

# THE INTEGRATION OF CRITICAL AND MORAL THINKING: THE ATTITUDES OF THE TEACHER STUDENTS TO THE DEVELOPMENT OF THEIR CRITICAL AND MORAL THINKING

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**Abstract:** In this study we present partial results of extensive research focused on the development of moral and critical thinking. The aim of the study was to find out whether there is a difference in students' perception of innovative and traditional teaching. Three balanced groups of teacher students of the University of Prešov in Prešov took part in the experiment (control group – n = 21; experimental group 1 – n = 21; experimental group 2 – n = 20). The basic method of evaluation of seminar lessons was a two-factor semantic differential with 15 scales, 6 of which measured the evaluation factor and 9 the energy factor. The results showed a significant difference between the control group and the experimental groups. The groups purposefully focusing on development of moral and critical thinking evaluated the teaching process (in the evaluation factor) as better, more pleasant, stronger, with a relaxed atmosphere, more interesting and nicer; in the energy factor as more demanding, stricter, heavier, much more active, less problematic, more valuable, a little louder and shorter. In order to achieve healthy development of an individual with moral autonomy, we consider it necessary to support the integrity of moral and critical thinking.

**Keywords:** integrity of moral and critical thinking, semantic differential, evaluation factor and energy factor.

## 1 Introduction

Global trends in the field of education have also made Slovak experts think about achieving more effective educational results. Our country started to deal with the issue of critical thinking only a few years ago. This requirement mainly arose in 2003, when Slovakia participated in the international OECD PISA measurement for the first time. The results showed insufficient ability of 15-year old Slovak students to think critically and think at the level of higher cognitive processes. This was followed by other unflattering findings from several groups in the educational environment, including teacher students and teachers in primary and secondary schools and universities. This prompted the efforts of many Slovak experts to delve deeper into the problem at the scientific level. Since recent years our country has embarked on a new era of education in the Slovak Republic, namely the integrity of critical thinking and character education. We are inspired by many effective Character Education Programmes from abroad. The Ministry of Education, Science, Research and Sports of the Slovak Republic has supported several grants in an effort to change mainly university teacher training. Our long-term goal is to change undergraduate teacher training with an orientation towards the quality of educational outcomes in the area of critical and moral thinking.

A part of the extensive research focused on the critical and moral thinking of teacher students was an experimental intervention. One of the goals of the experiment was to find out the opinions of experimental groups on traditional and innovative ways of teaching. The innovative programme was focused on the targeted development of critical and moral thinking of students in undergraduate teacher training. The basic measurement tool was a scheme of a two-factor semantic differential, which provides information about the evaluation factor and the energy factor for the monitored component. In this study, we present the evaluation of the subjects of the experiment for the course of the lesson, the so-called seminar. The starting point for formulating a scientific problem was the theories of world experts such as P. Facione, R.W. Paul, L. Elder, G. Lind.

## 2 Starting point in formulating the problem

Until recently critical thinking and moral reasoning in Slovak professional field were dealt separately, although the connection between the two domains is implicitly indicated. The concept of critical thinking is based on the original definition of the Delphi Report, which defines cognitive abilities and affective dispositions (Facione, 1990) and conceived standards of a good critical thinker with the necessary intellectual virtues (Paul & Edler, 2006).

From the point of view of moral reasoning, we rely on Lind's theory (2013), who grasps Kohlberg and Habermas's definition and complements it with an element of conflict and dilemma (implicitly indicated by Kohlberg). We also find this integrity in Lajčiaková's (2008) definition, who considers moral competence to be a kind of a bridge between moral attitudes or moral values on one hand and moral behavior on the other. It is the capability of an individual to reach moral judgments based on his or her internal principles and then to act in accordance with those judgments. This means that moral competence as a sign must be reflected not only in thinking but also acting. A morally competent person thus makes moral decisions and acts morally. Her or his thinking is reflected in her or his behavior. Lind (2013) suggests that moral competence includes, besides the ability to judge which action is correct in relation to a moral principle, the ability to solve dilemmas and conflicts between morally equal alternatives of action. Kaliská, Kaliský and Čizmaríková (2013) state that morally competent judgment means that both parties will try to resolve the conflict on the basis of general moral principles (e.g. the principle of justice, free expression, etc.) through thinking and discussion. Here we can see great space for the integrity of critical and moral reasoning, in which cognitive abilities, affective dispositions overlap with the virtues of a critically and morally responsible thinker.

