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Effect of Smart Schools on Intelligence Quotient of Students: (A Case Study on Boy and Girl Students of Sixth Grade of Primary School in Schools of Gorgan)

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ABSTRACT
The present paper aimed at determination of effect of smart schools on intelligence quotient of students in Gorgan City. Sample volume was assigned by use of Morgan Table (361 students). Data collection was performed by Test Mosaiquce De Gill. The obtained results showed that the mean IQ for boy students of smart schools was 7.64 while it was significantly lower for boy students of non-smart schools (7.16) ($p<0.05$). Also, the mean IQ for smart and non-smart schools were 6.56 and 6.45, respectively; the figures had no significant difference ($p>0.05$).
Keywords: *smart school, IQ, primary school, Gorgan.*

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INTRODUCTION

Nowadays, the most important concern of education systems is to provide a suitable basis for growth and development of intellectual capital in information and knowledge-based society. In order for all social groups to be able to participate effectively in such a society, they need to acquire continuous learning, creativity, innovation as well as active and creative social participation. This necessitates a novel definition of role and function of schools as the main educational center in society [1]. Since education in Iran is solely teacher-oriented, bringing schools up to date, use of novel technologies, having novel creativities in education as well as paying attention to capabilities of students are essential for such a revolution [1]. David Perkins et al. (1984) in Harvard University presented smart school plan as a novel experience in educational programs by use of ICT. The plan was gradually adopted in a few schools and it developed later [1]. The first smart schools are said to be founded in England in 1996 and then the plan was launched in Malaysia. Smart school plan was transferred to other countries through presenting a successful model so that it is used in such countries as Ireland, Egypt, and Australia. The learning processes in smart school focuses on all round development of thestudents and provide them with opportunities to enhance individual strength andabilities. With the aid ofmultimedia technology, smartschool students are required toself-direct, self-access, and self-pace in learning. As such, students are allowed toexplore topics ofinterest without being tied down to rigid curriculum and self-accessinformation from various sources independent ofthe teacher. They can also learn attheir own pace without being held back by slower students or having to deal withmaterial beyond their capabilities [2]. Inother words, smart school students are encouraged to self-regulate their own learning activities [3]. Three key differences in the teaching and learning process of Smart Schools as compared to the Mainstream Schools are self-accessed, self-paced, and self-directed learning. Self-accessed learning means the students learn how to access and use relevant learning materials. Self-directed learning means that students learn how to direct, manage and plan their learning. Self-paced learning means that a student learns at his/her own pace, with enough challenging materials to help him/her achieve a certain competency level [4]. The term “smart school” has recently appeared in education literature of Iran and precious works have been performed since then. However, there are doubts whether smart schools in

Iran were able to result in growth and development of qualitative and quantitative levels of students. An intelligence quotient, or IQ, is a score derived from one of several standardized tests designed to assess intelligence. The abbreviation "IQ" comes from the German term Intelligenz-Quotient, originally coined by psychologist William Stern. When current IQ tests are developed, the median raw score of the norming sample is defined as IQ 100 and scores each standard deviation (SD) up or down are defined as 15 IQ points greater or less, although this was not always so historically [5; as cited in 6]. The American Psychological Association's report "Intelligence: Knowns and Unknowns" states that wherever it has been studied, children with high scores on tests of intelligence tend to learn more of what is taught in school than their lower-scoring peers. The correlation between IQ scores and grades is about .50. This means that the explained variance is 25%. Achieving good grades depends on many factors other than IQ, such as "persistence, interest in school, and willingness to study" (p. 81) [7; as cited in 6] It has been found IQ correlation with school performance depends on the IQ measurement used. For undergraduate students, the Verbal IQ as measured by WAIS-R has been found to correlate significantly (0.53) with the GPA of the last 60 hours. In contrast, Performance IQ correlation with the same GPA was only 0.22 in the same study [8; as cited in 6]. Considering what mentioned above, the present paper aimed at determination of effect of smart schools on intelligence quotient of students in Gorgan City.

