



Smart School: A New Approach in Education

Mohammad Reza Nami¹, Alireza Arbaeipou¹, Hamidreza Vazirinia¹, Fatemeh Saneipour^{۲*۳}

Keywords: smart schools, educational system, communication skills, information and communication technology

INTRODUCTION

Now days, One of the most important features is the growing momentum of scientific, technology and social developments etc... . Technology is the application of using tools, materials, processes and systems by human to solve problems and provide benefits to humankind. (Gillett, 1996)[1].

We use of technology in purpose of improve our environment. These improvements may relate to survival needs (e.g., food, shelter, defense) or they may relate to human aspirations (e.g., knowledge, art, control) .(Henderson,1996)[2].

Education Technology involves a broad spectrum of knowledge and activities. Effective Education Technology combines knowledge of content, processes and skills to provide students with a holistic approach to learning. On the other hand Instructional Technology deals specifically with use of computers and different software to solve problems and communicate effectively. The success of the human depends on success of the national education. (Paulsen,1995)[3].

In recent years, there has been a growing interest in the creation and use of web-accessed digital video and audio throughout the education sector. Digital learning is included a wide spectrum of tools and practice, including using online and formative assessment, increasing focus and quality of teaching resources and time. (Hara & Kling, 2002)[4].

smart school structure

Converting every school into a Smart School would be the nation's priority. The process, however, will require huge management and financial efforts. Recent economic downturn in the region has become a problem in running and implement of the Smart School projects. The expenses of setting up Smart Schools as well as transforming selected schools into Smart Schools are very high, and make forcing to re-strategy the approach.

Without sufficient funding, the traditional schools face with many problems to equip their students for riding the wave of the Information age. (Paulsen ,1995)[3].

Technology Infrastructure should form the basic foundation of the Smart School and capable applications should be used. Technology is one of the most important success key for the Smart Schools. The Technology Infrastructure for the Smart Schools designers may comprise some or all of the following components:

Hardware such as end terminal devices and servers, Software such as operating system, graphical user interface, and security system ,Local Area Network (LAN) components, such as network interfaces, network operating system, network system management, physical cabling, hubs, routers and access equipment, Video Conferencing and its related components, Non-IT Support Equipment such as overhead projectors and audiovisual equipment. (Spector, 2000)[5].

New technologies being introduced into schools in developing countries in order to enrich the teaching and learning experience of students and to meet the goals of reform agendas dictated by national governments with the arrival of computers, the internet, and electronic networks, the limitations of time and place to get information has been removed Extensive use of Information and Communication Technology (ICT) in the learning process simultaneous with teaching evolution in the world, have provided predispose of smart schools creation. Spector, M. (2000)[19].

One of the achievements of information and communication technology is Smart Schools Creation that we will refer to it. Concept Definition: Achinstein, B. (2006) [6].

The smart School is a physical school that control and manage based on computer and network technology and the content of its courses is electronically and its evaluation and monitoring system is intelligent. Engeström, Y. (2008)[17].

Students can use the Internet and get information of any topic they want. In this system, both teachers and students deal with electronic and course contents are in CD format .Smart School's teachers should not

¹ Faculty of Electrical, Computer, and IT Engineering, Islamic Azad University- Qazvin Branch, Qazvin, IRAN

² Mehrnaz_sanei@yahoo.com

³ Faculty of Psychology and Education, Kharazmi University- Karaj, IRAN



be experts in the field of IT, but they should be aware of the school system and be able to use its features in a practical way. For example, a good teacher must know where the type of resources is in schools and help to reach resources when the students have raised questions. Bennison, A., & Goos, M. (2010)[8].

At Smart school, the teacher's role is Navigation. Students on school can access the available resources or external resources in information networks and are free to use them for their purposes. Over the same period, access to the Internet has been expanding in locations outside of school, especially to homes with school-aged children. Bulfin, S., & North, S. (2007) [9].

DEFINING CHARACTERISTICS OF THE SMART SCHOOL

The Initiate Smart School appropriated a term, that already being employed elsewhere. Hara,N.,and Kling,K,"Students"[18].

