

Critical Thinking – Impressions of Students from High School Level

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Abstract

The current article presents the influence of critical thinking on the students' development. The research has been applied in two forms: secondary analysis and primary research, based on survey. Secondary research analyses the evolution of the number of high school students and school units at regional, county and city level.

The primary research was performed using the quantitative method; the survey was applied to 102 students from senior high school level. The questionnaire was implemented during the period May - June 2019 in Râmnicu Sărat, Buzău county, Romania. The quantitative research was chosen due to its fulfilment of the objectives of data collection regarding a problem of general interest.

Key words: communication, students, critical thinking, ways of teaching, teachers

J.E.L. classification: H75, I21, I24

1. Introduction

Education is a process which leaves some remarkable signs on individuals. Those signs are tools that can enable people to cope with difficulties during their life. Schools are effective to the extent to which they form students' abilities. Although it is impossible to measure directly the consequences of those effects, they can become visible and impact the quality of life.

At all education levels, it is important to understand the needs of the students, to captivate their interest during courses and motivate them to be more interactive in classes. The teachers have the main responsibility regarding the way in which the classes are organized and the means by which students accumulate information during courses.

For these reasons, the quality of education in schools is a milestone in providing social justice (Çubukçu and Girmen, 2006). A school is an organization that can be of service to society in numerous ways. However, the most important duty of schools is teaching and learning. Therefore, what makes a school effective is the level of achievements of its students.

In order to boost the degree of achievement, schools must be improved. Before taking certain steps in the improvement process, the performance level should be accurately measured with respect to certain criteria. (Schildkamp et al., 2009).

Recent research shows that the classical method of school inspections does not effectively contribute to school performance (Gaertner et al., 2014). On account of changing paradigms, there is a strong global tendency towards new performance appraisal systems – where performance is assessed by quality improvement measures, in accordance with both qualitative and quantitative databases (Grek et al., 2009).

2. Literature review

In their study, Urwick and Kisa point out that the lack of specialist teachers for disciplines considered essential (mathematics, science - biology, chemistry, physics) contributes to the creation of discrepancies between students (Urwick and Kisa, 2014). These discrepancies also exist due to the background of the students: Talaslampi et al. emphasize in their research that children from placements (such as special schools for children with behavioral problems) have poor educational training and do not complete high school or vocational courses (Talaslampi et al., 2019). If these children are forced to work to support themselves or their family, the educational system should also offer them the chance to get an education, but also to benefit from as many opportunities, programs (available to other students) which could encourage them to complete their studies (Shoshana, 2020). Sammons et al state that the individual characteristics of students, the family and neighbourhood they come from are significant predictors of students' academic and behavioural results (Sammons et al., 2018). Jagnani and Khanna emphasize that investment in infrastructure contributes to increasing access to schools and lowering the dropout rate (Jagnani and Khanna, 2020). Other researchers claim, without clear scientific evidence, that the environment or learning setting can influence education in a beneficial way. (Van den Bogerd et al., 2020). Moreover, the existence of a curriculum that will provide students with a clear knowledge of the field for which they obtain the diploma can contribute to increasing interest in learning (Coll Ramis, 2020).

Casteleyn and Mottart note that the way in which lessons are taught in class impact their usefulness. The authors found no significant difference between the abstracts presented in the form of slides and the abstracts presented in the form of animations (Casteleyn and Mottart, 2012). Popta et al mention that students appreciate feedback; in its written, online form, feedback contributes to the active participation in the learning process, helps to develop time management skills, self-criticism and to enrich students' knowledge (Van Popta et al., 2017). The study conducted by Baars et al highlights that students are sensitive to the degree of difficulty of the tasks they have to solve and, as such, careful supervision can contribute to better learning outcomes (Baars et al., 2018). However, Van der Veen and Peetsma found that students in their free time (especially during holidays) focus more on recreation and less on learning (Van der Veen and Peetsma, 2011). This situation is most likely caused by overwork during the semester. Yet, according to a study, over 60% of students experience a low level of overwork by the end of the school year, this being valid for both 8th and 10th graders. (Salmela-Aro and Upadyaya, 2014).

