



# Identifying the Effective Factors on Achievement of Smart Schools by Review of the Status Quo and Problems in Smarts Schools

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**ABSTRACT:** The current investigation is intended to identify the effective factors on achievement in Smart Schools via study on the existing condition and problems in smart schools within Tehran City. The studied statistical population includes all principals from smart schools at Tehran city and master and mid- rank experts from Training and Education Organization (TEO). Method of this study is of survey type and questionnaire has been used as a tool to gather information where the validity of this test was confirmed by advisor teachers and master professors and some experienced instructors while the reliability of data collection tool was measured by Cronbach Alpha Coefficient. Time period of implementation of this study was the second half of 2010 and this research was carried out in smart schools from Tehran city as the spatial domain. Ten hypotheses were purposed in this study i.e. five hypotheses about identification of effective factors on achievement of smart schools and the rest five hypotheses concerned with the existing condition in each of the aforesaid factors within smart schools at Tehran City. The resultant findings from student t- test indicated that all five studied factors, including environmental, cultural, executive s and learners', hardware and network as well as software and digital factors, affected on achievement of smart schools at 95% level of confidence, according to respondents' comment. Similarly, in review of the status quo within smart schools, according to respondents' view, cultural factors are in appropriate condition at 95% level of confidence while executives and learners, hardware and network, and software and digital factors are not in suitable conditions and also environmental factors are at average level.

**Key words:** Smart Schools, Evaluation, Information Technology (IT)

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## INTRODUCTION

On the brink of twenty first century, global advancements in Information and Communication Technology (ICT) has exposed the humans to a modern and various community; a community of which outstanding characteristics is information and knowledge- orientation. Namely, anything, including economy, education and training, commerce, politics, and even life affairs are based on information and knowledge. Also education system is not exception to this rule and gradually a revolution was raised and targeted education traditional system and in addition to maintain dignity, position, and its major components, it has added new learning opportunities to them (Deleuze, 2007).

One of the obvious types of ICT applications in education is to establish smart schools (Huang, 2000). A smart school is a kind of school that rather than employing physical facilities of a n ordinary school and curricula like other schools, tries to lay foundation of its control and administration through mobilization to cyber facilities and the related technology and to make the content of textbook as E- content and to convert evaluation and monitoring system into smart one (Malaysian Ministry of Education, 1997a). In these schools, the given system is installed on central computer of school and this system is ready to give services by connection to a great number of telephone lines round- the- clock (Zaom et al., 2004). This system provides a facility for students, parents, teachers, and

school staffs to advance their plans by a permanent and dynamic interaction to each other. In such a school, students become familiar with technology and thereby increase their individual capability. Smart schools in Iran, of course, are placed at the start point (Zain et al., 2004). In academic year 2004-5, for the first time four high schools were selected in four regions in Tehran City and the next year trial execution of this plan was started in these schools. During past years, some other schools were also established in some towns throughout this country for this purpose and began their activity. The statements made by authorities of Training and Training Organization suggest this point that it has decided to extend this system in these schools. Before implementation of any new educational system, it necessitates identifying the needed requirements and defaults for the given system and explored them. This study has been also carried out by considering this goal in mind. During research process, initially the effective factors on achievement of smart schools are identified with respect to environmental, cultural, executive, hardware, and software factors and then their existing conditions have been examined. Finally, with respect to an existing gap among the appropriate condition and the status quo, some strategies were purposed to improve these conditions. One could outline work doing trend within the framework of the following model (Figure 1):

