Comparing teaching-learning methods in smart and ordinary schools

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Abstract

This study aimed to compare the teaching-learning processes in smart and ordinary girl high schools in second period of Kerman city district 2. The current study is causal-comparative. In order to collecting data, Marshall (1978) teaching-learning questionnaire has been used and its validity and reliability were measured 0/35 and 0/85, respectively. All statistical analysis has been done through computer software SPSS version 22. The study population consisted of all female secondary school students in the second period of intelligent and ordinary schools of Kerman district 2 whose number is 8,000, which among them 369 students were selected according to Cochran formula. The results of the analysis show that there is a significant difference between teaching-learning methods in smart and ordinary female high schools in second period of Kerman city district 2.

Keywords: teaching-learning, smart schools, ordinary schools.
Introduction

Today's man to deal effectively with the scientific, technological, cultural, political, social and ethical challenges hasn’t found a better, more plausible and effective means than schools. So, effective school has been assessed as a prerequisite for comprehensive and sustainable development. The schools have seven elements or components. Learner (student), trainer (teacher), program (content or knowledge and skills that must be learned), purpose, method, and finally the time and place where the teaching-learning process are happened (Abadi, 2005). Now the question is how schools and relying on what of their elements and components, show the maximum impact and role in sustainable development? In other words, is it possible to prioritize these elements in terms of the degree of importance and influence on the changes and transformation? It seems that the three elements of schools components of special importance and priority: first, teacher, second, student and third, content. Throughout the history of schools, each of these elements within a specific time, have been in the school system focal (Mirza Aqae, 1997), so that we have had «teacher-based”, “student-based” and "content-based" schools. Maybe you're allowed to focus on one of these elements (Cayenne Lu, 2000). Teacher can be the focal of education process because of being as the main agent of this process. Student also can be the focal of education process because of being as the core of all activities and all teachers activities will be provided for to bring educational content to him/her and the content because it contains information, knowledge, skills and values that will be transferred during the teaching-learning process. Irrespective of which of these three elements are at the core of the educational system, it can be considered that training process meaning teaching-learning, is the result of the interaction of three elements: teachers, students and content. How these interactions work and the influence each of these elements under the influence of teaching-learning methodological strategies is considered as another component of the schools system. Expansion of our understanding of these strategies can lead to the reform of teaching-learning process and as a result, structural changes in bases of educational system (Betham, 2005). According to Nola (1998) teaching-learning component is one of the important components of the education system. With accepting this point, it can be said any reform or revise in education system firstly should be directed to teaching-learning component and its core elements meaning teacher and learning, because these elements (agents) specifically teacher plays basic and direct role in learning experience. In other words, much of the effectiveness of the education system on students rather than is sought on programs, policies and approved guidelines, should be found in the teaching and learning environment (Mehrmohammadi, 2001). Teaching-learning component is one of the most important components of the education system (Fenstr Makher, 2002 and Dewey, 2010).

The basic elements of teaching-learning component are the teacher and the learner. The cause of emphasis on the role of teacher and student, especially teacher in the teaching-learning process is that the influence of other educational factors including educational goals, curricula, the content of textbooks and teaching methods takes place through the teacher towards learner. That's why the education system must direct any revise and review in educational system to teaching-learning process and the role of the teacher and student (especially teacher). Smart schools are schools that are flexible in relation to students abilities and characteristic and do not impose them
to be compatible with predetermined requirements. This is represents the difference between traditional and modern teaching methods. In contrast, ordinary schools do not act flexible in relation to student’s capabilities and features work (Ebadi, 2008). Smart School, is a school in which the process of implementing the entire processes, including the management, supervision, teaching-learning, educational resources and teaching aids, evaluation, documentation and office affairs, communications and development principles both based on information and communication technology (ICT) and to improve research-based educational system have been designed. Therefore the aim of comparing these two schools is that we know which of the practices of teaching and learning in schools of Baft city have more efficiency and performed better. Considering the above matters the main purpose of this research is comparing teaching-learning methods in smart and ordinary girl high schools in second period of Kerman city district 2. Based on main purpose of the research, the hypotheses we intend to investigate them in this study are as follows:

The main hypothesis

• There is relationship between teaching and learning methods in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

Secondary hypotheses

• There is relationship between the perception of the learning environment in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

