



## The study of factors affecting concentration in classroom among high school students in Divandarreh City, Iran, in 2018

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### Original Article

#### Abstract

**BACKGROUND:** Concentration is one of the most important requirements of education and learning; so that decentralization and distraction in the classroom is one of the most common educational problems. The purpose of this study was to determine the factors affecting the concentration in the classroom among high school students in Divandarreh City, Iran, in 2018.

**METHODS:** This cross-sectional study was conducted in 2018 among all high school students in Divandarreh City. The sample size was 370 and the cluster sampling method was used. The research instrument was a questionnaire containing demographic characteristics and concentration in classroom. Exclusion criteria included the lack of consent or incorrect completion of the questionnaire. Finally, the data were analyzed by descriptive statistics [frequency, mean, and standard deviation (SD)] and chi-square test.

**RESULTS:** In this study, 54% (198 boys) were male and 46% (172 girls) were female. The average score of the factors related to the teacher was  $28.98 \pm 5.79$ , for the factors related to the student was  $29.07 \pm 5.76$ , and for the environmental factors was  $8.20 \pm 2.48$ . The most effective factor in concentration in class was the teacher ethics and his/her appropriate behavior with the students ( $3.18 \pm 1.00$ ) and the least effective factor was relying on booklet ( $1.94 \pm 1.10$ ). There was a significant relationship between gender and the teacher-related factors ( $P < 0.001$ ), student-related factors ( $P = 0.004$ ), and environmental factors ( $P < 0.001$ ).

**CONCLUSION:** According to the results of this study, by improving the behavior of teachers and professors and empowering them to bring their students together, they can play a major role in increasing the students' learning and concentration.

**KEYWORDS:** Concentration, Students, Learning, Iran

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#### Introduction

Education is the most important principle in an educational system and attention and concentration in the classroom is considered as one of its most important foundations. Consequently, lack of attention and concentration will result in a lack of proper learning and ultimately lack of progress.<sup>1</sup>

Focus is a behavioral and cognitive process, i.e., it is selective and based on the intended purpose in ignoring other understandable information. In other words, focus means that the mind is clearly drawn from the various simultaneous spaces of thought to the desired goal.<sup>2</sup> Professors often talk about attention and concentration as a general mental state in which the mind focuses on certain special features of the environment, so they regard the focus as one of the main pillars of education and believe

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that the students who are unable to focus, cannot benefit from appropriate training.<sup>3</sup> Regarding the importance of concentration in learning and teaching, especially in the classroom, it can be noted that it is one of the most important needs of education and learning, which aimed at promoting education through decentralization and distraction in the classroom.<sup>4</sup>

It is worth considering the point that it is easy to focus on improving patterns by modifying some patterns.<sup>5</sup> In a study by Mehralizadeh et al., it was concluded that students had the highest concentration in the front row of the class (58.3%) and the time interval of 10-12 a.m. (43.8%).<sup>5</sup>

There are several factors that influence concentration in the classroom, which can be generally categorized into three categories:

I. The factors associated with the teacher such as his/her skill in motivating and applying the material, having sufficient knowledge and information, the grasp of the subject of teaching in the classroom, the use of educational aids, teacher ethics, and the uniformity of the teacher's voice.<sup>6-8</sup>

II. Student-related factors such as attendance in class, classroom sleepiness, having individual intellectual involvement, interest in the subject of course, and the desired nutrition before class.<sup>9-12</sup>

III. Environmental factors such as the presence of sound pollution in the class, the presence of light and ventilation in the classroom, and too many students in class.<sup>13,14</sup>

The classroom is a special place for learning and transferring experience and knowledge between professors and students; therefore, the need for attention and concentration in class must be taken into consideration more and more.<sup>15</sup> Quality in education is an important issue in the educational system of each country in order to improve their educational status.<sup>5</sup>

One of the important factors in creating

concentration in students is motivation; therefore, it is one of the important factors in learning and progress in students;<sup>16</sup> so that professors can create positive motivation in students and transfer knowledge in different ways, educate their students and encourage them to work more and more to learn, and ultimately improve the educational and academic achievement of students.<sup>17</sup>

## Materials and Methods

This cross-sectional study was carried out in the academic year of 2018-2019. The statistical population included all high school students of Divandarreh City in Kurdistan Province, Iran. According to the Cochran formula, the P-value of 0.05, and a confidence level of 95%, the sample size was estimated to be 370 people.