The official characterization of the Smart School is working as an institution under continuous reform:

a learning institution that has been systematically reinvented in terms of teaching learning practices and school management in order to prepare children for the Information Age. Cuban, L. (2001) [12]. A Smart School will evolve continuously development of professional staff skills, and its educational resources, and administrative capabilities. This will allow the school to adapt of changing conditions, in the way of preparing students for life in the Information Age. Arnseth, H. C., & Ludvigsen, S. (2006) [7].

In more specifically educational terms, such as school aims to provide experience are as follow:

Stimulate of think, creativity, and caring in all students, with individual abilities and learning styles, and is based on more equitable access. It will require students to exercise greater responsibility for their own learning, while seeking more active participation by parents and the wider community. Bryk, A. S., Bender Sebring, P [11].

SMART SCHOOL GOALS

The goals and objectives of Smart School contain five important agenda that need to be carried out to provide factors of development individually (intellectual, physical, emotional, spiritual, and.) , provide opportunities to enhance individual strengths and abilities, produce a thinking and technology literate workforce, democratize education and increase participation of stakeholders. (Henderson,1996)[2].

To reach of these goals providing opportunities to enhance individual strengths and abilities will be appeared. The strategy of this goal provides elective way in the curriculum and allow for vertical integration. The vertical integration means that students levels for all subject in the school curriculum. Curriculum for smart schools will incorporate elements of vertical integration to allow high fliers to surf through their schooling years, without being kept apart from their peers in virtual express classes. Arnseth, H. C., & Ludvigsen, S. (2006) [7].

Therefore, another goal is producing a thinking way and technology-literate workforce and the strategy is teaching the way of think across the curriculum and applied technology in teaching and learning. In the smart school, using of technology like internet as a teaching- learning material is the best way to educate children who are have different learning style than another school. Spector, M. (2000)[19].

The fourth goal of the Smart School Project is democratize education. The first strategies is Smart School program, that provides equal access to learning opportunities which we can see that in the Smart School Curriculum that can enable students to have holistic learning that the curriculum gives appropriate emphasis to all significant aspect of growth for all the types of human intelligence, helping students to see the connections between the separate subjects. Plus the uses of technology as one delivery system, examines the influence on student's life, and gives students the skills they need to use technology such as internet to get more information. Students can use their entire local environment in school for enhance their learning process such as edunet and internet. (Paulsen ,1995)[3].

Besides the Smart School project have combined the best of network-based, teacher-based and courseware material such as modules for computer that includes interactive story books and simulation games that makes students to access more knowledge. It also provides video, interactive TV and online library for student and they can refer to collect more information. Bulfin, S., & North, S. (2007) [9].

Training Smart School Teachers: Aims

The training of Smart School teachers was aimed at enhancing their professional skills of facilitating learning and fostering innovation. So, it optimized instruction through the integration of technology. The training provided to Smart School teachers was intended to enable them to:

(1) Plan and develop instructional packages that fulfilled the requirements of the Smart Schools curriculum.

(2) Facilitate and manage learner-centered instructional environments through the application of a variety of innovative and creative strategies.

(3) Apply and integrate technological applications such as multimedia,Internet and Digital Communications in the instructional process.

(4) Manage classrooms equipped with multimedia technology facilities. Engeström, Y. (2008)[17].



PROCESSES

To achieve educational objectives for a Smart School, must internal processes be coordinated. Ensuring coordination entails viewing these processes as a system: if the system is well designed, providing appropriate inputs will yield the desired outputs - namely, students ready for higher education or active and productive participation in the work force. The Smart Schools initiative offers an ideal opportunity to reassess the current schooling system, identifying problems and finding potential solutions, many of options can be enabled by technology. Cuban, L. (2001) [12].

For the Smart School system, the major inputs are the resources - students, teachers, technology and tools – and the Education department, curriculum specification, financing, and management and control functions. Convery, A. (2009). [13]. The system proceeds through a series of sub processes – such as: identifying and localizing teaching plans, selecting and organizing teaching-learning materials, determining a student's entry level, planning the student's experience, holding classroom sessions, assessing achievement internally, providing feedback – before delivering the student for external achievement assessment, and ultimately for higher education or the work force. Achinstein, B. (2006) [6].

