
**PERCEPTION OF THE EDUCATIONAL ENVIRONMENT BY STUDENTS OF
BUSINESS SCHOOL “GEORGI STOJKOV RAKOVSKI” – VARNA**

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Abstract: Business school “Georgi S. Rakovski” – Varna is a public school which prepares students for working in the small and medium-sized enterprises across the city and the country. Additionally, the school actively participates in various European and international projects in order to achieve optimal training for their students, and to ensure that students are competitive on an international level.

In order to establish the extent to which the school curriculums and the organised extra-curricular activities satisfy students’ views on effective training on team-working, innovative decision-making in deadline-orientated environments, business planning, product development, and presentation skills; it is important to collect student feedback. Questionnaires are a quick way to assess different aspects of school life – from the effectiveness of school curriculums and the teaching methods employed, to the relationships between teachers and students and between students.

Business school “Georgi S. Rakovski” is the second high-school in Varna that was chosen by the authors to test the validity of their devised questionnaire for testing the educational environment. The questionnaire was tested on 210 male and female students from years 9, 10 and 11. Non-hierarchical clustering of the input data was used for data processing. The advantage of this supervised pattern recognition method is that one could preliminary select the number of clusters into which the input data will be classified.

The questions were clustered in 5 clusters by non-hierarchical clustering. The clusters were formed by grouping the questions into the following categories: the educational process; the teacher’s role in the educational process; the relationship between teacher and students; the students’ attitude towards the educational process; and the optimisation of the educational process. The results confirmed the correct structure of the questionnaire which takes into account all aspects of mutual interests (teachers and students) into the learning process.

Two of the clusters consist of only two questions each. These are topics which students are generally sensitive about and typically attribute very low scores to. Students admit that there are instances of aggression among their peers, even though they claim these to not be daily occurrences. They claim that their delegated group projects and assignments do nothing to bring them together. These results give an indication that further talks are needed between students and teachers for the improvement of the educational environment.

The results verified the constructive value of the questionnaire as a method of evaluation of the educational environment.

Keywords: questionnaire, educational environment, non-hierarchical clustering, high school.

1. INTRODUCTION

A school’s good atmosphere is a basis for increasing the educational quality, as it is a premise for the students’ positive attitude towards their school, which is crucial for their education and upbringing and for their motivation to learn [1, 2]. The relationships between students, as well as these with their teachers, are an important characteristic of the life within a school [3, 4]. The evaluation of the learning environment is a significant factor in the evaluation of curriculums [5]. Organising group assignments in class contribute to the formation of friendships between students and turn school life into an enjoyable experience. The belief that students are in a team with their teacher strongly motivates them to attend class [6]. The feedback from students is undoubtedly important in order to monitor their opinions about the curriculums and the educational methods, the pedagogical approaches of instilling a spirit of cooperation, the relationships between students and their teachers. The systematic use of questionnaires would help indicate the problematic areas in the learning environment, in order for steps to be taken for their correction [7, 8]. Under stress, students are inclined to think that the school environment is negative. This decreases their motivation for attending classes [9]. A link between the environment in which students learn and the quality of their work has been identified and documented [2, 10]. The positive environment gives students self-confidence and it motivates

them to achieve better results. The way students perceive their educational environment is highly influenced by the available learning facilities, by their expectations, by their cultural background and upbringing and by their past education [5]. This illustrates the importance of students' opinions on the educational environment.

In this paper, the authors' collective is presenting a questionnaire, designed and tested by them for the regular evaluation of the educational environment in high schools. Business school "Georgi S. Rakovski" is the second high-school in Varna that was chosen by the authors to test the validity of their devised questionnaire.

2. MATERIALS AND METHODS

2.1. Questionnaire

Questions	I strongly disagree.	I somewhat disagree.	I am not sure.	I somewhat agree.	I strongly agree.
1. I am fully aware of the educational aims of the high school curriculum.					
2. Teachers encourage me to participate in class.					
3. The learning strategy that I am using is suitable for me.					
The study subjects are too many for me to spend more time studying the ones that I like.					
5. Education is focused on the students' future needs.					
6. Education is done in a way that increases my competence.					
7. I rarely feel bored during class.					
8.The enjoyment from studying for certain subjects is greater than the stress involved.					
9. Teachers distribute teaching time adequately for covering the learning content.					
10. Education is too focused on learning facts by heart.					
11. I don't think that my current education is preparing me for university.					
12. I am able to concentrate in class easily.					
13. Non-traditional educational methods (role-playing, solving problems, discussions, etc.) help me understand the educational content better.					
14. Aggression is a daily occurrence within this school.					
15. My problem-solving skills evolved during my education.					
16.During group problem-solving, answers come up more easily.					
17. I can discuss my interests with my teacher.					
18. I am responsible for my education. Teachers are only guiding me.					
19. Education increases my belief in my knowledge and skills.					
20. In education, it is important to achieve results, regardless of the way they are achieved.					
21. I would put more effort into a subject which is interesting for me.					
22.I am able to achieve my personal educational interests during classes.					
23. The learning load is optimal and equally distributed throughout the week.					
24. The order of the teaching subjects in a					