• There is relationship between the perception of organizing in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

• There is relationship between the scientific condition of teaching in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

• There is relationship between the perception of general space of teaching in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

• There is relationship between the perception of social relationships in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

The teaching-learning processes are the main elements of the curriculum and in teaching and learning process play an important role. Achieving education goals is possible through the application of methods and teaching techniques. If in curriculum tried by selection appropriate content learning and desired behavior change taken place, the method of content presentation or the way in which it is tried intended changes in learner happen, called teaching methods or teaching-learning processes (Mirzabeygi, 2001). In the teaching-learning methods (teaching),
some issues including how to provide knowledge, changing attitudes and teaching required skills by the teacher to the student, the learner participation in learning, how to communicate with each other and with environment, materials, equipment and training facilities, are considered.

In a participatory teaching-learning process, learners are more likely to comment. As well as the teacher has more ability to transfer knowledge, familiarize with abilities and ideas of learners and most importantly, for mutual learning. They through a common activity help each other in receiving learning goals and with accumulate their forces and facilities and sharing in work, integrate individual goals with group ones. This means that each person consider himself responsible for achieving educational goals. In this approach teaching-learning process is organized so that each learner in the learning process faced with questions which must respond to each of them, individually or collectively or do assigned homework. Accordingly, the amount and content of what they have learned, is evaluated continuously and based on the obtained results each type of for restorative or compensative training may be required for learners are given to them. This approach makes their participation in the teaching-learning process fruitful. Participatory teaching-learning models often have this feature, which creates a division of labor among the participants in this process that by adoption of educational technology and the use of multimedia tools such as dialogue boxes, concurrent conferences and, in general, e-learning technology its backgrounds are provided and facilitated (Salimi, 2009).

In smart schools, the expected targets are defined in long-term time periods. These objectives are explained in a way that reflects the organization's objectives and pave the way for achieving these objectives. Also, the objectives of smart schools have been developed in line with the vision of these schools to achieve these goals makes it possible to achieve the vision (Hall, 2001). In student-based learning environments in smart schools, technology is a powerful tool for experiential learning. Traditional classroom tools such as pens, notebook and school books are still important, but to adjust and refine ideas and students access to information are not enough. Especially the computer and audiovisual tools can engage students with their everyday life issues (Shahrakipour et al., 2003).

Similar researches have been done in this area that we refer to some of them. Zamanibeygi et al (2013) conducted a study to identify ways to develop mobile learning in teaching-learning activities in medical education from the perspective of medical students and IT professionals and training courses, educational programs, information and monetary facilities were introduced as the most important development strategies for mobile learning facilities in Isfahan University of Medical Sciences. Thus, it is recommended that the authorities take the necessary steps to extend this learning. Dordoinejad and Farhad (2014) in a study entitled the application of total quality management in teaching-learning process of education experts came to the conclusion that TQM had the most influence on modern literature of education. Wide efforts have been done to implement comprehensive quality management principles in education but we are still in the early stages of work. Some schools and universities have used these principles in the fields of industry and with specific objectives but the use of total quality management in the process of
teaching-learning that is at the heart of education –meaning teaching-learning process, has been less considered. Ebrahizadeh (2014) in a study entitled teaching-learning and open universities examined distance and future teaching-learning process. The present article after the introduction of elements of education with the question of education based on which of its elements or components shows the greatest impact on its role in sustainable development, addresses teaching-learning process, different approaches are used in this process, and introduction a new structuralism approach and its impact on the environment of learning. Then consider the issue of learning and collaborative teaching-learning opportunities and by offering this sample of learning points to the role of giving rapid feedback to learners as a success factor in the learning. Jabbarifar, Khademi, Khalifeh Sultan and Youssefi (2014) in a study entitled “dental students of Esfahan assessment of the teaching and learning environment” concluded that the conditions of teaching and learning and educational environment of the considerable notes on the students skills and abilities obtaining during their studies and providing the satisfactory condition in their future professional. Ortiz and Wilkinson (1991) consider curriculum and good teaching, involving students in the process of teaching and learning to create appropriate learning, performance and knowledge of teachers and continuous and systematic evaluation of student achievement of effective factors in the achieving English language goals. Also creating the opportunity to learn skills and access to educational curricula providing the development of skills in the form of intertwined are effective factors in teaching and learning of English language. Wang Shosan (2000) in a study about the use of ICT and its role in teaching and learning in smart schools came to the conclusion that the old ways can no longer meet the needs of teaching - learning an as a result, new training method should be replaced by traditional methods.