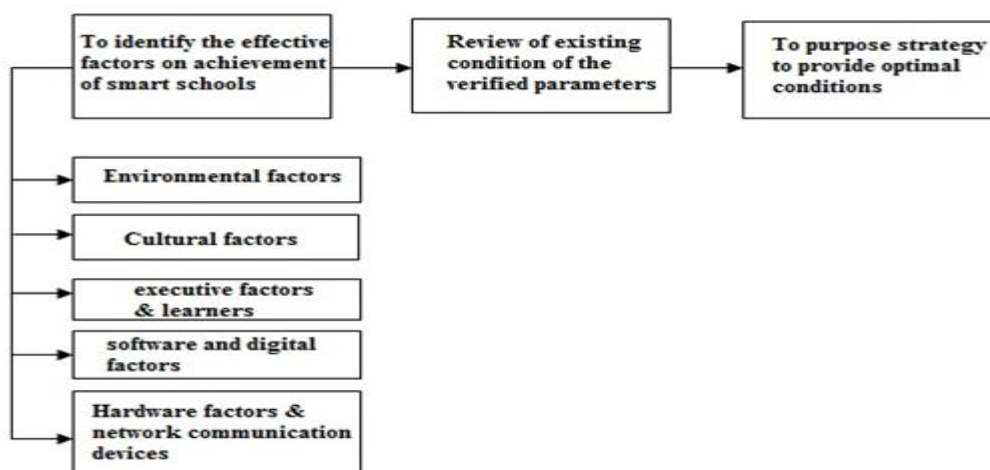
Equal access educational opportunities. They may improve learning processes and contribute effectively to developing education quality; they expand access to education and by means of on the job training, they help to empowerment of manpower. But it should be forgotten that there is great distance among capability and effectiveness and in order to make technological potentials into practice for renovation of education and learning development, it requires presenting an effective strategy to reduce limitations, developing human resources, codification of educational policies and strategies in line with integration of modern technology with education. All of these needs thinking about IT paradigms, connection and revision in mental beliefs and presuppositions about nature, role and expectation in IT (Sarkar Arani, 2006).

Possibly, unlike higher technical investments, those educational systems, which pay no necessary attention to constant process of technological convergence, will practically encounter problems in economic utilization and the effective exploitation from ICT. Success in effective exploitation from ICT in education, to great extent, depends on experience of educational institutions in employing other educational technologies such as computer, TV, radio, and other realia and training aids within teaching-learning process. In today world, educational systems seek for modern approaches that contribute them in exposure to world extensive developments to reconstruct themselves. For this reconstruction, of course, it needs to rich curriculum, flexible education, effective educational leadership, and interesting learning climate, educational content beyond the

existing structures, and competent and professional teachers and the schools for learning (Sarkar Arani, 2005).

For this purpose, educational institutions need to step-by-step operation plan with comprehensive strategy in order to encourage technology in teaching-learning process. Educational planners are required having a systematic and clear image from technological level and their proportion with learning styles that are a cultural affair. Educational principals need to be able to overcome a gap among requirements and sources in developing of IT and their ambiguity about technological capabilities for teaching or teachers' ability in exploitation from them is considered as a great challenge for developing IT in teaching- learning process. Developing technology in educational institutions may transform teachers' role and challenge their authority and add to their responsibilities. In comparison with other social and economic fields, education needs further mobility and creativity in developing of IT. IT is rapidly renovated and its development and presence life is usually shorter than educational scholar reformative courses and programs. Thus, it requires conducting wide researches to employ technological capabilities in education, overcoming doubts, native adaptation techniques and effectively utilization of them and accurately cost- profit analysis for plans of implementation of technological development in education (Davos, 2008).

Therefore, this study is intended to identify the effective factors on achievement of smart schools and review their existing condition within schools at Tehran City.



**Figure 1.** Work Doing Trend

**MATERIAL AND METHODS**

The present research is of applied type based on its objective. Applied researches are those studies,

which are employed based on using information ground and platform that was prepared by fundamental studies to remove human's needs.

Similarly, it is survey type with background- finding in terms of its methodology. The studied population in this investigation comprises of all principals, experts and specialists in the field of educational planning and system. Statistical population of this study includes 96 teachers in the related disciplines from universities, principals of smart schools at Tehran City, top and mid- rank directors from Ministry of Education. Sample space was obtained by means of Cochran's sample size formula as 96 respondents. 100 questionnaires were distributed to compensate for possible defective questionnaire forms in this research.