The most concise integrating understanding of the critical and moral aspects can be registered with Paul (2020). Critical thinking understood as an individual skill separated from values, is often used to rationalize prejudice and interest. Moral integrity and responsible citizenship, only understood as a *good heart*, are themselves more likely to be manipulated by propaganda. Human mind, whether it is its conscious goodwill, is a subject of a strong, self-deceptive, unconscious egocentric mind. The full development of each characteristic - critical thinking, moral integrity and responsible citizenship - in its strong sense requires and develops other ones in a parallel strong sense. The three mentioned are only developed together in an atmosphere which encourages intellectual virtues: intellectual courage, intellectual empathy, intellectual goodwill or integrity, intellectual perseverance, intellectual justice and faith in reason. The intellectual and moral virtues themselves are interdependent.

## 3 Research methodology

The basic goal of this part of the research was to find out how the students included in the experiment evaluated the development of critical and moral thinking during the teaching process on their seminar.

### 3.1 Research Design

We used the Semantic Differential method to measure the attitudes of teacher students to the development of their critical and moral thinking during the seminars. We created a record sheet (study appendix) with the individual meanings of selected terms measured. At the end of the experiment, the students assessed 9 concepts (lecture, seminar, homework, experience, memorization, reflection, classmates, evaluation, I as a critically thinking person - self-reflection) with 15 scales of a two-factor

semantic differential, 6 of which measure the evaluation factor and 9 the energy factor. Each assessed concept was submitted on a separate record sheet. Choosing a point on the scale the subjects of the experiment indicated the degree of properties expressed by the particular pair of adjectives. Numerical values 1 to 7 were assigned to individual points on the scale. In order to avoid stereotypical assessment in scales, some scales were presented in the so-called reverse form and in the record sheet were marked by an asterisk (Chráska, 2007). It was quite difficult to choose a certain range of relevant adjectives applicable to several terms. The original list of 50 scales of semantic differential according to C. Osgood from 1958 presented by Chráska (2007, p. 225) was helpful. In this paper we offer an analysis of students' attitudes to one concept (or object) – a seminar, i.e. that students evaluated the course of the teaching process aimed at developing of critical and moral thinking after the experiment had finished.

### 3.2 Participants

The selected sample of this study consisted of three balanced groups of 2nd year teacher students of the bachelor's degree at the University of Prešov in Prešov (one-way ANOVA results -  $p = 0.889$ ). There were 21 students in the control group who were taught in traditional way. Experimental group 1 (EG –  $n = 21$ ) and experimental group 2 (EG –  $n = 20$ ) included a programme for the development of critical and moral thinking.

### 3.3 Procedures

The experiment was carried out during 13 weeks of the summer semester in three subjects. The lectures were presented in traditional way. During the seminars, the control group proceeded in the classic usual way. The group was taught by a teacher who followed exactly the previous customs (according to the information sheets of study subjects). The experimental groups completed a programme for the development of critical and moral thinking (3 hours and week). The teaching during the seminars was provided by a trained teacher who prepared the programme and who also mastered the difference between classical and innovative teaching in the given subjects very well.

In addition to demanding testing of the entry level of critical and moral thinking, students were presented with moral dilemmas, e.g. solving socio-cultural aspects of education - the problem of integrating a classmate of another culture into the school staff, testing and relatively possible cheating of a student during an online conference, etc. Part of the preparation for the seminar lessons was the study of the theoretical anchoring of the problem and the possibility of its solution. One topic was set each week. In the integrated way of developing critical and moral thinking, we used active methodologies: case stimulation, case studies, workshops with ethical dilemmas, realistic simulation, various model situations.

