

Research Article

Identifying and Explaining the Benefits of Intelligentization in Schools

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Abstract

Introduction: Making schools smarter is one of the new approaches in the field of education, which will transform the teaching and learning process by making changes in the curricula. Considering the importance of the school's role in the formation of students' talent and ability, and the importance of education and the importance of the quality of education, in this research, an attempt has been made to identify the benefits of intelligentization in schools. **Method:** This research was done with the method of content analysis. First, 24 people were purposefully selected to conduct the interview, and after conducting the interview, the data analysis process was carried out with maxqda10 software. After extracting the open codes, these codes were categorized and placed in subcategories, and finally, by categorizing the subcategories, the main categories were identified and extracted. **Results:** By analyzing the data, 7 main categories and 36 sub-categories were identified as the benefits of making schools smarter. **Conclusion:** The results of the research showed that the quality of education in schools can be improved by using emerging technologies in making schools smarter.

Keywords

Technology, Intelligence, Smart Schools, Quality of Education

1. Introduction

The emergence of the fourth industrial revolution has caused changes in artificial intelligence, Internet of Things and other technologies in different parts of our society, including education. This fact leads to a paradigm shift in which web-based cyber-physical environments will shape the learning environments of the future. Therefore, learning becomes ubiquitous and schools take on new roles and become learning organizations with systemic changes in communication, management and administration [1].

The information age is the result of human transformation from the industrial age to its entry into the third millennium,

and this change requires new educational methods that are not compatible with current educational [2] and causes the emergence of new forms of formal and informal learning [3]. Fundamental changes in educational content are taking place in most countries of the world [4].

Development based on intelligence is a rapidly developing process of the technological revolution [5]. The traditional "score-based" teaching model, both in "teaching" and "management", cannot adapt to the development of the current information age. With the support of emerging technologies such as the Internet and big data, the concept of educational

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intelligence is changing the traditional model of "hard" educational management [6]. Educational systems must change to keep up with the extensive changes in today's world, changes that have affected all human societies. Smart school is a technology-based educational-learning institution to prepare children for the information age [7]. The emergence of smart schools has provided new learning opportunities for students. These types of schools have been established to compensate for some shortcomings such as inefficient traditional teacher-centered teaching methods, lack of up-to-date and valuable textbooks, and weak computer knowledge of teachers and students [3] and this is one of the strategies that schools have adopted in response to today's modern needs [8]. Smart schools are one of the new approaches in the field of education, which, by combining information technology and curricula, will lead to fundamental changes in the teaching and learning process. A smart school is a school that has been completely systematized with the help of new technologies, smart educational and digital systems to speed up the teaching-learning process and improve management so that humans in the information age are able to process and categorize and The optimal use of technical resources of today's knowledge, considering its wide range, should be to discover one's talent and bring forth creativity. Technology in smart schools acts as an accelerator and enabler and not only fulfills the current goals of the education system, but also cultivates a workforce that has the ability to face the challenges of the 20th century [9]. Intelligence can transform teaching and learning. It can also create a revolution in teaching and by increasing new methods, it can improve students' learning and reduce teachers' planning time for teaching, and also improve teacher's assessment of students. With the increase of studies in the field of artificial intelligence in the field of education, many researchers in this field believe that the role of teachers, schools and leaders in education will change [10]. In smart schools, students do not have any restrictions in their academic [11]. Education and giving importance to the capabilities of students requires a fundamental transformation in the form and method of education using new information technologies, which has created a new potential in the country. Technology-based education is very effective in the learning-teaching process. These technologies have also led to continuous comprehensive and deep learning. Smart schools will create an educational environment that will enable the realization of a knowledge-based society [12]. Considering the importance of the school's role in the formation of students' talent and ability, and considering the importance of intelligence and its impact on improving the quality of education and evaluation, etc., in this research, an attempt has been made to identify the benefits of intelligence in schools.