Other authors focused on the emotions experienced by students during the educational process. Niculescu et al emphasize that the intensity of emotions can be increased or decreased depending on internal experiences and such situations as tests, assessments, or evaluations (Niculescu et al., 2016).

The needs in the Romanian educational system

The Romanian educational system comprises two levels (National Education Law, 2011): pre-university and higher education. Within the pre-university level we find: preschool education (3 years), primary education (5 years including grades 0), secondary education (4 years), high school education (4/5 years), vocational education (3 years), post-secondary education (between 2 and 5 years). In Romania, education is compulsory for young people up to the 10th grade. There is also a 5-year part-time program intended for those who dropped out of high school in their adolescence but still want to attend it.

Successful completion (with a baccalaureate exam passed) of any type of high school in Romania allows access to higher education, including both state or private universities.

Establishing effective communication between teachers and students is not always easy. Civikly-Powell considers that the basis of effective learning is effective communication, which requires more than making yourself understood (Civikly-Powell, 2002). In Griffin's opinion, efficient communication represents the relational process of creating and interpreting messages by generating desired or undesired responses (Griffin, 2012). In the attempt to make communication effective, teachers must carefully choose the content and form of their message, as well as the optimal channel for transmitting it (Fofana, 2016). Good communication contributes to the involvement of students in educational activities and can help students to better cope with, or

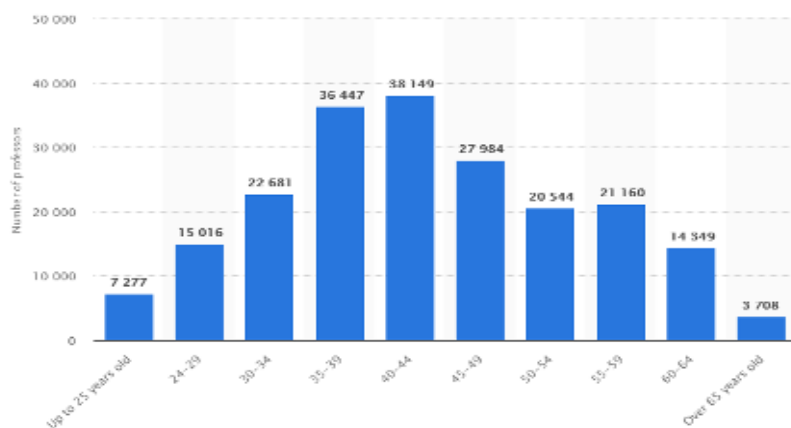
build resistance against age-specific depressions. Thus, the teacher is seen by specialists as one of the key factors in combating the latter (Whitehill et al., 2013).

Finn (2018) points out that students have different needs which vary depending on their place of origin, while Duta et al. (2015) emphasize that without effective communication the teaching and learning process cannot take place. Teachers communicate ideas, information and expectations using a variety of ways, including speech, gestures, body language and last but not least, writing. Majid et al. (2010) state that teachers must have a degree of satisfaction as regards their activity, in order to be effective in their student modelling efforts.

Panisoara et al. argue that effective communication involves not only the correct use of language but also the use of other forms of communication, such as interpersonal communication (Pânișoară et al., 2015).

According to the education index, Romania occupies the 52nd place as of 2018, a position slightly improved since 2012, when Romania was ranked 54th (United Nations, 2020).

Figure no. 1. Number of professors who work in secondary education in Romania in 2018, by age group



Source: (Sava, 2020)

In Romania, most secondary school teachers were between 40 and 44. It is also noted that 7,277 teachers were under the age 25. Furthermore, many teachers were aged between 60 and 64 years, while 3708 teachers were carrying out teaching activities even when retired - in Romania, the retirement age is 65 for men and 61 for women (European Commission, 2020). At EU level, in the same year 2018, there were 17.7 million high school students, respectively 1.57 million teachers (Eurostat, 2020).

