach to the perfect and proper training and how we should provide the preparations and prerequisites to reach that, students that each one enters the field of education with its specific purpose. Here, the issue of motivation appears its importance. Motivation that drives and incites the behavior and it appears in different for in each of students, is unfortunately less considered. Motivation is defined as the person's internal status that is a driver, director and factor of behavior. All education experts believe that creating motivation in students is a basic task of teaching. That is why various theories have been conducted on the category of motivation and educational psychologists have also performed numerous studies on the motivation of the students. Undoubtedly, the intrinsic motivation of student (including objectives, interests and self-concept) and the extrinsic motivation terms (i.e. the kind of curriculum and how teachers work) are effective on achievement of

students. Each of different theories on motivation (behavioral theory, cognitive theory, humanistic theory, as well as social-cultural theory) have also provided their own explanations of the students' motivation and have described students' success and failure based on the theories (Lotf Abadi, 2010). Several factors are related to the motivation level of people and one of these effective factors is the objective. Objective is an outcome for which achievement a person attempts. The motivational level of students is also associated with their interests. Studies show that little interest in studying and working will cause the loss of students' motivation. More interest of student in learning more stable and deeper learning of student will be (Miller, 2002).

To achieve that, new practical discussions, theories and approaches have been raised these days, including the use of new technologies which one of the internal approaches is automation of schools. Smart schools are those schools that are going to accelerate the process of teaching-learning and improvement of the management in a fully organized form with the help of modern technology, smart educational and digital systems to enable the human of information era to process and classify and optimally use technical resources of the day knowledge considering its wide range to discover its talent and the emergence of creativities [7]. Considering the point that the future information society requires people who can innovatively apply the information technology for growth and development, being deprived of knowledge, insight and skills of the day will result in unemployment, social inequalities and as a result the appearance of stress and dissatisfaction. Smart School project is mainly planned to meet the needs, because at these schools the students learn how extract and apply their required information through the information networks [8]. With the advancement of technology and production of new technologies (automation) many changes in education and teaching methods have been developed that aim to optimize education and achieve the desired result, and one of the issues raised by the actors of the development of information technology in education is that this way we can provide equal educational opportunities for different classes of society particularly proletariats. According to one of the connoisseurs, the purpose of information communications technology (ICT) development in education is the students' empowerment and equality of enjoying of educational facilities. And educational revolution takes place with 3 purposes of network access, group education and research, and providing the field of creativity to produce creative, efficient, entrepreneur and responsible in the society for the global competition manpower, and benefiting from information communications technology instead of finding jobs, the youths create jobs themselves [5].

Use of automation causes self-efficacy and self-regulated learning and these are of factors that contribute person to express high level of performance and progress. These factors play a decisive role in attitude, motivation, anxiety and academic achievement of students. On the other hand, theories of self-regulated learning note the fact that how students personally act in, change or maintain the learning process, and thus self-regulated learning that is of the effects of automation is applied to explain students' efforts in independent management and optimization of their learning experiences in the classrooms that are all considered as positive effects of these schools. Benefits, effects and consequences of smart schools learning is not only limited to the education environment, but their reflection is visible on the life and experience surrounding it too. The schools have led the students to become studios and creative with high ability of communication than being passive persons. In other words, smart schools prepare students to face the real world and postindustrial era, and consider their needs in accordance with their daily life [3]. Since automation is the use of technology in education, and using the students' five senses, technology causes the task-based and self-regulated learning of students and thus the increase of their motivation, and since teachers know motivation as an important factor to learning, and therefore they wish to have

motivated and students are also willing and to achieve success, also because of the features of smart schools, the schools need massive investment in infrastructure sectors such as hardware and software equipment, electronic content production and, most importantly, training skillful and proficient manpower, for better planning to equip more schools with the system, it's required to conduct additional research on the performance of the system compared to the traditional system;

Accordingly, this study aims to find whether automation can increase the motivation of students and since the education is today going to develop the knowledge and creativity of students, thus developing the students' hidden talents and the growth of their abilities in the form of smart schools is at the head of affairs nowadays, and generally it can be said that the results of studies conducted on smart schools indicate the effectiveness and positive impact of automation on students' learning. Due to the reasons mentioned about the necessity of automation, more research is required to be conducted on the performance of smart school than on-smart and traditional schools. Since the due to the research, most students' problem is the lack or absence of motivation, this study aims to examine whether the can be solved using technologies available in smart schools to improve the quality of teaching and learning process and to train students for the present and future time, and whether the smart schools in comparison to the traditional schools can provide students with more motivation for learning. Obviously, the results of this research can be useful in the advancement of the schools' goals and their developments [4] . in a study entitled as "Evaluating the performance of smart schools in Sary County" which is a type of descriptive survey research, investigated the performance of smart schools from the perspective of teachers. They concluded that in smart schools the capacities and technology resources are utilized to promote the quality of education, and a variety of teaching methods appropriate to the individual differences of students are used. There is participation and support of parents in the learning process and guiding the students.