### 3.4 Statistical methods

We used one-way ANOVA (conditions are met, the dependent variable is at least interval, the approximately normal distribution, the selection is random and independent and the homogeneity of the variances is preserved). For descriptive characteristics, we present the number of subjects of individual groups ( $n$ ), mean ( $M$ ) and standard deviation ( $SD$ ). The Benferroni post hoc test was used to determine statistically significant differences.

## 4 Research results and discussion

The semantic differential is one of the effective methods used to find out the views involved in the research.

### 4.1 Results of opinions of subjects of experimental groups

The two-factor semantic differential record sheet contained 15 pairs of adjectives. At the end of the experiment students evaluated the course of the teaching process focused on the

development of critical and moral thinking using a 7-point scale. In Table 1 we present the findings on the term of seminar.

Tab. 1 Perception of the term Seminar in groups of experiments – evaluation factor

A pair of adjectives	CG – control group (n = 21); EG1 – experimental group 1 (n = 21); EG2 – experimental group 2 (n = 21)					
	CG		EG1		EG2	
	M	SD	M	SD	M	SD
bad / good	4,76	1,23	6,66	0,56	6,70	0,45
unpleasant / pleasant	4,00	1,02	6,66	0,56	6,45	0,66
weak / strong	4,66	1,39	4,90	1,10	4,85	1,15
tense / relaxed	5,00	1,06	6,47	0,73	5,85	1,58
uninteresting / interesting	5,23	1,44	6,66	0,56	6,50	0,50
ugly / nice	5,19	1,43	6,38	0,72	6,55	0,58
<b>Gross score</b>	<b>4,80</b>	<b>0,90</b>	<b>6,29</b>	<b>0,35</b>	<b>6,15</b>	<b>0,47</b>

Key:  $n$  – number;  $M$  – average;  $SD$  – standard deviation

The evaluation factor (Table 1) indicates that the perception of the term "Seminar" in the control group ( $M = 4.80$ ;  $SD = 0.90$ ) differs from experimental group 1 ( $M = 6.29$ ;  $SD = 0.35$ ) and experimental group 2 ( $M = 6.15$ ;  $SD = 0.47$ ). Experimental groups evaluated seminar classes focused on the development of moral and critical thinking more positively. They evaluated the innovative way of teaching as better, more pleasant, stronger, with a relaxed atmosphere, more interesting and nicer. The most positive average rating was given by EG1. The control group evaluated traditional teaching more negatively.

The average values in the semantic space of the term "Seminar" in terms of energy factor are shown in Tab. 2.

Tab. 2 Perception of the term Seminar in groups of experiments - energy factor

A pair of adjectives	CG – control group (n = 21); EG1 – experimental group 1 (n = 21); EG2 – experimental group 2 (n = 21)					
	KS		ES1		ES2	
	M	SD	M	SD	M	SD
undemanding / demanding	3,19	1,36	4,85	1,20	4,25	1,57
moderate / strict	3,61	1,09	3,61	1,21	4,40	1,42
easy / difficult	4,04	1,29	3,66	1,24	4,05	1,24
passive / active	3,66	1,61	6,71	0,54	6,30	1,18
unproblematic / problematic	3,33	1,42	3,04	1,17	2,80	1,91
worthless / valuable	5,33	1,28	6,33	0,94	5,90	1,75
quiet / loud	3,90	1,63	4,76	0,97	4,65	1,62
short / long	4,09	1,34	4,00	0,92	4,20	1,32
ineffective / effective	5,90	0,92	6,19	0,79	5,80	1,07
<b>Gross score</b>	<b>4,12</b>	<b>0,68</b>	<b>4,79</b>	<b>0,43</b>	<b>4,70</b>	<b>0,57</b>

Key:  $n$  – number;  $M$  – average;  $SD$  – standard deviation

The term "Seminar", in terms of the perception of experimental groups, is in close proximity, which means that it is perceived similarly in experimental groups. Experimental groups rated the energy factor in 'during the innovative seminar classes higher. They considered the seminar for the development of moral and critical thinking in terms of energy to be more demanding, stricter, more difficult, much more active, less problematic, more valuable, a little louder, shorter. Overall, the highest average score was achieved by EG1 ( $M = 4.79$ ,  $SD = 0.43$ ) and slightly lower average by ES2 ( $M = 4.70$ ,  $SD = 0.57$ ). The traditional teaching of the control group was evaluated on average  $M = 4.12$  ( $SD = 0.68$ ).