Multistage sampling was used, in which boys and girls were considered to be two clusters. The sample size assigned to each cluster was proportional to the size of the floor. The number of classes within school and the number of students in each class would also be selected according to their size. Finally, the volume allocated to each class was selected using simple random sampling.

The criteria for entering the study included students aged 16-19 in the city of Divandarreh in all disciplines and all schools, and the criteria for leaving the study included lack of interest in completing the questionnaire and incorrect completion of the questionnaires.

After approval of the school administrators, informed consent was obtained from all students. It also emphasized the protection of all information about them.

The research tool was a questionnaire about factors influencing concentration in the class which had 25 questions. The aim of this study was to investigate the factors affecting concentration in the classroom from the viewpoint of students (factors related to the teacher, factors related to the student, and environmental factors). The questionnaire

consisted of two sections: demographic characteristics (gender, grade, and academic average) and questions related to concentration from the students' point of view in three sections: faculty affiliation (11 items), student-related factors (11 items), and environmental factors (3 items). The questions were scored in a 5-point Likert scale from 0 to 4 for ineffective, very low, low, high, and very high responses, respectively.

In the study by Mehralizadeh et al.,<sup>5</sup> the validity of the questionnaire was criticized and verified by reviewing the articles, texts, and counseling with leading experts and professors of the university. To test its reliability by means of a re-test, the questionnaire was given to 15 students in two time intervals of 10 days. By calculating the Spearman correlation coefficient, the reliability was confirmed ( $r = 0.77$ ).

In this study, quantitative variables were estimated based on mean and standard deviation (SD) and qualitative variables based on number and percentage. The abundance of each of their domains and subcategories was calculated based on the Likert scale and the mean and SD of the total in each of the domains and subcategories were also calculated. Data analysis was performed using Stata software (version 12, Stata Corporation, College Station, TX, USA). For all tests, the level of significance was considered as 0.05. For all of the above parameters, the 95% confidence interval (CI) was also calculated.

## Results

In this study, 370 high school students from 10 schools in the city of Divandarreh were enrolled. 54% (198 students) were male and 46% (172 students) were female. The mean and SD of students' age was  $16.80 \pm 0.71$  years.

38% (140 students) were at the 10<sup>th</sup> grade, 48% (177 students) at the 11<sup>th</sup> grade, and 14% (53 students) at the 12<sup>th</sup> grade.

In terms of students, the mean score of the

factors related to the teacher was  $28.98 \pm 5.79$ , for the factors related to the student it was  $29.07 \pm 5.76$ , and for the environmental factors was  $8.20 \pm 2.48$ .

Among the factors related to the teacher, the appropriate behavior of the teacher with the students ( $3.18 \pm 1.00$ ) and his/her ability to bring the students together ( $3.00 \pm 1.02$ ) got the highest scores. On the other hand, the difference in teacher's gender with that of student ( $1.97 \pm 1.47$ ) and the use of PowerPoint teaching aids got the lowest scores ( $2.12 \pm 1.18$ ).

Of the factors associated with the students, the most related factors were interest in the subject ( $3.18 \pm 0.99$ ) and active attendance in the classroom ( $3.08 \pm 0.91$ ). In the area of environmental factors, the presence of light and ventilation in the class ( $2.71 \pm 1.10$ ) had the highest correlation with the concentration and the presence of noise pollution in the class had the least correlation ( $2.74 \pm 1.24$ ) with student focus (Table 1).

From the viewpoint of the students in this study, the most effective factor in concentration in the class was the teacher ethics and his/her appropriate behavior with students ( $3.18 \pm 1.00$ ) and the least effective factor in the classroom was relying on the booklet ( $1.94 \pm 1.10$ ).