- In a study conducted by Yazdi on the input factors in the success of smart schools in Yazd province in2011, they investigated the software, hardware and technological tools in scholastic environment as the input factors, and since the project has been running for 5 years in Yazd province, considering the factors as basic infrastructure to improve the education process can have important effects on the quantitative and qualitative development of education.

- Nowroozi et al (2008) in a study entitled as "the impact of courseware on the mathematics development of students" has studied the effect of smart boards on learning mathematics, indicating that that the use of visual materials have been effective on better learning.

[1] in their study entitled as "the role of smart schools in learning ability of students" concluded that modern e-learning system provides unique advantages and benefits for individuals, organizations and educational institutions, and it also requires attention to thinking, creativity and taking the students' abilities into account.

Zamani and Ghassabpour, [2] in a study entitled as "the strengths and weaknesses, opportunities and threats coming up on smart schools" concluded that they will bring the attitude change of manager, authorities and other people, including parents. The study also shows that the use of information communications information (ICT) in education could shorten the gap between what is and what ought to be.

- Kumutha et al [12] in a study entitled as "the effects using ICT in learning and teaching on the academic development of primary school students" states that there is a relationship between ICT and academic success. Kenneth et al [11] in a study entitled as "the effect of automation schools in terms of students' success in science and mathematics" suggests that the rate of success in mathematics and science among

students in smart schools is statistically more significant than their counterparts in ordinary schools in Malaysia.

Jeana [10] in a study entitled as "the effectiveness of smart learning environment of classroom on academic achievement of rural areas with high levels of education and low levels of education" concluded that the learning environment in smart classes is better than traditional classroom education in terms of academic achievement.

Research hypothesis

1- automation is effective on the motivation of students.

2- there is a significant difference between male and female students' motivation in smart schools.

3-there is a significant difference between students' motivation with different field of study in smart schools.

4- there is a significant difference between students' motivation in different grades in smart schools.

5-there is a significant difference between students' motivation in smart and ordinary schools by gender.

6-there is a significant difference between students' motivation in smart and ordinary schools by academic grade.

7-there is a significant difference between students' motivation in smart and ordinary schools by field of study.

8- investigating the effect of automation on intrinsic and extrinsic motivation of students.

9-investigating the effect of gender on intrinsic and extrinsic motivation of students in smart schools.

10-investigating the effect of field of study on intrinsic and extrinsic motivation of students in smart schools.

Findings

Question 1: automation is effective on the motivation of students.

In other words, there is a significant difference between the motivation of students by school type (smart and ordinary).

To test the first hypothesis the t-test based on two independent samples is used. Because motivation is a quantitative variable and type of school (smart and ordinary) is a dichotomous or binary nominal qualitative variable. Here the null hypothesis is equal means of students' motivation (smart and ordinary) and the alternative hypothesis is inequality means of students' motivation of (smart and ordinary)schools.

Table 1 - t-test in the evaluation of first hypothesis (Number: 360)

Significance level p	Degree of freedom	t statistic	Mean	Type of school	Criterion
0.000	358	9.26	3.54	smart	Total motivation
			3.17	ordinary	

The results listed in Table 1 show that due to the t-test significance level is less than the error of 5% (or even 1%) therefore the null hypothesis is rejected and the first hypothesis is confirmed. Given that the mean of students' motivation in smart schools is much more than students' motivation in ordinary schools, thus it could be said that automationhas been very effective in the increase of students' motivation.

Question 2: there is a significant difference between male and female students' motivation in smart schools.

In other words, automation is effective in female and male students' motivation. In the second hypothesis test, the t-test based on two independent samples is used. Because motivation is a quantitative variable and gender (male and female) is a dichotomous or binary nominal qualitative variable. Here the null hypothesis is equal means of male and female students' motivation and the alternative hypothesis is inequality means of male and female students' motivation.