Feedback and its role in modern education

Renowned entrepreneur and philanthropist Bill Gates emphasize the importance of feedback in the personal training of individuals: "We all need people who will give us feedback. That's how we improve" (Gates, 2017). The educational process is a complex one in which the individual should learn from mistakes, in which he should be able to try/test and find solutions. Unfortunately, the realities of today's education system contradict these ideals (The Graide Network, 2020). According to a study by the University of Michigan, students who perform at school benefit from more opportunities than those who do not perform, but the same study showed that often, students who perform better are not necessarily the smartest, but rather more adaptable to the given conditions (University of Michigan Institute for Social Research, 2002). An educational system based on feedback and not on grading would be more suited to motivating students to develop new skills and increase their potential. Feedback is an essential component of the educational process. Through it, students gain a better understanding and command of the disciplines studied, and further obtain clear instructions on the educational process. Feedback improves students' confidence, contributes to increasing both responsibility and the desire to learn (University of Reading, 2020).

3. Research methodology

In this article, a primary and secondary research were undertaken. The purpose of the research is to identify the influence that critical thinking methods have on the pupils’ development, on the one hand, and on didactic activities, on the other hand.

The secondary research is an exploratory one, with the aim to find more information and to provide a base for the primary research.

The secondary research consisted in conducting an analysis in the city Râmnicu Sărat, at both county regional levels, in order to observe the evolution of the indicators which are examined in the article.

The method applied for the primary research is the survey. The research was performed by the questionnaire tool, and the survey was applied to 102 high school students.

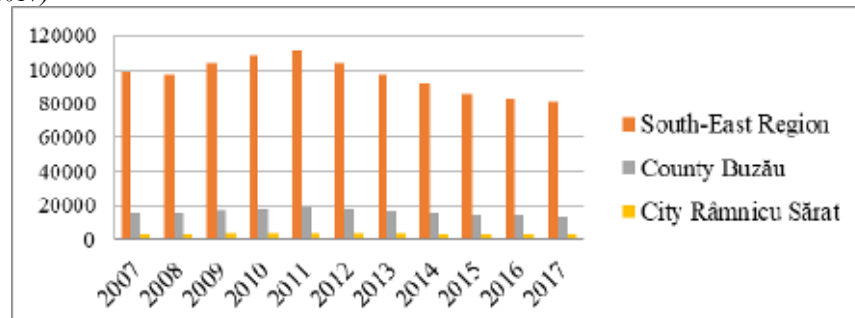
The questionnaire was implemented during the period May – June 2019 to students from urban and rural areas, in Râmnicu Sărat, Romania.

4. Findings

Secondary research

The number of high schoolers at the regional level had an oscillating tendency in the period 2007-2017, in period 2011-2017 could be observed the gradual decrease of the number of high schoolers. Thus, compared to 2007, in 2017 number of high schoolers at the level of locality is 0,9 times lower, decrease from 2.788 to 2.388 high schoolers.

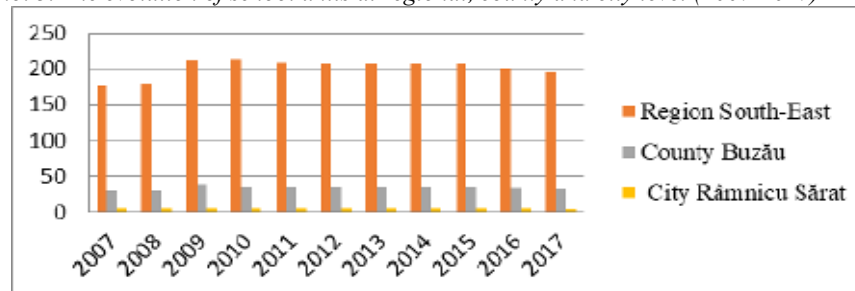
Figure no. 2. The evolution of the number of high school students at regional, county and city level (2007-2017)



Source: Figure done by the authors

Number of high schools at the regional level had an bent oscillation in period 2007-2017. Thus, at the level of locality, in comparison with 2007, in 2017 number of high schools are 0,9 times lower, fall from 2.788 to 2.388.