### 4.2 Discussion of the findings

We compared the results of the perception of the term "Seminar" in individual groups in both the energy factor and the evaluation factor. We used one-step analysis of variance. The results are shown in Table 3 and Table 4.

Tab. 3 Comparison of group averages achieved in the evaluation factor (concept – seminar)

Seminar (evaluation factor)	n	M	SD	F	s.v.	p
control group	21	4,80	0,90	35,621	2	< 0,000
experimental group 1	21	6,29	0,35			
experimental group 2	20	6,15	0,47			

Based on the results, significant differences were demonstrated between the individual groups ( $F = 35.621$ ;  $p < 0.000$ ) in the evaluation factor. The post hoc test (Benferroni) showed the existence of differences between the control and experimental groups ( $p < 0.000$ ). The experimental groups did not differ significantly ( $p > 0.05$ ). As shown in tab. 3, control group achieved a lower average result ( $M = 4.80$ ;  $SD = 0.90$ ) than the experimental group 1 ( $M = 6.29$ ;  $SD = 0.35$ ) and experimental group 2 ( $M = 6.15$ ;  $SD = 0.47$ ).

The comparison of averages in the energy factor to the term "Seminar" is presented in tab. 4.

Tab. 4 Comparison of group averages achieved in the energy factor (concept – seminar)

Seminar (energy factor)	n	M	SD	F	s.v.	p
control group	21	4,12	0,68	8,572	2	< 0,001
experimental group 1	21	4,79	0,43			
experimental group 2	20	4,70	0,57			

Based on the results, we state that there are significant differences between the individual groups ( $F = 8.572$ ;  $p < 0.001$ ) in the energy factor. The post hoc test (Benferroni) showed the existence of differences between the control and experimental groups ( $p < 0.001$ ). The experimental groups did not differ significantly ( $p > 0.05$ ). As shown in tab. 4, the control group achieved a lower average result ( $M = 4.12$ ;  $SD = 0.68$ ) than the experimental group 1 ( $M = 4.79$ ;  $SD = 0.43$ ) and the experimental group 2 ( $M = 4.70$ ;  $SD = 0.57$ ).

Based on the test results we can state that the groups which completed the programme of development of moral and critical thinking achieved higher average score in evaluation of teaching process than the control group, which completed traditional teaching.

The students of experimental groups developed their:

- basic research skills – information gathering, organization and planning, critical thinking, moral dilemmas solving;
- basic personal skills – dispositions of a critical thinker, intellectual and moral virtues;
- professional skills – career development, professional supervision of argumentation and questioning, self-regulation.

The observed energy factor (Table 2) proved that such teaching is more demanding, stricter, heavier, a little louder, but much more active and more valuable. We were inspired by research from the Jubilee Center for Characteristics and Virtues (2020) at the University of Birmingham. Critical thinking cannot be taught without the values and virtues (intellectual and character) which a critical thinker should have (Knapík, 2020a; Maturkanič, 2018, 2020, etc.). Several authors state that the educational process should help learners to become moral individuals who have the ability of critical thinking and moral judgment (Knapík, 2020b; Kučerková, 2018; Pintes & Borisová, 2020).

## 5 Conclusion

The current priority of Slovak education is the development of a morally responsible individual. More than ever, our country realizes that we need graduates who have the ability to think analytically, behave ethically, and make morally right decisions. The State Educational Programme of the Slovak Republic has created official space for the support of moral and critical thinking in education. It is hardly reflected

in practice. In our programme, we have integrated critical thinking skills into the process of moral reasoning. In the semester experiment, it was shown that students of experimental groups perceive this integrity in teaching much more intensely than groups of students who have completed classical teaching. Long-term interest in the issue leads us to change the curriculum in the next accreditation process at Slovak teaching faculties. We consider the support of moral and critical thinking in future teachers to be a necessary step nowadays.

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