2. Methodology

This research was conducted with a qualitative approach

and conventional content analysis method. The purpose of content analysis is to identify the goals, values, culture and tendencies of the text or the author of the text or the interviewee, or observed. Content analysis first dealt with the objective description of the system and some of the content of the obvious relationships, but over time, it reached the interpretation of the hidden content [13]. The statistical population of this research is experts and teachers in the implementation of school smartness. Since the research method is qualitative, samples should be selected in such a way as to provide the maximum amount of information based on the goal and question of the research, which is called purposive sampling. Therefore, in this research, purposeful snowball sampling was used until the study of theoretical saturation [14]. At first, the researcher contacted the participants who were introduced, and while stating the purpose of the research, the interview method, ensuring the confidentiality of the interview, if they agreed, the time and place of the interview was determined by the participants. The interviews started from November 2023 and continued until March 2023. The interviews were conducted by the authors in a calm environment. A total of 24 interviews were conducted in person. The interviewees were selected from the principals, teachers and specialists of Shiraz schools. The interview was recorded with the consent of the interviewees and the text of the interviews was typed verbatim and with the literature of the interviewees as soon as possible. The text of each interview was read several times so that the researcher could get a deeper understanding of the data. After typing each interview, the text of the interviews was uploaded separately in MAXQDA 10 software. Data analysis was done by the conventional content analysis method and according to the method of Granheim and Lundman [15]. Open coding was done using MAXQDA 10 software. In open coding, the text of the articles was broken into semantic units. The primary codes were listed and at the end of the coding, the output was taken from the software in Excel format. The code and text assigned to each code were specified in Excel file format and based on each article. After extracting the open codes, the codes were grouped based on conceptual and semantic similarity, and each class was named with titles that indicated its characteristics. Gradually, with constant comparison and integration, the data was placed in the main classes. Credibility of the data was done by reviewing the manuscripts by the participants. After the implementation of the interviews, the text of the interviews was sent to several interviewees to confirm the typed text, and sampling with maximum variety (managers, teachers, experts) increased the validity of the data. Confirmability By respecting the impartiality of the researcher, agreement was made on the codes and themes. After extracting the codes and specifying the main and sub-categories, the research results were given to two teachers and confirmed. The reliability of the data (Dependability Data) was provided by using experts' opinions and re-studying the entire data. After 10% of the coding, the text

of the interviews was given to two experts to re-code, and in this way, the reliability of the data was achieved, as well as the transferability through interviews with different participants. and providing direct quotations enabled a rich explanation of the data [13]. The profile of the interviewees can be seen in the following table:

Findings: After completing the interview, the interview text was loaded into the software and the open codes were extracted. In the next step, by categorizing the codes, subcategories were extracted, and in the last step, by categorizing the subcategories, 7 main categories and 36 subcategories were identified.

Table 1. Data Analysis (category).

category	sub category
Improving the quality and quantity of teaching and learning of students	Increase interactive learning
	Using blended learning
	Creating opportunities for cooperative learning and exploratory learning
	Learning based on multimedia content
	Activate the virtual class
	Designing educational materials with multimedia standards
	Learning at higher cognitive levels
Simultaneous participation of teacher and student in the teaching-learning process	Turning knowledge into ability
	Student-centered learning
	Learning at higher cognitive levels
	Content production by teacher and student
	Teacher and student participation in teaching and learning
Designing the learning environment according to the talent of the students	Preparation and presentation of different educational models by teachers
	Attention to individual differences
	Understanding the nature, needs and talent of students
	Improving individual abilities and capabilities
	Comprehensive development of students
Increasing motivation to learn in students	Considering the talent of students
	Motivate learning
	Encouragement in e-learning activities
	Satisfying students
	Increasing the educational motivation of learners
Diversifying student evaluation methods	Continuous evaluation of teaching-learning processes, variety of evaluation in smart schools
	Provide quick feedback to the student
	Evaluation using several methods and tools
	Reducing the application of teachers' personal opinions in evaluation
	Abandon the paper system
Saving money and school resources by making schools smarter	Reducing the number of personnel in the organization
	Minimizing costs in school
	Ease of access to multiple and educational resources at minimal cost
	Increasing the well-being of users with minimal cost

category	sub category
Facilitating access to information using technology	Shortening service time to users with minimum cost
	Increasing the speed of access to information resources using intelligence
	Information integration using intelligence
	Easy access to information
	Accurate distribution of information

3. Discussion

Improving the quality and quantity of students' education and learning by using intelligence: Whenever the school environment is (open, creative and humane), learning will be continuous, enjoyable and deep. In terms of improving the quality of school affairs in educational and educational dimensions, serious attention should be paid to rebuilding the model of intra-school relationships and training necessary to empower students, so that with the help of an appropriate model of improving the quality of students (capable, independent, self-leader, researcher and religious) raised Smartization, if implemented correctly, will increase the speed and quality of students' education. Zamani et al, (2015) also showed in their research that when intelligence is combined with the teaching process, teaching becomes more effective and satisfying [16]. Also, in addition to increasing the abilities of professors in teaching, it makes the teaching method easier. Ayala-Pazmiño (2023) showed in his research that intelligence can completely transform teaching and learning, which is consistent with the results of the current research [17].