People, Skills and Responsibilities

The higher degree of individualized attention for students at a Smart School requires new roles and responsibilities for teachers, principals, Ministry of Education officers, support staff and parents. In fact, fulfilling these roles and responsibilities will require specialized training for each group.

Teachers

Teacher development will be critical to the success of the Smart School. Teachers will need intensive training in the use of information technology and its integration into classroom activities in a way that enhance thinking and creativity. Smart School teachers will also need to learn to facilitate and encourage students in taking advantage of their own learning. Hara, N., and Kling, K., "Students" [18].

In the long term, these teachers will need to augment their skills regularly, if they are to stay abreast of development and remain confident in their using of this technology. Davies, J., & Merchant, G. (2009) [14].

Principals

The third pillar of the Smart Schools will be the streamlining of school administration through the use of technology .the task of managing schools involves working with information and building on ideas collaboratively.

The efficiency and effectiveness of this management task can be enhanced significantly through the use of technology. Principals in Smart Schools will need intensive training to equip them to manage the new facilities, technologies and methodologies deployed in their schools. Engeström, Y. (2008)[17].

Parents

Parents can play a major role in helping Smart Schools provide individualized education for students. Research has shown that students do better when their parents are involved. This task will go beyond monitoring the child's progress, and providing guidance, motivation, and counsel; it will require familiarity with the new educational processes, a willingness to assist with developing teaching-learning and assessment materials, as well as the ability to access the school's public domain databases. Arnseth, H. C., & Ludvigsen, S. (2006)[7].

There is a need to increase the participation of parents in educational processes such as teaching-learning, development of educational materials, assessment, etc. A student's learning opportunities stretch beyond the classrooms. Parents can be educational resources, and in the process benefit themselves as their own learning needs become a life-long Endeavour. (Hara & Kling, 2002)[4].

Research has also shown that children are more successful in school when parents are involved in their education. (Henderson, 1996)[2].

Current and Future Challenges

Although development of intelligent schools in recent years is on the agenda for the authorities, but there are problems that prevent the development of bilateral ties. Convery, A. (2009) [13]. The most important problem that prevent of development of intelligent schools in the country can be following division:

No laws and regulations required in the education department, one of these problems, in regard to the fact that in the schools intelligent control, supervision and assessment based on computer technology has been the case and intelligent, need roles and laws which are different from traditional schools. Lack of regulations in this field has caused many problems in intelligent schools. For example: it doesn't forced the teacher to teach content to create a media & If a teacher to provide lesson content with a personal interest, there's no place to pay legal and financial compensation for that. Arnseth, H. C., & Ludvigsen, S. (2006) [7]. Structure and Iranian schools are completely traditional and have no place in the information technology. Pay attention to this point that information technology in schools and intelligent key role in determining. Dwyer, J. (2007) [15]. One of the big obstacles in the way the intelligent schools, Cultural



beliefs our society especially parents of students. Still with regard to the passage of several decades such production technologies unfortunately culture of using the prosperity it has not yet & there is great strength in the direction. In many families from the dishonesty of this issue has caused this technology as an alien assumption and the arrival of electronic equipment to refrain from home. Therefore they will face such a family children with severe problem. (Henderson, 1996)[2].

Unfortunately, in spite of the fabliaux science in the world for reasons still limited network of the country is very inappropriate interactions and establishing internet communications is not so easy. Many economic problems of the families to provide at least a computer system one of the most important obstacles on the way success intelligent schools& This issue once more will be seen that intelligent schools in different regions will be extended, because right now they are not even a considerable percent of the students also enjoy areas might provide the computer at home. one of the problems intelligent schools is communications. As if to produce software and speed Internet access to at least, producers of software programs have grown fuzzier lower production. And it is natural that he could not have proper training effect. Next problem in this regard teacher not trained in schools is an intelligent. Therefore, it with a suitable educational system to promote region's teachers tried to make necessary efficiency in the schools have intelligent. Dwyer, J. (2007) [15].

We will use various case studies, and provide students with the opportunity to work on a concrete strategic media problem confronting an existing media company. Engeström, Y. (2008) [17].