Table 2 - t-test in the evaluation of second hypothesis (Number: 180)

Significance level p	Degree of freedom	t statistic	Mean	Gender	Criterion
0.000	178	3.67	3.64	male	Students' motivation in smart schools
			3.45	female	

The results listed in Table 2 show that due to the t-test significance level is less than the error of 5% (or even 1%) therefore the null hypothesis is rejected and the second hypothesis is confirmed. Given that the mean of male students' motivation in smart schools is more than female students' motivation in smart schools, thus it could be said that there is a significant difference between the male and female students' motivation in smart schools. In other words, automationis effective in male and female students' motivation.

Question 3: there is a significant difference between students' motivation with different field of study in smart schools.

In other words, automation is effective in students' motivation with different fields of study. In the third hypothesis test, the F-test (analysis of variance) is used, because motivation is a quantitative variable and fields of study (mathematics, science and literature), is a three-state nominal qualitative variable. Here the null hypothesis is equal means of students' motivation with different fields of study and the alternative hypothesis is inequality means of students' motivation with different field of study (mathematics, science and literature) in smart schools.

Table 3 - F-test in the evaluation of third hypothesis (Number: 180)

Significance level p	Degree of freedom	t statistic	Mean	field	Criterion
0.24	178	1.46	3.49	Mathematics	Students' motivation in smart schools
			3.55	Science	
			3.59	Literature	

The results listed in Table 3 show that due to the F-test significance level is not less than the error of 5%, therefore the null hypothesis is not rejected and the third hypothesis is not confirmed. Thus it could be said that there is no significant difference between the students' motivation with different fields of study (mathematics, science and literature) in smart schools. In other words, automationis not effective in students' motivation with different fields of study (mathematics, science and literature).

Question 4: there is a significant difference between students' motivation in different grades in smart schools.
In other words, automationis effective instudents' motivation in different grades. In the fourth hypothesis test, the t-test based on two independent samples is used, because motivation is a quantitative variable and different academic grades (second and third grades), is a dichotomous rank qualitative variable. Here the null hypothesis is equal means of students' motivation indifferent grades and the alternative hypothesis is inequality means ofstudents' motivation in different grades.

Table 4 - t-test in the evaluation of fourth hypothesis (Number: 180)

Significance level p	Degree of freedom	t statistic	Mean	Grade	Criterion
0.000	178	3.67	3.64	Second	Students' motivation in smart schools
			3.45	Third	

The results listed in Table 4 show that due to the t-test significance level is less than the error of 5% (or even 1%), therefore the null hypothesis is rejected and the fourth hypothesis is confirmed. Given that the mean of second grade students' motivation in smart schools is more than third grade students' motivation in smart schools, thus it could be said that there is a significant difference between the second and third grades students' motivation in smart schools. In other words, automationis effective in second and third grades students' motivation.

Question 5: there is a significant difference between students' motivation in smart and ordinary schools by gender.
Here the null hypothesis is equal means of students' motivation in smart and ordinary schools by gender and the alternative hypothesis is inequality means of students' motivation in smart and ordinary schools by gender.

Table 4 - t-test in the evaluation of fifth hypothesis (Number of males: 180, Number off emales: 180)

Significance level p	Degree of freedom	t statistic	Mean	Type of school	Gender	Criterion
0.000	178	9.09	3.64	smart	male	Total motivation
			3.13	ordinary		
0.000	178	4.25	3.45	smart	female	
			3.21	ordinary		

The results listed in Table 5 show that due to the t-test significance level is less than the error of 5% (or even 1%), therefore the null hypothesis is rejected and the fifth hypothesis is confirmed. In other words, the male and female students' motivation is different in smart and ordinary schools, as well as the female students' motivation. The means show that the students' motivation in both sexes is more in smart schools.

Question 6: there is a significant difference between students' motivation in smart and ordinary schools by academic grade.

Here the null hypothesis is equal means of students' motivation in smart and ordinary schools by grade and the alternative hypothesis is inequality means of students' motivation in smart and ordinary schools by grade.

Table 4 - t-test in the evaluation of sixth hypothesis (second grade: 180 and third grade: 180)

Significance level p	Degree of freedom	t statistic	Mean	Type of school	Academic grade	Criterion
0.000	178	9.09	3.638	smart	second	Total motivation
			3.129	ordinary		
0.000	178	4.25	3.449	smart	third	
			3.206	ordinary		

The results listed in Table 6 show that due to the t-test significance level is less than the error of 5% (or even 1%), therefore the null hypothesis is rejected and the sixth hypothesis is confirmed. In other words, the second and third students' motivation is different in smart and ordinary schools, as well as the female students' motivation. The means show that the students' motivation in both grades is more in smart schools.