Simultaneous participation of the teacher and the student in the teaching-learning process: the teacher can accompany the students in learning. In fact, the students take the responsibility of teaching-learning and alongside them, these teachers help to solve the problems in learning a particular subject. they help But this cooperation and participation is not an easy task for teachers due to the high number of students with the traditional teaching method. One of the most important and efficient solutions is the use of school smart software. With their school software, teachers can take responsibility for each student's interaction and cooperation in solving problems and making the student's learning mature. Gin et al. (2024) showed in the research that intelligentization by reforming formal education has promoted development, and by changing education from traditional to student-centered, it supports the all-round development of students [6].

Designing the learning environment according to the students' talent: smart schools due to flexible curricula, the possibility of teaching with new methods, having a wide range

of programs and educational methods, and focusing on the role of the student, taking into account individual differences. Paying more attention to the needs, interests, and talents of students can eliminate or reduce the gap between education and talent. Smart schools are one of the information and communication technology educational projects that have been created to innovate teaching-learning processes in the world and in order to improve the quality of the education process, by intelligently using the media. In their research, Rezaei et al. (2019) showed that by making schools smarter, every student has the opportunity to reveal his talent and create content. In these schools, success can be achieved and its level will depend on the efforts of the students [11]. In his research, Nesterenko (2023) showed that in smart schools, personal and smart technologies help participants in learning, and due to the richness of the field of education, it increases the independence of students [4].

Diversifying student evaluation methods: evaluation is considered a vital pillar in the teaching-learning process. Certainly, creating an efficient evaluation system can help to make the educational system of smart schools more efficient and make its activities transparent. In a research conducted by Shah Zari (2016), he came to the conclusion that information and communication technology is more effective on educational planning and evaluation variables than other quality variables, which is consistent with the results of the current research [18].

Increasing the motivation of students to learn: Smartening the school has great effects on increasing the quality of learning and improving the education process. In smart schools, each student can learn according to his talent, the competitive atmosphere will be less and this will help motivate students. Easier access to information will result in better education, cost savings, effective learning experience, and increased student motivation. Akhwan Tuiserkani et al. (2015) showed in their research that there is a significant relationship between the facilities needed to make schools smarter and motivating students to learn, which is in line with the results of the current research [19].

Saving money and school resources by making schools smarter: It is possible to save money in schools with the implementation of intelligentization. Saving paper is one of the things that will happen with intelligentization, creating a

database, etc., is one of the things that can be used to reduce the costs of schools. Making schools smarter saves time and money. By making schools smarter and using software, it is possible to reduce additional costs and save time. Woodside (2015) showed in their research that considering the benefits of cloud computing (intelligent equipment), using cloud computing in education will reduce costs and innovate education in the future [20].

Facilitating communication and interaction between teacher and student with intelligence: Communication is one of the most basic parts of learning for students. Teachers play an essential role in this. Providing communication helps students to learn better through communication with other students and also helps to develop social and personal characteristics of students. The use of technology is very effective in facilitating the process of communication and formation of educational groups. Azizzadeh & Taghipourtalesh, 2023, showed in their research that the interaction between teacher and student can be improved with intelligence [3].

Facilitating access to information using technology: The use of intelligence will increase access to information at any time and any place. The fact that students have access to the educational content of the same day during their absence will definitely reduce educational problems. The teacher will communicate with students 24 hours a day and this will improve the quality of education in schools. Mousavi Chalak and colleagues (2017) showed in their research that by using distance education, learners will be able to absorb more information in a shorter period of time and have more motivation in learning, which is consistent with the present results [21].

4. Conclusion

By making schools smarter, a space will be created in which management, monitoring, evaluation, education, etc. are based on technology. By preparing the infrastructure needed for smart building in schools, it is possible to create a huge transformation in education and learning. In this research, which was conducted with the method of content analysis, 7 main categories (improving the quality and quantity of teaching and learning of students, the simultaneous participation of teachers and students in the teaching-learning process, designing the learning environment according to the talent of students, diversifying the methods of evaluating students, increasing the motivation of students to learn, saving money and resources of schools by making schools smarter, facilitating communication and interaction between teachers and students by making them smarter, facilitating access to information using technology) from the interviewees as the benefits of making schools smarter was extracted.

Conflicts of Interest

The authors declare no conflicts of interest.

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