day is not rational and well thought of.					
25. The school is equipped with opportunities for engaging use of free time.					
26. Teachers often give us group projects, presentations, assignments, which help me get close to my peers and to take in the learning content more easily					
27. We are always ready to help peers in need.					
28. I am satisfied by my choice of school.					
29. Teachers treat students with respect.					
30. There is good communication between parents and students.					
31. Teachers always come well prepared for class.					
32. Teachers communicate well with students.					
33. Teachers use plenty of real life examples during class.					
34. Most teachers are authoritative.					
35. Students provoke annoyance in teachers.					
36. Teachers' criticising helps us rethink our behaviour.					
37. Teachers' exam marking is done on a favouritism basis rather than students' knowledge.					
38. Teachers often conduct the classes in non-traditional forms (game, discussion, debate, press conference).					
39. I have good friends at school.					
40. I rarely feel lonely.					
41. I have the opportunity to establish good interpersonal relationships.					
42. I do not feel different than my peers in a social aspect.					
43. The environment in class seriously affects my mood.					
44. The school needs well-equipped classrooms, in order for teaching to run smoothly.					
45. Group work helps establish friendships.					
46. We prefer exams to be run as tests.					
47. I share my problems with my head teacher and I rely on them for advice.					
48. We would like to be able to suggest additional topics, according to our own interests.					
49. If we know how to solve a problem, we share the solution with our peers.					
50. We discuss between us how to solve problems given by the teacher.					

Questionnaire consists of 50 multiple choice questions, corresponding to the 5-point Likert psychometric scale for measuring social aptitudes. Answers were thus given in points; the highest number of total points corresponding to a maximal positive view of school life.

2.2. Multivariate statistical assessment of data ranking the relationship in school environment

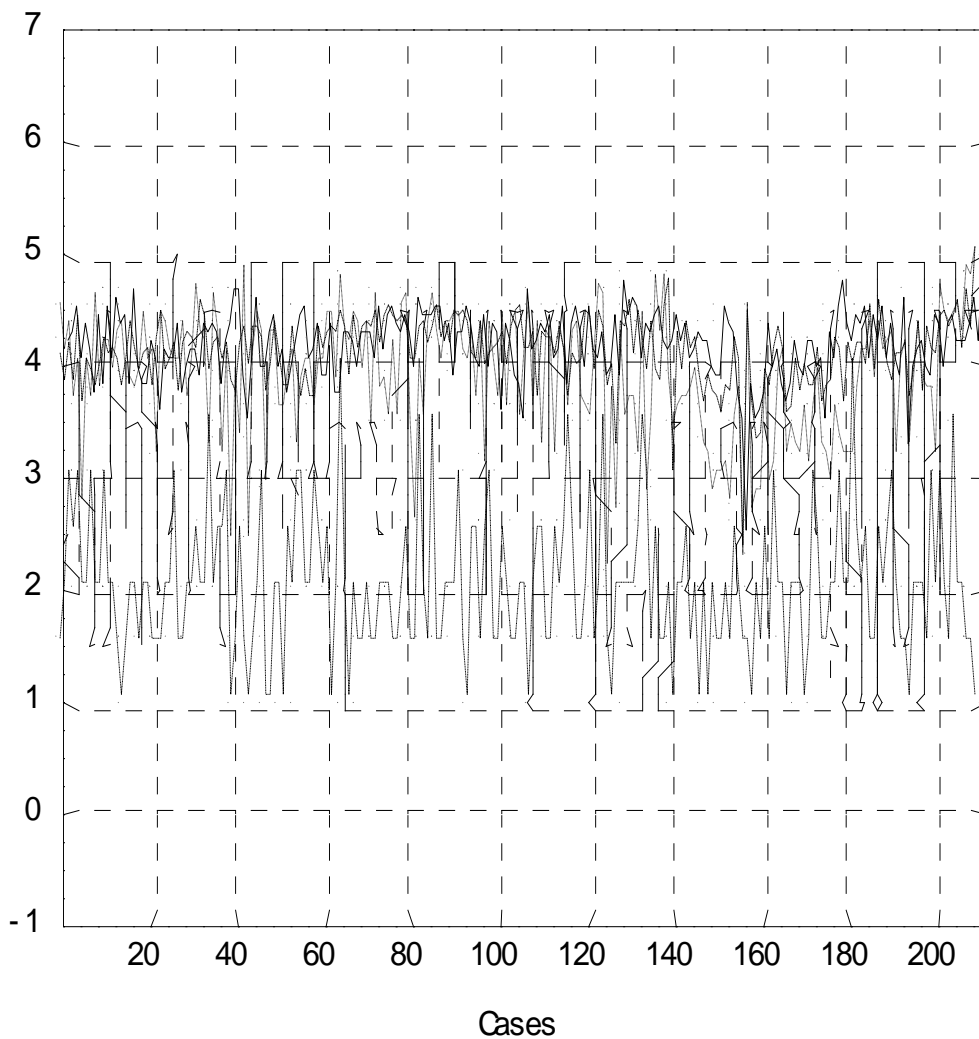
The data set consists of 210 objects (210 schoolboys and girls from Business school "Georgi S. Rakovski" – Varna, grades 9, 10, and 11) characterized by their answers to 50 questions each one ranked by values from 1 to 5 of a questionnaire about quality of learning and relations between schoolchildren and teachers. At this the male to female ratio of students is approximately 1:1. In order to assess the answers obtained non-hierarchical cluster