**Research methodology**

The aim of this study is an applied research and the method is causal-comparative descriptive research that is conducted as field research to collect data. The study population consisted of all female secondary school students in the second period of intelligent and ordinary schools of Kerman district 2 whose number is 8,000, (6000 students of ordinary schools and 2000 students of smart schools) which among them369 students were selected according to Cochran formula as sample size. Stratified random sampling method proportional to population size was used in this research. After determining the sample size in each category, simple random sampling was used to select sampling unit, that is the size of each unit was specified and then based on the sample size, the required number of people for sampling were selected in proportion to the size of the list and questionnaire was distributed between them. In this study, in order to collect data and information for analysis the Marshall (1978) teaching-learning questionnaire was used. This questionnaire has fifty positive and negative statements with a Likert scale and five areas that include:

1 - The scope of perception of learning environment with 12 questions, 2- The scope of perception of organizing training course with eleven questions, 3- The scope of perception of scientific condition of teaching with eight questions, 4- The scope of perception of general space
of training with twelve questions, 5- questions social relationships with eight questions. The score range of questionnaire is between 0-200 and the average placed between1-5. Based on the questionnaire author's commentaries the average of 3/5 and higher indicates that the positive aspects of learning environment are more than negative aspects of it and the average of 2 and lower indicates negative aspects of learning environment are more than positive aspects. Marshall (1978) teaching-learning validity was determined by 5 professors 0/35 and its reliability 0/85. To collect data, researcher distributed 369 questionnaires among female secondary school students in the second period of intelligent and ordinary schools of Kerman district 2 and the amount of sample size was collected and used to analysis. To analyze the data, descriptive statistics (frequency, percentage, mean, variance, standard deviation) were used and in inferential statistics t test was used to testing hypotheses. SPSS software was used for data analysis and statistical significance level was considered at 0/05.

**Research findings**

To describe the general characteristics of respondents, descriptive statistics were used. In Table 1, the frequency of respondents by type of school is studied.

<table>
<thead>
<tr>
<th>School type</th>
<th>percentage</th>
<th>frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>smart</td>
<td>51/5</td>
<td>187</td>
</tr>
<tr>
<td>ordinary</td>
<td>48/5</td>
<td>182</td>
</tr>
<tr>
<td>total</td>
<td>100</td>
<td>369</td>
</tr>
</tbody>
</table>

According to Table 1, the 87 people meaning 51/5 percent of respondents were studying in smart schools. 5/48 82 percent of the respondents were studying in ordinary schools.

In Table 2 descriptive statistics of variables are presented.

<table>
<thead>
<tr>
<th>Variable</th>
<th>strain</th>
<th>skewness</th>
<th>variance</th>
<th>standard deviation</th>
<th>mean</th>
<th>maximum</th>
<th>Minimum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of learning environment</td>
<td>-0/224</td>
<td>-0/064</td>
<td>0/289</td>
<td>0/537</td>
<td>3/558</td>
<td>4/917</td>
<td>2/083</td>
<td></td>
</tr>
<tr>
<td>Perception of organizing</td>
<td>-0/196</td>
<td>0/015</td>
<td>0/358</td>
<td>0/598</td>
<td>3/584</td>
<td>4/909</td>
<td>1/909</td>
<td></td>
</tr>
<tr>
<td>Perception of scientific condition of teaching</td>
<td>0/060</td>
<td>-0/255</td>
<td>0/297</td>
<td>0/545</td>
<td>3/826</td>
<td>5</td>
<td>2/125</td>
<td></td>
</tr>
<tr>
<td>Perception of general space of</td>
<td>0/241</td>
<td>0/032</td>
<td>0/389</td>
<td>0/623</td>
<td>3/279</td>
<td>4/917</td>
<td>1/333</td>
<td></td>
</tr>
</tbody>
</table>
Confirmatory factor analysis of used scale