The reasons why some teachers were reluctant to use computers can be found in the section below:

Computer Problems

There were many complaints about the shortage of computers. The facilities, the computers and the equipments are limited. School AS was heavily affected because the school's ICT facilities were not ready. One of the schools had a problem with old, outdated and slow computers. We need high speed computers. Now we only have a 350 Mhz one with slow Internet connection. I wish at least for 1.6 to 3.0 GHz". According to one teacher at the school, it not been replaced for a long time (Hara & Kling, 2002)[4]. The costs of providing computers and the maintenance cost in all Smart Schools are very high and the Government cannot afford them . At the end of the day, we turn back to the old technique, do the talk and chalk". Some of participants were not convinced by the contribution of computers in teaching and learning. Sometimes the use of Information Technology does not necessarily make teaching easier. One student said that computers sometimes can be a distraction for learning. Computer is distracting. It's more on enjoying and playing. It's too many entertainment programs on the Internet. Brown, W., Klein, H., & Lapadat, J. (2009) [10].

Software Problems

the Smart Schools software was not compatible with the national textbooks "Even the chapters are different". One student suggested looking into this problem and "upgrading the Smart software in accordance with the national textbook". The reason for that, according to the student, is that they have to answer the exam questions which are based on the textbook .Bryk, A. S., Bender Sebring, P., Allensworth, E., Luppescu, S., & Easton, J. Q. (2010). [11].

There was wrong information in the software. Smart School software should be developed professionally. When asked on how it should look like, "It should be fun", "not look like something boring", and "not slow like pre-school children's software". The conversation in the language software was criticized by the students because it was "too slow", "not motivated" and "boring."

Currently, they use software developed by a private company. Education teachers said that they really needed software that was purposely built according to the Education syllabus. Cuban, L. (2001)[12].

Workloads in smart school

Students felt that the workloads had increased in compare with before because they have to search and work on their own, but before teachers gave them all the information . If you fail in searching for information, and are delayed, then it will be a burden on you .This problem become worse because the students have to participate in extra-curriculum activities after school, hence the schedule is packed in the evening. Students complained that teachers were not always available for lessons as they attended Ministerial tasks to prepare exam questions and courses of examiners. This was conceded by the teachers. The problem arises when the teachers have to leave the school for Smart School training and courses. Spector, M. (2000) [19].

Time Constraints and Time Consumption

Time constraints are one of the frequent issues stated by students and teachers. Students said that it is difficult to do self-search because of time constraints. Some of the students felt that learning using a computer is very time consuming and they had only "one hour and 10 minutes" in the classroom. If they do



not have the Internet at home then they have to go to a cybercafé outside the school which is very difficult for them. Arnseth, H. C., & Ludvigsen, S. (2006) [7]. Students have to prepare 10 minutes earlier if they want to use a computer lab for teaching. They have to go the classroom and take the student to the computer lab and sometimes the distance between the classroom and the computer lab is quite far. Also the fact that the computers and the Internet connection are very slow contributes to this problem. It takes 5 minutes to enter or log in the computers and another 5 minutes to log out. (Gillett, 1996)[1].

Examination Attitudes

Exam-centered learning is one of the obstacles in implementing the Smart School concept of teaching and learning. Students were more concerned and interested in the outcomes of examination. Learning using a computer is only to deepen your knowledge but it does not help you in your examinations. They would prefer to prepare for examinations, than by attending a specific computer literacy class or learning computer skills in their classroom. Bryk, A. S., Bender Sebring, P. [11]. We can learn with computers at any time, but we have to prepare for the exams first. That's why we're not that bothered if teachers just teach during classes based on the syllabus and not using ICT. Hara, N., and Kling, K. [18].