Figure no. 3. The evolution of school units at regional, county and city level (2007-2017)



Source: Figure done by the authors

Information about the target group

All pupils included were from the Râmnicu Sărat city and their age were between 14-18 years old.

Regarding the areas where the pupils come from, the situation presents as it follows: they are from rural and urban areas.

Primary research

Descriptive statistical indicators

Table no. 1. Measuring the central tendency

		Statistics			
		Q1	Q2	Q3	Q4
N	Valid	102	102	102	102
	Missing	0	0	0	0
Mode		1.00	1.00	2.00	1.00
Minimum		1.00	1.00	1.00	1.00
Maximum		5.00	3.00	3.00	5.00

Source: done by the authors

Mode - Presents the maximum frequency in the data series.

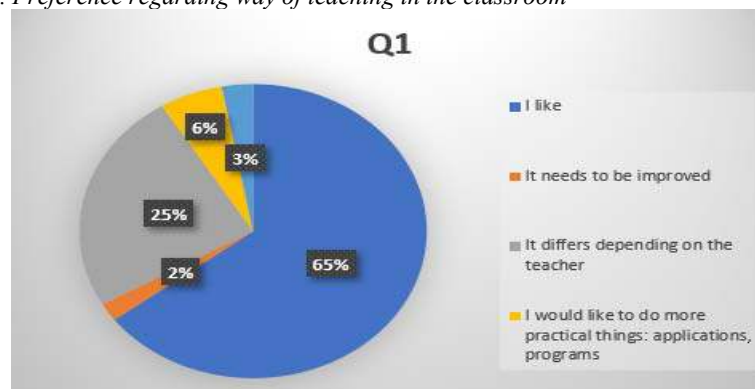
Table no. 2. Students' opinion regarding the way of teaching used by professors in the classroom

		Q1			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I like	66	64.7	64.7	64.7
	It needs to be improved	2	2.0	2.0	66.7
	It differs depending on the teacher	25	24.5	24.5	91.2
	I would like to do more practical things: applications, programs	6	5.9	5.9	97.1
	I do not know	3	2.9	2.9	100.0
	Total	102	100.0	100.0	

Source: done by the authors

It is observed that most students are satisfied with the way professor teach (66 out of 102, representing 64.7%). Of these, they consider that the teaching method differs depending on the teacher (25 out of 102, representing 24.5%).

Figure no. 4. Preference regarding way of teaching in the classroom



Source: done by the authors

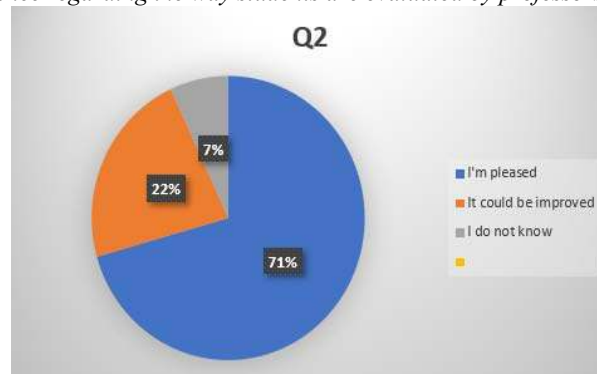
Most of the students are satisfied with the evaluation method applied in high school (70.6%) and 22.5% think that it should be improved.

Table no. 3. Students' opinion regarding the way they are evaluated in classroom by professors

Q2				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I'm pleased	72	70.6	70.6
	It could be improved	23	22.5	93.1
	I do not know	7	6.9	100.0
	Total	102	100.0	100.0

Source: done by the authors

Figure no. 5. Preference regarding the way students are evaluated by professors



Source: done by the authors

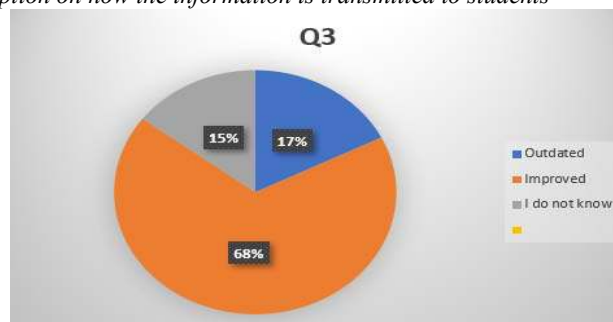
Regarding the way teachers communicate and transmit information, 67.6% of students believe that the way information is transmitted has improved.