As shown in table 2, according to Mann-Whitney U statistical analysis, there was a significant relationship between gender and teacher-related factors ( $P < 0.001$ ), student-related factors ( $P = 0.004$ ), and environmental factors ( $P < 0.001$ ).

In the present study, the students' grade point average (GPA) was divided into 4 groups: under 14, 14-16, 16-18, and 18-20, respectively. The frequency of each group was 38 (11%), 96 (25%), 156 (42%), and 80 (22%).

At the end, and for better statistical analysis, the GPA of less than 16 years was considered "weak" and higher than it was considered "strong".

**Table 1. Mean, standard deviation (SD), and total score of questions about the factors related to concentration in the classroom from the point of view of high school students (n = 370) in Divandarreh City, Iran, in 2018**

Questions	Sum	Mean ± SD
Teacher's skills in motivating (applied submission)	1103.00	2.98 ± 1.04
Proper time management of the teachers	1022.00	2.76 ± 0.93
Use of PowerPoint tutorial tool	785.00	2.12 ± 1.18
Large volume of teaching materials in one session	874.00	2.36 ± 1.33
Positive mental history from teacher	992.00	2.68 ± 1.10
Good speed of teaching	997.00	2.69 ± 1.00
Uniformity of the teacher's voice (being monotone)	820.00	2.21 ± 1.19
Appropriate teacher's correspondence with students (teacher ethics)	1180.00	3.18 ± 1.00
Teacher's ability to bring students together with him/her	1112.00	3.00 ± 1.02
Teacher's knowledge and information about discussion	1110.00	3.00 ± 1.02
Teacher's different gender with students	731.00	1.97 ± 1.47
Desired nutrition before class	1036.00	2.80 ± 1.09
Sleepiness in the class	930.00	2.51 ± 1.36
Having a student base on the topics presented	946.00	2.55 ± 0.95
Focusing on other students	954.00	2.57 ± 1.12
Being interested in subject curriculum	1178.00	3.18 ± 0.99
Individual intellectual conflict	1089.00	2.94 ± 1.16
Active presence in class	1139.00	3.08 ± 0.91
Belief in learning the content during teaching	1072.00	2.90 ± 1.02
Relying on the booklet	719.00	1.94 ± 1.10
Students with different gender in class	790.00	2.13 ± 1.46
Read prepared pamphlets or reference books before class	902.00	2.43 ± 1.21
Presence of noise pollution in the class	1014.00	2.74 ± 1.24
Presence of light and ventilation in the class	1006.00	2.71 ± 1.10
Large number of students in the class	1017.00	2.74 ± 1.27

SD: Standard deviation

According to the chi-square test, there was a significant relationship between the GPA and the concentration of students ( $P = 0.009$ ); as 90% of the students with a strong GPA had high concentration level in the classroom (Table 3).

## Discussion

Results of this study showed that teachers' ethics had the greatest impact in the field of teachers related factors and being interested in subject curriculum and active presence in class

had the greatest impact in the student related factors; and in the field of environmental factors, the presence of light and good ventilation had the most impact. A relationship between GPA and concentration among the students was observed, and also a significant relationship between gender and all 3 groups of factors (factors related to the teacher, factors associated with students, and environmental factors) affecting the concentration in the class was revealed.

**Table 2. Mean and standard deviation (SD) and total scores of the factors related to concentration in the classroom (factors related to the teacher, factors related to the student, and environmental factors) from the point of view of high school students in Divandarreh City, Iran, in 2018**

Concentration factors	Sex	N	Mean rank	95% CI for mean	Sum of ranks	Mean ± SD.	P
Factors related to teacher	Male	198	180.00	27.00-29.00	35745.00	28 ± 6	< 0.001
	Female	172	191.00	28.00-30.09	32890.00	29 ± 5	
Factors related to student	Male	198	170.00	27.00-29.01	33780.00	28 ± 6	0.004
	Female	172	202.00	29.00-30.00	34855.00	30 ± 5	
Environmental factors	Male	198	177.00	7.00-8.00	35177.00	7 ± 2	< 0.001
	Female	172	194.00	8.00-8.00	33458.00	8 ± 2	