To collect data in this study, a self- made questionnaire was used. In order to prepare research inventory as well as to gather the needed information and achieving a general attitude toward research subject, several sessions were held with presence of organizational experts and managers and also university teachers and their comments were utilized in different part of this study especially in checkup and adjusting questionnaire.

Content validity shows that to what extent dimension and elements of a concept have been covered accurately in research tools and in other

According to the given data in the statistical table, upper limit and lower limit are both positive. Thus, Null Hypothesis is rejected and Hypothesis 1 is verified. In other words, it could be implied at 95% level of confidence that according to respondents' view, environmental factors might affect on achievement of smart schools. According to the given data in this table, higher and lower limits are both positive. Therefore, Null Hypothesis is rejected and Hypothesis 2 is confirmed. Namely, it could be expressed at 95% level of confidence that according to respondents' view, cultural factors might influence in achievement of smart schools.

Based on the given data in the statistical table, upper limit and lower limit are both positive. Thus, Null Hypothesis is rejected and Hypothesis 3 is verified. In other words, it could be implied at 95% level of confidence that according to respondents' view, executive factors and learners might affect on achievement of smart schools.

Statistics of higher limit and lower limits are both positive; thus, Null Hypothesis is rejected and Hypothesis 4 is verified. One could express at 95% level of confidence that based on respondents' view, hardware and network factors affect on achievement of smart schools.

Both higher and lower limits are positive. Therefore, Null Hypothesis is rejected and Hypothesis 5 is confirmed and it could be said at 95% level of confidence that according to respondents' opinion,

words the capacity for measurement of a concept is examined by this tool (e.g. questionnaire). To make sure from validity of questionnaire, some comments from teachers as wells as guidance by experienced experts in design of inventory and the specialists in the studied field were used. To determine reliability of questionnaire, Cronbach's Alpha Coefficient was calculated by SPSS software and its value was derived as 0.820. Since this figure is greater than 0.70 so this questionnaire is adequately reliable.

## RESULTS

In this section, it is intended to review the impact of various elements on achievement of smart schools. For this purpose, a questionnaire with two halves was designed. The first part measured the impact of different variables on achievement of smart schools and the second half evaluated these variables in achievement of smart schools from viewpoint of the same respondents. To measure respondents' comments accurately and the impact of independent and dependent variables, distance scale (LIKERT Spectrum) was utilized.

**Research Hypothesis:** Environmental factors may affect on achievement of smart schools. software and digital factors may influence in achievement of smart schools.

Based on given data from statistical table, higher and lower limits are both positive. In other words, according to respondents view, the existing condition of environmental factors in smart schools was at average level.

According to in the statistical table, upper limit and lower limit are both positive. Thus, Null Hypothesis is rejected and Hypothesis 6 is confirmed. So it could be implied at 95% level of confidence that from respondents' view, the status quo for cultural factors in smart schools is higher than average level.

Based on the aforementioned data in statistic table, both higher and lower limits are negative. Thus, null hypothesis is confirmed and hypothesis is rejected. It could be said at 95% confidence level that according respondents' view, the existing condition for executive factors and learners in smart schools is at lower level than average.

According to given data from statistic table, both higher and lower limits are negative. Therefore, null hypothesis is verified and hypothesis is rejected. It could be implied at 95% confidence level that according respondents' view, the existing condition for hardware and network factors in smart schools is at lower level than average.

Based on the given data in statistic table, higher and lower limit are both negative, thus, null hypothesis is verified and hypothesis is rejected. Then,

it could be mentioned with 95% level of confidence that from respondents' viewpoint, the existing condition for software and digital factors in smart schools is at lower level than average.

Ranking each of effective factors on achievement of smart schools Application of Friedman test was intended to identify some variables, which have been more effective on achievement of smart schools, according to experts. Equality or inequality of

the impact of each of main variables was tested by means of SPSS software and a certain value was obtained for each of them. The following tables indicate the outputs derived from SPSS for Friedman test. According to respondents' comment, hardware and network as well as software and digital factors have been affected achievement of smart schools more than other factors.