Table no. 4. Students' opinion regarding the way the knowledge is transmitted to students

Q3				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Outdated	18	17.6	17.6
	Improved	69	67.6	85.3
	I do not know	15	14.7	100.0
	Total	102	100.0	100.0

Source: done by the authors

Figure no. 6. Perception on how the information is transmitted to students



Source: done by the authors

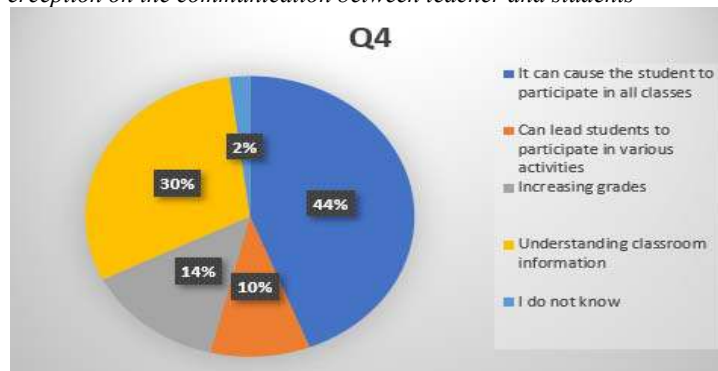
The importance of communication between student and teacher is underlined by the following aspects: the student is involved in the classes (44.1%), determines the student to pay attention to what the teacher teaches, so that he understands the information from the classroom (30.4%), at the same time leads to the increase of students' grades (13.7%) and the involvement of students in various high school activities (9.8%).

Table no. 5. Students' opinion regarding communication between teacher and students

		Q4			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	It can cause the student to participate in all classes	45	44.1	44.1	44.1
	Can lead students to participate in various activities	10	9.8	9.8	53.9
	Increasing grades	14	13.7	13.7	67.6
	Understanding classroom information	31	30.4	30.4	98.0
	I do not know	2	2.0	2.0	100.0
	Total	102	100.0	100.0	

Source: done by the authors

Figure no. 7. Perception on the communication between teacher and students



Source: done by the authors

NPar Tests

Goodness of fit, this test compares the observed frequencies with the expected frequencies of the values of the same categorical variable to see the match between them. So, the Chi-square test compares a real distribution of data with a theoretical, reference distribution.

Ho: population distribution coincides with research distribution.

H1: data distribution does not follow the specified theoretical model.

Chi-Square Test

For all 4 questions there is a statistically significant link, because in the Test statistics table p values is less than 0.05 (p values is lower than 0.05), it has a value of 0.00.

Thus, it can be concluded that the observed frequencies are different from the expected frequencies.

Table no. 6. Chi-Square Test

	Test Statistics			
	What do you think about the teaching method applied in high school	What do you think about the evaluation method used in high school	Do you consider that the way teachers communicate, and present information is	In your opinion, how important is the communication between a teacher and a student
Chi-Square	144.569 ^a	67.471 ^b	54.176 ^b	59.078 ^a
df	4	2	2	4
Asymp. Sig.	.000*	.000*	.000*	.000*

*correlation is significant at the .05 level

Source: done by the authors

5. Conclusions

The continuous change in education, determine an increase effort by the teacher's sides in order to be able to meet the new requirements. The present research aimed to highlight the influences of the application of new teaching techniques that emphasize the critical thinking of students. Thus, we found that students perceive favorably the new ways of teaching and evaluation used by teachers. The students especially appreciated their involvement in the teaching activity but also the increase of the degree in which they better understand the information transmitted by their teachers. This research confirms a well-known aspect, namely that the use of critical thinking is applicable to both students and teachers, all depending on the ability of teachers to adapt to the new recommendations, as students are open on using the new ways of teaching.

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