SD: Standard deviation; CI: Confidence interval

**Table 3. Investigating the relationship of grade point average (GPA) with concentration in the classroom from the point of view of high school students in Divandarreh City, Iran, in 2018**

Variable		Concentration			Total [n (%)]	P
		Mild (Poor) [n (%)]	Moderate [n (%)]	Severe [n (%)]		
GPA	Weak	0 (0)	19 (14)	115 (86)	134 (100)	0.009
	Strong	3 (1)	7 (3)	226 (96)		

GPA: Grade point average

In the present study, it was evident that the interaction between the teacher and the students had the greatest impact. Such results are consistent with the results of the study of Ghadami et al.<sup>18</sup> that they, too, characterized the teacher's moral behavior such as rhetoric teaching skills level, the scholarship and experience of the teacher as well as ethics and maintaining respect of the students as the most important factors in establishing communication from the viewpoint of the students. Contrary to the results of the present study, the study of Haresabadi et al.<sup>19</sup> showed that proper time management in presentations by professors was the most important factor related to the teachers. Also in the study of Mehralizadeh et al.,<sup>5</sup> Nazari Vanani et al.,<sup>20</sup> and Firouznia et al.,<sup>6</sup> the teacher's ability to motivate and apply the curriculum has been identified as the most important factor in this field.

In the study of Yasayi et al.,<sup>21</sup> the greatest factor in the absence of students in classrooms was the lack of interest in the subject as well as the inappropriate ethics of the professor.

In the study of Nazari Vanani et al.,<sup>20</sup> the motivating factor by the teacher played the most important role in the presence of students in the classroom. These results are similar to those of Haresabadi et al.<sup>19</sup> and Fasihi Harandi et al.<sup>22</sup> However, the studies of Mehralizadeh et al.,<sup>5</sup> Nojomi et al.,<sup>10</sup> and Ghorbani et al.<sup>14</sup> have described sleepiness as the most important factor in this field.

Hughes in his study showed that lack of interest in the subject was one of the main causes of student absenteeism in the classroom.<sup>23</sup> Also, Gump showed that the attractiveness of syllabus was one of the most

important motivational factors in the classroom.<sup>7</sup> The third area that was considered in this study was the environmental domain, in which the most important factor was the presence of light and ventilation in the classroom. These results are in accordance with the results of the studies by Haresabadi et al.<sup>19</sup> and Mehralizadeh et al.<sup>5</sup> In the study of Habibipour and Seif,<sup>24</sup> the inappropriate physical space of classes was mentioned as a major factor in absenteeism in the classroom. Decentralization in the classroom can cause lack of motivation and finally absenteeism in the classroom.

From the viewpoint of the students in the present study, the use of audiovisual teaching aids, such as PowerPoint, played a very small role in the student's concentration, which was consistent with the results of the Nazari Vanani et al.<sup>20</sup>

The other results of the present study showed that there was a significant relationship between sex and the factors related to the teacher ( $P < 0.001$ ), student-related factors ( $P = 0.004$ ), and environmental factors ( $P < 0.001$ ). So that female students showed more importance to these factors; these results are in line with the results of the study by Klohnen and Luo. In their study, the viewpoint of male and female students about the effect of environmental factors on concentration was significant, meaning that female students, due to their psychological characteristics, showed more importance to these factors.<sup>25</sup>

On the other hand, in the present study, there was a significant relationship between the students' GPA and their concentration in

the classroom, so that students with a better grade had a better concentration; therefore, it could be concluded that the concentration has a direct relationship with academic achievement.

### Conclusion

According to the overall results of the study, the most effective factor in the classroom was the teacher ethics and appropriate behavior with the students, so that teachers can improve their behavior to promote education and increase the efficiency and concentration of students. On the other hand, the use of educational tools like PowerPoint has had the least impact. Unfortunately, in the current modern society, some of the professors, regardless of the needs of their students, simply take the boring PowerPoint slides to the classroom with students actually do not need, and according to the results of this research, it is not the correct way. In area of environmental factors, by improving the light and ventilation of the classroom, as well as decreasing the number of student population in the class, one can expect a significant improvement in the quality of education.

### Conflict of Interests

Authors have no conflict of interests.

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