In this study, to assess the factors of practices of teaching and learning in smart and ordinary girl high schools in second period a scale composed of five factors (latent variables) and 51 items (observable variables) has been used. To examine research questions based on this scale firstly the accuracy of the used scale must be approved. So, the confirmatory factor analysis has been used to measure latent variables relationships with their measurement items. Confirmatory factor analysis assesses the relationship of items (questions of questionnaire) with the structures. In fact, if it is not proved the questions of questionnaire have measured the latent variables, the research questions can’t be used based on questionnaire data. So in order to prove that the data have been properly measure, confirmatory factor analysis is used. The results of factor analysis of the used scale are shown in figure 3 and figure 4. Factor loading in all cases has a value greater than 0/3 indicating that the correlation between latent variables (aspects of each of the main structures) with visible variables is acceptable. After identification of correlation between variables the significance test should be performed. To investigate the significance of the relationship between variables the t-value statistics is used. Because significance is investigated on error level of 0/05, so if amount of observed factor loading with t-value test is calculated less than 1/96, the relationship is not significant and in LISREL software will be displayed in red. Based on the results shown in Figures 3-4 the assessment indicators in each of the used scales in confidence level of 0/05 of t-value is greater than 1/96, which shows the observed correlations are significant.
Figure 3: The standard factor loading of confirmatory factor analysis of used scale
Figure 4 The significance statistic (t-value) of factor analysis of used scale

Study hypotheses review

To investigate study question, the effect of respondent’s school type, t test results have been used.

The main hypothesis

• There is relationship between teaching and learning methods in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

In order to measure significant differences in the mean score of respondents' views based on the type of school about student learning two samples t-test was used.

**Table 5** Two-sample independent t data of learning practices based on the type of school

<table>
<thead>
<tr>
<th>Type of school</th>
<th>mean</th>
<th>SD</th>
<th>significance amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart</td>
<td>3/541</td>
<td>0/477</td>
<td>0/029</td>
</tr>
<tr>
<td>ordinary</td>
<td>3/527</td>
<td>0/428</td>
<td></td>
</tr>
</tbody>
</table>

Based on the findings of two samples independent t test in Table 5 at the error level of 5%, the difference of learning practices in smart and ordinary schools is significant. Therefore it can be said teaching-learning methods in smart schools are higher level.

First secondary hypothesis:

• There is relationship between the perception of the learning environment in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

**Table 6** Two-sample independent t data of perception of the learning environment based on the type of school

<table>
<thead>
<tr>
<th>Type of school</th>
<th>mean</th>
<th>SD</th>
<th>significance amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart</td>
<td>3/731</td>
<td>0/555</td>
<td>0/049</td>
</tr>
<tr>
<td>ordinary</td>
<td>3/587</td>
<td>0/519</td>
<td></td>
</tr>
</tbody>
</table>

Based on the findings of two samples independent t test in Table 6 at the error level of 5%, the difference of the perception of the learning environment in smart and ordinary schools is significant. Therefore it can be said teaching-learning methods in smart schools are higher level.
The second secondary hypothesis:

• There is relationship between the perception of organizing in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

Table 7 Two-sample independent t data of perception of organizing based on the type of school

<table>
<thead>
<tr>
<th>significance amount</th>
<th>SD</th>
<th>mean</th>
<th>Type of school</th>
<th>perception of organizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/022</td>
<td>0/612</td>
<td>3/639</td>
<td>Smart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0/580</td>
<td>3/525</td>
<td>ordinary</td>
<td></td>
</tr>
</tbody>
</table>

Based on the findings of two samples independent t test in Table 7 at the error level of 5%, the difference of the perception of organizing in smart and ordinary schools is significant. Therefore it can be said teaching-learning methods in smart schools are higher level.

The third secondary hypothesis:

• There is relationship between the perception of scientific condition in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

Table 8 Two-sample independent t data of perception of scientific condition based on the type of school

<table>
<thead>
<tr>
<th>significance amount</th>
<th>SD</th>
<th>mean</th>
<th>Type of school</th>
<th>perception of scientific condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/047</td>
<td>0/570</td>
<td>3/827</td>
<td>Smart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0/520</td>
<td>3/824</td>
<td>ordinary</td>
<td></td>
</tr>
</tbody>
</table>

Based on the findings of two samples independent t test in Table 8 at the error level of 5%, the difference of the perception of scientific condition in smart and ordinary schools is significant. Therefore it can be said teaching-learning methods in smart schools are higher level.