METHODOLOGY

The present paper was formulated to determine effect of smart schools on intelligence quotient of students in Gorgan City. Study community was composed of all boy and girl students of sixth grade of primary school of Gorgan City (6239). Sample volume was assigned by use of Morgan Table (361 students). Data collection was performed by Test Mosaiquce De Gill. This test is specialized for primary school students ranging in age between 6 and 14 years. The test is performed in presence of teacher and all characteristics of a usual class are observed. The teachers were asked not to have any interference with the test and not to walk between benches or not to sit at the end of the class. Scores were estimated by use of the guide table. Then, mental age of the students was assigned in terms of different social and economic environments in which the students live as well as the obtained score. Finally, IQ was calculated as follows:

$$IQ = \frac{mental\ age}{calendar\ age} \times 100$$

Statistical analysis was performed via SPSS Software version 16.

RESULTS

As it can be seen from table 1, the highest IQ in boy students of non-smart schools is 9.23 and the mean IQ is 7.16 (SD=1.03).

Table 1: descriptive data for the gained score, estimated mental age, and IQ for boy students of non-smart schools

	Number	Minimum	Maximum	Mean	Standard deviation
Gained score	105	65.00	168.00	120.88	21.13
Estimated mental age	105	6.50	12.00	10.04	1.45
IQ	105	4.86	9.23	7.16	1.03

As it is seen in table 2, the highest IQ for girl students of non-smart schools is 8.95 and the mean IQ is 6.45 (SD=1.41).

Table 2: descriptive data for the gained score, estimated mental age, and IQ for girl students of non-smart schools

	Number	Minimum	Maximum	Mean	Standard deviation
Gained score	78	47.00	902.00	118.42	94.04
Estimated mental age	78	6.00	12.00	9.23	1.69
IQ	78	0.00	8.95	6.45	1.41

According to table 3, the highest score for IQ in boy students of smart schools is 8.90 and the mean IQ is 7.64 (SD=0.95).

Table 3: descriptive data for the gained score, estimated mental age, and IQ for boy students of smart schools

	Number	Minimum	Maximum	Mean	Standard deviation
Gained score	81	91.00	174.00	138.45	19.37
Estimated mental age	81	7.50	12.00	10.81	1.31
IQ	81	5.00	8.90	7.64	0.95

Furthermore, table 4 shows that the highest IQ for girl students of smart schools is 8.95 and the mean IQ is 6.56 (SD=1.43).

Table 4: descriptive data for the gained score, estimated mental age, and IQ for girl students of smart schools

	Number	Minimum	Maximum	Mean	Standard deviation
Gained score	97	24.00	191.00	111.42	33.42
Estimated mental age	97	4.00	12.00	9.34	1.87
IQ	97	0.00	8.95	6.56	1.43

Table 5 presents the mean scores, mental age, and IQ gained by boy and girl students of smart and non-smart schools. It is noteworthy that a significant difference was detected between the IQ gained by boy students of smart and non-smart schools ($p<0.05$). However, no significant difference was seen between IQ of girl students of smart and non-smart schools ($p>0.05$).

Table 5: the mean scores, mental age, and IQ for boy and girl students of smart and non-smart schools

	Gained score	Estimated mental age	IQ
Boy students of smart schools	138.45	10.81	7.64
Girl students of smart schools	111.42	9.34	6.56
Boy students of non-smart schools	120.88	10.04	7.16
Girl students of non-smart schools	118.42	9.23	6.45

DISCUSSION

The present paper aimed at determining effect of smart schools on IQ of boy and girl students of smart and non-smart schools in 6th primary grade. Data collection was performed by Test Mosaique De Gill. The obtained results showed that the mean IQ for boy students of smart schools is 7.64 while it is significantly lower for boy students of non-smart schools (7.16) ($p<0.05$). This indicates that smart schooling is properly performed in primary schools of Gorgan city for boys. Of course, more studies are required for determination of other indices. It is also noteworthy that we were not able to find similar studies for making comparisons. Only in a study performed by Ong et al. (2010), it was found that smart schools resulted in higher interest of students for science courses [2]. Moreover, the results obtained about girl students showed that the mean IQ for smart and non-smart schools are 6.56 and 6.45, respectively; the figures had no significant difference ($p>0.05$). This indicates that more attempts should be done to observe standards of smart schools, especially in the girl schools of Gorgan.

It is recommended that future studies focus on other indices related to students of smart and non-smart schools and such studies are performed in such vaster scopes as province or even country. Authorities are recommended to promote qualitative level of smart schools by observing standards of such schools so that a proper basis is provided for qualitative and quantitative progression of students. Additionally, lack of similar studies to make comparisons can be named as a limitation of this study.

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