Question 7: there is a significant difference between students' motivation in smart and ordinary schools by field of study.

Here the null hypothesis is equal means of students' motivation in smart and ordinary schools by field of study and the alternative hypothesis is inequality means of students' motivation in smart and ordinary schools by field of study.

Table 4 - t-test in the evaluation of seventh hypothesis (mathematics: 120, science: 120 and literature: 120)

Significance level p	Degree of freedom	t statistic	Mean	Type of school	Filed of study	Criterion
0.000	118	5.99	3.49	smart	mathematics	Total motivation
			3.13	ordinary		
0.000	118	5.30	3.55	smart	science	
			3.15	ordinary		
0.000	118	4.96	3.60	smart	literature	
			3.22	ordinary		

The results listed in Table 7 show that due to the t-test significance level in all 3 fields of study is less than the error of 5% (or even 1%), therefore the null hypothesis is rejected and the seventh hypothesis is confirmed. In other words, the students' motivation in mathematics, science and literature fields of study is different in smart and ordinary schools. The means show that the students' motivation in all fields of study is more in smart schools.

Question 8: investigating the effect of automation on intrinsic and extrinsic motivation of students.
In other words, there is a significant difference between students' intrinsic and extrinsic motivation by type of school (smart and ordinary).

Table 8 – t-test in evaluating the effect of automation on intrinsic and extrinsic motivation of students (Number: 360)

Significance level p	Degree of freedom	t statistic	Mean	Type of school	Criterion
0.000	358	4/56	3.19	smart	Extrinsic motivation
			2.90	ordinary	
0.000	358	-15.57	3.15	smart	Intrinsic motivation
			4.15	ordinary	

The results listed in Table 8 show that due to the t-test significance levels is less than the error of 5% (or even 1%), it can be said there is a significant different between intrinsic and extrinsic motivation of students by type of school (smart and ordinary) and automation has been so effective in students' intrinsic and extrinsic motivation. The mean of students' intrinsic motivation in smart schools is much more than students' intrinsic motivation in ordinary schools and the mean of students' extrinsic motivation in ordinary schools is more than students' extrinsic motivation in smart schools.

Question 9: investigating the effect of gender on intrinsic and extrinsic motivation of students in smart schools.

In other words, there is a significant difference between students' intrinsic and extrinsic motivation by gender in smart schools (male and female).

Table 9 – t-test in evaluating the effect of gender on intrinsic and extrinsic motivation of students in smart schools (Number: 180)

Significance level p	Degree of freedom	t statistic	Mean	Gender	Criterion
0.207	178	1.27	2.95	male	Extrinsic motivation of students in smart schools
			2.84	female	
0.000	178	4.18	4.29	male	Intrinsic motivation of students in smart schools
			4.02	female	

The results listed in Table 9 show that the t-test significance level for extrinsic motivation of students in smart schools by gender is not less than the error of 5%, therefore it can be said extrinsic motivation of male and female students in smart schools is almost the same, but for intrinsic motivation of students in smart schools by gender the t-test significance level is less than the error of 5% (or even 1%), thus it can be said that there is a significant different between intrinsic motivation of male and female in smart schools and automation has been effective in male and female students' intrinsic motivation. The mean of male students' intrinsic motivation in smart schools is more than female students' intrinsic motivation in smart schools.

Question 10: investigating the effect of field of study on intrinsic and extrinsic motivation of students in smart schools.
In other words, there is a significant difference between students' intrinsic and extrinsic motivation of students in smart schools by field of study (mathematics, science and literature).

Table 10 – F-test in evaluating the effect of field of study on intrinsic and extrinsic motivation of students in smart schools (Number: 180)

Significance level p	t statistic	Mean	Field of study	Criterion
0.078	2.89	2.83	mathematics	Extrinsic motivation of students in smart schools
		2.82	science	
		2.99	literature	
0.193	1.66	4.10	mathematics	Intrinsic motivation of students in smart schools
		4.12	science	
		4.12	literature	

The results listed in Table 10 show the F-test significance levels for extrinsic and intrinsic motivation of students in smart schools is not less than the error of 5%, therefore there is no significant difference between extrinsic and intrinsic motivation of students in different fields of study (mathematics, science,

literature). In other words, automation is not effective in extrinsic and intrinsic motivation of students in different fields of study (mathematics, science, literature).