analysis was applied in order to find patterns of similarity between the questions (assessment of the learning process) or between the pupils (based on their attitude to the learning process). The questions from the questionnaire are clustered in 5 clusters by non-hierarchical clustering. The choice of the number of clusters is done due to the general separation of the questions into following major categories:

- Questions related to the educational process (1,7,10,11,19, 23, 24, 50);
- Questions related to the role of the teacher in the educational process (2, 9, 21, 28, 29, 31, 32);
- Questions related to the relationship between teacher and pupils (14, 16, 17, 30, 33, 34, 35, 37, 38, 45, 47, 48);
- Questions related to the personal attitude of the pupils to the educational process (8,12, 15, 18, 20, 22, 25, 39, 40, 41, 42, 49);
- Questions related to optimization of the educational process (3, 4, 5, 6, 13, 26, 27, 36, 43, 44, 46).

2.2.1 Non-hierarchical cluster analysis of the questions

Plot of Means for Each Cluster



Non-hierarchical cluster analysis of the 50 questions. Variables (questions 1- 50)

C1	C2	C3	C4	C5
4,10,13,16,18,27,28,40 42,44,46,48,49	5,6,7,15,19,20, 22,3,25,33,36,37	26,38	1,2,3,8,9,11,12,17, 21, 24,29, 30,31,32, 34,39, 41,43,45,47,50	14,35

Attitude towards the questionnaire in Business school “Georgi S. Rakovski” – Varna:

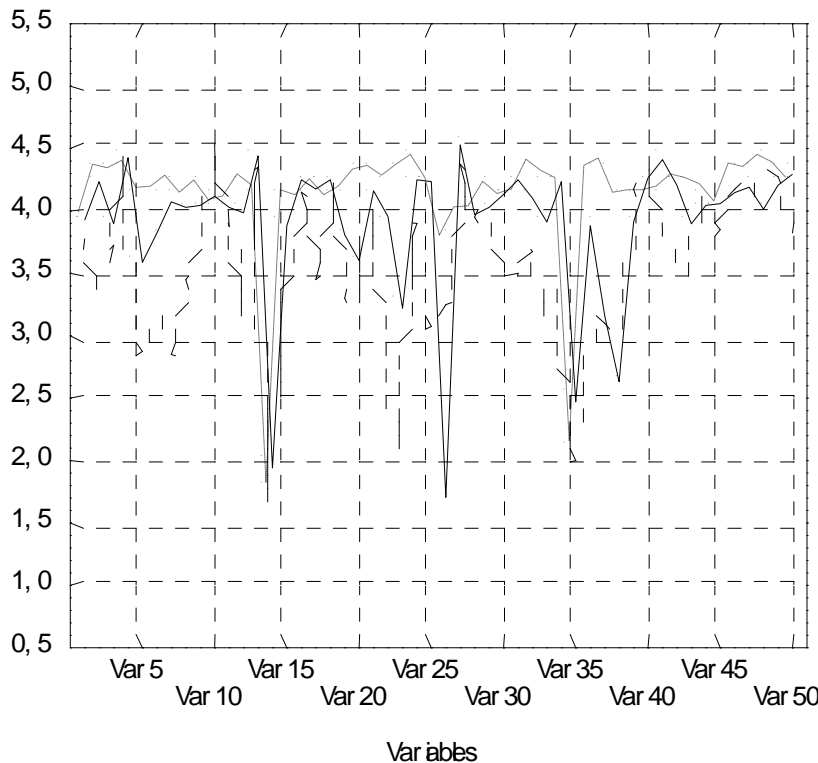
Four questions indicate a specific attitude – 14, 26, 35 and 38. They are from different categories (Questions related to the relationship between teacher and pupils – 14, 35 and 38 and Questions related to optimization of the educational process – 26). It seems that the pupils are seriously engaged with the problems of aggression at school (14), introduction of common projects (26), provoking annoyance in teachers (35) and introduction of non-traditional lessons (38). All of these questions are characterized by very low scores meaning that the participants do not accept and approve aggression, feel the lack of common and non-traditional educational instruments and are not teased by their teachers.