**Table 1.** Test results for hypothesis of impact of environmental factors on achievement of smart schools

Tested concept	Measurement criterion = 3				
	t-value	DF	Mean difference	Lower limit	Higher limit
Environmental factors affect on achievement of smart schools	3.201	90	0.21703	0.0823	0.3517
Cultural factors affect on achievement of smart schools	8.740	90	0.55220	0.4267	0.6777
Executive factors and learners affect on achievement of smart schools	9.354	90	0.51049	0.4021	0.6189
Hardware and network factors affect on achievement of smart schools	9.483	90	0.68760	0.5435	0.8316
Software and digital factors affect on achievement of smart schools	8.815	90	0.52381	0.4058	0.6419
The existing condition of environmental factors is higher than average level	0.229	90	0.01374	-0.1056	0.1331
The existing condition of cultural factors is higher than average level	2.605	90	0.20055	0.0476	0.3535
The existing condition of executive factors and learners is higher than average level	-2.229	90	-0.13686	-0.2588	-0.0149
The existing condition of hardware and network factors is higher than average level	-4.116	90	-0.23077	-0.3422	-0.1194
The existing condition of software and digital factors is higher than average level	-3.709	90	-0.22894	-0.3516	-0.1063

**Table 2.** Significance in Friedman test

Test description	Quantity	Chi-square	Degree of freedom	Sig.
Ranking of effective factors on achievement of smart schools	91	39.249	4	0.001

**Table 3.** Ranking of effective factors on achievement of smart schools

The measured factors	Test results	Rank
Hardware and network factors	3.63	1
Software and digital factors	16.3	2
Cultural factors	12.3	3
Executive factors and learners	87.3	4
Environmental factors	2.22	5

**DISCUSSION**

The study results from Hypothesis I show that respondents have considered the existing certain trends as important points for training teacher for smart schools. At present, there is no such a trend in teacher training centers. It is suggested to some preparatory efforts are made for creation of such trend in teacher training centers if possible and if execution of this suggestion takes longer time then several credits may be added to the current curriculum in order to make students familiar with smart schools and their key concepts.

The results came from review on second hypothesis indicate that respondents attached no importance for ministerial directors' belief in profitability of smart schools. With respect to existing

belief among principals of Ministry of Education, it seems that respondent have not considered the practical and physical results from such an idea. It is suggested to directors and experts in this ministry to inform the sponsors and officials of schools about their plans and measures as well as the findings of next researches and activities within some bulletins and the similar items. The results from third hypothesis show that respondents have considered the executive factors and learners as effective on this trend. With respect to this fact that these ordinary schools are converted into smart schools at first phase, it is suggested to hold some introductory courses for making students familiar with these concepts on or two years before conversion of

ordinary schools into smart ones. Acquaintance with computer and improving English language skill in students should be on the top of such courses. Similarly, given that ordinary teachers are employed to teach in smart schools, it is recommended to hold On the Job training courses for this group of teachers in order to remove weak points in teachers in some cases like operation with computer and producing content for textbook aids.

The findings from fourth hypothesis express this fact that rather than students, their parents are also involved in process of converting normal schools into smart ones and they play important role in this respect. Modernization of way of relationship among school and students' parents is one of the goals in these schools. Given this issue, students' parents should carefully take this point into consideration. It may be a favorable suggestion for this purpose to invite such persons to schools and introducing the topics of the main activities in smart schools and expressing school objectives regarding implementation of these changes. In results of review of hypothesis V, with respect to weakness of teachers and students in using English language and dominance of English over other languages in web contents, it is suggested to try to create Persian content in parallel with curricula for students in schools.

The findings came from hypotheses six to ten, it is indicated that respondents have evaluated cultural factors in smart schools higher than average and other factors as lower than average level. With respect to impact of mentalities caused by performance from these schools that affected on audiences' mind, it is suggested to enhance position of current schools in some projects with higher priority as agenda for the related officials.

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