Discussion and Conclusion

In investigating the effect of automation on the students' motivation, the results of t-test showed that the mean of students' motivation in smart schools is much more than students' motivation in ordinary schools. Therefore, it can be said automation has been so effective on the increase of students' motivation. Also the results of t-test showed that the mean of students' intrinsic motivation in smart schools is much more than students' intrinsic in ordinary schools and the mean of students' extrinsic motivation in ordinary schools is more than students' extrinsic motivation in smart schools. The results are aligned with and confirmed the results of a research conducted in 1996 in America's elementary and secondary schools quoted by Ebadi, [3] which has shown that the development of information technology increases learning in students and teachers, enhances their motivation to learn science and knowledge and due to considering the needs, and interests of learners and the existence of several learning resources and the field of their comprehensive development and thinking skills, students' focus on education would be highly increased.

In studying the difference between male and female students' motivation in smart schools, test t results showed that the mean of male students' motivation in smart schools is more than female students' motivation in ordinary schools and thus it can be said automation is effective in male and female students' motivation. Also the results of t-test showed that the mean of male and female students' extrinsic motivation in smart schools is almost the same and automation is not effective on male and female students' extrinsic motivation. But the results of t-test showed that the mean of male students' intrinsic motivation in smart schools is more than female students' intrinsic motivation in smart schools. In a review on the difference between the motivation of different students in different fields of study in smart schools, F-test results showed that there is no significant difference between the mean of students' motivation in different field of study (mathematics, science and literature) in smart schools, in other words, automation is not effective on students' motivation in different field of study academic disciplines (mathematics, science and literature).

F-test results also showed there is no significant difference between intrinsic and extrinsic motivation of students in different fields of study (mathematics, science, literature) in smart schools. In studying the difference between students' motivation in smart and ordinary schools by gender, the results of t-test showed that the motivation of male students in smart and ordinary is different as well as female students' motivation that is different in smart and ordinary schools. The means suggest that the motivation of students of both sexes is more in smart schools. In a study of the difference between students' motivation in smart and ordinary schools by field of study, t-test results in all three fields of study, showed that students' motivation in mathematics, science and literature fields is different in smart and ordinary schools. The results of this study is aligned with and confirmed the results of a research by Kenneth [11] titled as the impact of the smart school in terms of student achievement in science and mathematics suggest that the success level in mathematics and science among smart schools students has been statistically and significantly more than their counterparts in ordinary schools in Malaysia and is linked to the result Confirm.

References

[1] Bashiri S., Tavasoli ara F. (2012). The role of smart schools in the learning ability of students, Published area: Regional Conference on Computer Science, Computer Engineering and Information Technology.

[2] Zamani, B.E. Ghasabpour B. (2010). The application of information technology in smart schools of Malaysia and its comparison with smart schools of Iran, Yazd Farda group of cultural scientific papers

[3] Ebadi, R. (2004). Electronic Learning and Education, Tehran, Amirkabir publications

[4] Enayati T., Zameni, F., Pour Somayeh J. (2011). Smart schools performance of Sari County fromthe perspective of teachers: National Conference on electronic city.

[5] Attaran, M. (2003) Information technology globalization and education, Tehran, Institute of Educational Technology Development of Smart Schools

[6] Lotfabadi, H. (2010). Educational Psychology, Tehran, Samt publications

[7] Mohajeran B., Hamzeh Robati M. (2013). The main reasons for the lack of accurate formation of smart schools and provide development solutions in Mazandaran from the perspective of administrators and experts of Information and Communications Technology, University of Urmia, Iran: Faculty of Education and Psychology.

[8] NaseriM.Mshhadian, F (2011) Roshd-e Madreseye Farda. No.7, vol. 7

[9] Norouzi M., Zandi F., Mousavi Madani F. (2008). Ranking of application methods of IT in teaching and learning process in schools, conference paper of CIVILICA ®, Published area: Fourth International Conference on Information Management and Communications

[10] Jeana P. (2013). Effect of smart classroom learning Environment on Academic Achievement of Rural High Achievers and low Achievers and low Achievers in science

[11] Kenneth O, Eng T, Ruthven p. (2012). The effectiveness of smart schooling in Terms of student Achievement in science: A study of Malaysian practice.

[12] Kumutha k, Isshana I,Robitah S. (2011) The Effects of ICT use in Teaching and learning on students Achievement in science in a primary