Students also prefer to use the national textbook compared to the Smart School textbook because the national textbook is more compatible with the examination. Examinations were based on the school textbook whilst the Smart School textbook was just like an additional source to let students be more aware and help do their work. Bryk, A. S., Bender Sebring, P. [11]. There are differences in the information content between textbooks and the Smart system". The students were preferred the national textbook because it was the main resource and the public examination questions will be based on. (Spector, 2000)[5].

conclusions

This article has focused on the uptake and use of digital technology in primary and secondary schools. It has attempted to provide a credible and clear picture of the current international research on this topic. It should be noted that difficulties were encountered in terms of the vague and seldom well-defined understanding of "uptake" and "use" in most of the articles reviewed. Bulfin, S., & North, S. (2007) [9].

As stated in the introduction to our article, these two concepts seemed to be taken for granted. In view of this we decided to employ "uptake and use" as "a phrase to simultaneously address both aspects of digital technologies, something in use and something about to be used in perhaps new and changing contexts". Such a way of understanding uptake and use might have the potential to guide future literature reviews and empirical studies on this topic. Bryk, A. S., Bender Sebring, P. [11].

Before a few, we hope, well-informed suggestions are given for moving beyond the current situation, each of the four themes that have been identified and presented above will be discussed and understood as lessons learned from the literature review. Spector, M. (2000) [19].

REFERENCES

- Achinstein, B. (2006). New teacher and mentor political literacy: reading, navigating and transforming induction contexts. *Teachers and Teaching: Theory and Practice*, 12(2), 123–138.
- Arnseth, H. C., & Ludvigsen, S. (2006). Approaching institutional contexts: Systemic versus dialogic research in CSCL. *International Journal of Computer-Supported Collaborative Learning*, 1(2) June 2006, 167–185.
- Bennison, A., & Goos, M. (2010). Learning to teach mathematics with technology: A survey of professional development needs, experiences and impacts. *Mathematics Education Research Journal*, 22(1), 31–56.
- Brown, W., Klein, H., & Lapadat, J. (2009). Scaffolding student research in a digital age: An invitation to inquiry, *Networks*, 11(1), 1–11.
- Bryk, A. S., Bender Sebring, P., Allensworth, E., Luppescu, S., & Easton, J. Q. (2010). *Organizing schools for improvement. Lessons from Chicago*. Chicago: The University of Chicago Press.
- Bulfin, S., & North, S. (2007). Negotiating digital literacy practices across school and home: Case studies of young people in Australia. *Language and Education*, 21(3), 247–263.
- Convery, A. (2009). The pedagogy of the impressed. How teachers become victims of technological visions. *Teachers and Teaching: Theory and Practice*, 15(1), 25–41.
- Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.
- Davies, J., & Merchant, G. (2009). *Web 2.0 for schools; learning and social participation*. New York: Peter Lang.
- Dwyer, J. (2007). Computer-based learning in a primary school: Differences between the early and later years of primary schooling. *Asia-Pacific Journal of Teacher Education*, 35(1), 89–103.
- Elmore, R. F. (2004). *School reform from the inside out. Policy, practice and performance*. Cambridge, MA: Harvard Education Press.



- Engeström, Y. (2008). Weaving the texture of school change. *Journal of Educational Change*, 9(4), 379–383.
- Gillett, M. "Advancing on Technology: are Women Gaining Ground?", *Women's Times*, Nov.
- Hara, N., and Kling, K., "Students' Distress with a Web-Based Distances". Spring, Retrieved September 2002.
- Hara, N., and Kling, K., "Students' Distress with a Web-Based Distances". Spring, Retrieved September 3, 2002.
- Henderson, L., "Instructional Design of Interactive Multimedia: A Cultural Critique". *Educational Technology research and Development*, 44(4), 85-104, 1996.
- Paulsen, M. F. "The Online Report on Pedagogical Techniques for computer-Mediated Communication. DEOSNEWS, 1996. understanding of the ways that must help to students for critical thinking 0.273 0.261 0.243 2.541 0.000 Finding the tools for involvement in learning 0.483 0.082 0.710*
- Spector, M. (2000). Designing technology enhanced learning environments. In B. Abbey (Ed.), *Instructional and cognitive impacts of Web-based education* (pp. 241-261). Hershey: idea group Publishing.
- Spector, M. (2000). Designing technology enhanced learning environments. In B. Abbey (Ed.), *Instructional and cognitive impacts of Web-based education* (pp. 241-261). Hershey: idea group Publishin