All other questions are grouped into three other big clusters. Cluster 1 includes dominantly questions related to the optimization of the teaching process and the personal attitude of the pupils to the educational process (group of educational and personal issues). Cluster 2 is also principally dedicated to the general educational strategy assessment and personal attitude questions (group of educational strategy issues). Cluster 4 is the biggest one and is dominantly linked to all categories of questions (group of general assessment).

As seen in Fig. 1 the participants give lowest marks for questions in clusters 5 and 3 which is already discussed above. For all other clusters the marks are relatively high (between 4 and 5), which is an indication that the pupils accept the general educational strategy, support the efforts for its optimization and are satisfied with the relationship with the teachers trying to have a personal attitude towards the educational process.

2.2.2 Non-hierarchical clustering of the pupils

Plot of Means for Each Cluster



The supervised data treatment requires formation of 3 clusters as the preliminary condition was related to the three classes of pupils participating in the questionnaire (9th, 10th and 11th). It was interesting to find out if the response to the different categories of questions is linked to some extent with the pupil's age. Numbers of cases 1- 70 are for 9th grade, 71-140 – 10th grade and 141 – 210 – 11th grade.

C1	C2	C3
<p>9th grade: 2,3,7-9,11,13, 18, 22,27, 37,38,42,51,56,58,60,64,65</p> <p>10th grade: 72,74-76,78,84,96, 103,106,109,111,117,120-122, 124, 125, 125,127,130-134,136-138</p> <p>11th grade: 142-147,155,156, 171, 178,179,181-183,185,187, 190,192, 195,196,198,201</p>	<p>9th grade: 1,4,5,10,12,14-17, 20, 21,24-26,28-34,36,39,41,43,45-47, 49,50,53, 54,57,61-63,66-71</p> <p>10th grade: 73,77,79,80,83,85-95, 97,99-102, 104,105,107,108,110, 112,113, 115,116,118, 119,123, 129,139</p> <p>11th grade:158,162,165,166,175,184,186,188,189 ,191,193,194,197,199,200,202-210</p>	<p>9th grade: 6,23,35,40, 44,48,52,55,59</p> <p>10th grade: 81,82,98, 114,126,128,135,</p> <p>11th grade: 141, 148-154, 157, 159-161,163,164, 167-170, 171, 173,175-177,180</p>

In Business school there is not specificity with respect to age. The pupils are distributed almost evenly in two big and one small cluster, so no specific dominance of age variable (9th, 10th, 11th grade) could be found.

The discrimination between the three clusters formed for this school is similar to that established for GPCE school: for members in cluster 3 the lowest marks are given, for those in cluster 2 – the highest. Cluster 1 takes intermediate position resembling to high extent the average responses of cluster 3. No specific comment for the pupil's attitude towards the educational process and the relations to teachers in the different age groups could be done.

3. CONCLUSIONS

In general, the pupils from Business school react with higher differentiability to the questionnaire and it makes it possible to analyse better different groups of attitude towards the educational issues.

In this study non-hierarchical clustering of the input data was used. The advantage of this method is that it allows for the preliminary selection of the number of clusters, into which the input data is classified. Therefore, in order to cluster the 50 questions from the questionnaire 5 clusters were chosen. This number corresponds to the number of categories into which the questionnaire could be subdivided (from theoretical point of view). For the clustering of the pupils participating in the study the number of clusters chosen was three since we know in advance that the preliminary classification of the pupils could correspond to their age (participants from grades 9, 10, and 11). It is difficult to expect that the supervised clustering will result in exactly the same preliminary categories but, at least, it give a starting point for proper data interpretation.

This paper was supported by project ПД-08-98/06.02.2017 of the Foundation for Scientific experiments, Shumen University, Bulgaria.

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