The fourth secondary hypothesis:

• There is relationship between the perception of general space of teaching in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.
Table 9 Two-sample independent t data of perception of general space of teaching based on the type of school

<table>
<thead>
<tr>
<th>Type of school</th>
<th>SD</th>
<th>mean</th>
<th>significance amount</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart</td>
<td>0/649</td>
<td>3/281</td>
<td>0/040</td>
<td></td>
</tr>
<tr>
<td>ordinary</td>
<td>0/598</td>
<td>3/277</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the findings of two samples independent t test in Table 9 at the error level of 5%, the difference of the perception of general space of teaching in smart and ordinary schools is significant. Therefore it can be said teaching-learning methods in smart schools are higher level.

The fifth secondary hypothesis:

- There is relationship between the perception of social relationships in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016.

Table 10 Two-sample independent t data of perception of social relationships based on the type of school

<table>
<thead>
<tr>
<th>Type of school</th>
<th>SD</th>
<th>mean</th>
<th>significance amount</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart</td>
<td>0/608</td>
<td>3/525</td>
<td>0/029</td>
<td></td>
</tr>
<tr>
<td>ordinary</td>
<td>0/600</td>
<td>3/521</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the findings of two samples independent t test in Table 10 at the error level of 5%, the difference of the perception of social relationships in smart and ordinary schools is significant. Therefore it can be said teaching-learning methods in smart schools are higher level.

Discussion and conclusion

The present study aimed to describe the teaching and learning methods in smart and ordinary girl high schools in second period of Kerman city district 2. The main hypothesis of this research was there is relationship between teaching and learning methods in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016 which this hypothesis was confirmed. Therefore it can be said teaching-learning methods in smart schools are higher level. This has been confirmed by Jabbari et al. (2014) in a study entitled dental students of Esfahan assessment of the teaching and learning environment” indicating the effect of teaching and learning methods is important.
The first secondary hypothesis was there is relationship between the perception of the learning environment in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016, that this issue previously has been confirmed by Ebrahimzadeh (2014) in a study entitled teaching-learning and open universities examined distance and future teaching-learning process. The second secondary hypothesis was there is relationship between the perception of organizing in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016, which previously had been confirmed by Dordoinejad and Farhad (2014) in a study entitled the application of total quality management in teaching-learning process of education experts. The third secondary hypothesis was there is relationship between the perception of scientific condition in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016, which already had been confirmed by Wang Shosan (2000) in a study about the use of ICT and its role in teaching and learning in smart schools. The fourth secondary hypothesis was there is relationship between the perception of general space of teaching in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016, which this issue had been confirmed previously by Tamjidtash and colleagues (2011) in a study entitled the role of teacher’s attitude change on their teaching-learning performance in elementary schools of Maragheh city in the academic year of 2011. The fourth secondary hypothesis was there is relationship between the perception of general space of teaching in smart and ordinary girl high schools in second period of Kerman city district 2 in year of 2016, which this issue already had been confirmed by Mirzabeigi and colleagues (2013) in a study entitled the identification of the strategies to develop fluid learning in teaching-learning activities of medical training from the perspective of Esfahan university of medical sciences students and information technology experts.

Finally, the research achievements are mentioned. The first achievement of this study is creating a valid (valid) and reliable scale for assessing the teaching-learning methods. Although these structures are widely used in the real scientific and educational world but so far little academic studies have been done, in this area, at least within the country. Therefore, as a first step, a valid scale to measure each of these structures has been presented. The main aspects of each of the structures based on existing research literature and expert interviews were identified. After verifying and final approval of the principal dimensions (factors), measurement items of each factor were determined. In this stage, to confirm the items and ensure the accuracy of designed scales confirmatory factor analysis was used. Confirmatory factor analysis revealed that the designed scale to measure research variables is valid. Another achievement of the research is applying designed scales to solve a practical problem among students in district 2 of Kerman city. These results have been obtained in response to the hypothesis. Conceptual model using LISREL software has been authenticated. Factor loadings of assessment of each variable of research have been obtained higher than 0.3, indicating the intended aspects to assess these aspects (dimensions) have been selected properly and model is confirmed. Factor loadings of t-value statistics also in each of the hypotheses show the significance of the observed correlations.
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