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CRISIS MANAGEMENT AND INCREASING KNOWLEDGE IN SECURITY AND RESILIENCE OF CRITICAL INFRASTRUCTURE ELEMENTS IN THE NEW STUDY PROGRAM FOR STUDENTS OF THE FACULTY OF REGIONAL DEVELOPMENT AND INTERNATIONAL STUDIES

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Abstract: *The aim of the article is to analyze the experience of the supply chain management security and knowledge in crisis management of the Faculty of Regional Development and International Studies and their reflection in the design of the new study program. Processing of the new study program of the faculty International Territorial Studies for Accreditation was based on the experience of the previous accredited study program and foreign internships, where the students analyzed the ability of students to respond to examples of crisis situations, to examine their decision-making process and to respond to changes in the situation. Students in the years 2011-2017 attended the Crisis Management courses, which represents the study load of the subject in the semester, is 140 hours and in the years 2016 - 2017 Transport Management and Distribution and Regional Development and Transport Management, Marketing and Logistics with a allocated limit of 143 lessons. Overall, 143 students took part in the courses in Crisis Management, and the subject of Transport Management, Marketing and Logistics was 45. Realization of case studies has shown positive changes in all aspects of research - transformational leadership, transactional leadership and passive / avoidant behavior. The use of the Multifactor Leadership presented by Bernard M. Bass and Bruce J. Avolio has enabled the study of changes in leadership and, using the results obtained, to propose changes and complements to a new study program. The data analyzed not only allowed the adoption of proposals to increase students' professional knowledge, but also highlighted the need for increased training in human resources and intercultural communication skills.*

Keywords*: supply chain management; leadership; communication skills*

1. INTRODUCTION

The crisis is a term for a period caused by a negative event, where the results or even the existence of an organization are significantly affected or jeopardized. As a result of the crisis, there may be a significant deterioration and change in the functioning of the organization, its existence, the lives of its employees, or property and other values may be jeopardized (Robertson, 2000). The crisis caused by a disaster or other threat is the form of a wide-spread risk that needs to be addressed ex post, depending on the specific situation. Crisis is usually preceded by Failure; there may be various crises, such as: the economic crisis, the financial crisis, the personnel crisis, the personal crisis, the corporate crisis and the manufacturing crisis (Coombs, 2007).

According to Parsons (1996), the causes of the crisis in terms of organization can be: (1) internal causes of the crisis caused when crisis can be prevented, (2) external causes of the crisis when external causes cannot be directly affected, but their impacts can be reduced by organizational readiness. The crisis may be due, for example, to production constraints, falling employment and wages, liquidation of the enterprise. A crisis situation is always a loss for the business, and it's inappropriate or no solution can lead to the company's disappearance (Sapriel, 2003).

Knowledge of crisis response and the resulting solution requires, among other things, the principles and the operation of logistics and transport. A virtually proven capability to use programmatic management methods and analytical techniques in the field of transport and logistics enables students to manage the transport and storage activities of an organization. All these processes assume the knowledge in the areas of logistics planning which includes managing

material, information and financial flows to meet customer requirements (Cooper, Lambert, Pagh, 1997). In this context, it is possible to state that the objective of logistics is to ensure that the right customer receives at the right time and in the right place the right goods or service of the right quality and quantity.

The support of technical education is the efforts of the faculty to link together activities that will enable it to be profiled as a faculty with a knowledge-based economy.

In recent years, the question arises as to how to educate students capable of responding adequately to the crisis situation and to solve the issues of logistics processes that are an important part of the lead management. The topic is widely discussed not only between educational institutions, experts at the international level, but also professional public. The current world is characterized by an increasing number of military and non-military incidents, which in turn pose risks for national states and supranational entities.The knowledge of distribution logistics in the crisis management process is a conditional factor for success in eliminating the impact of crises (Školník,M., Belan,L., 2015). Significantly proves that the analysis of the transport networks region is a necessary prerequisite for a crisis operation and therefore the need to increase knowledge through innovation of study programs and the inclusion of multidisciplinary subjects. There has still been a lower level of knowledge of project management in a real environment. The experience of the analyzed period and subjects has led to the extension of the taught areas on the problem of sub-jet resistance (Ivančík *et al.*, 2014).

Graduates of the faculty will take part in crisis situations in the near future, where they will hold leading positions in international staff and it is therefore desirable to increase their knowledge not only in the areas of crisis management and sustainability, but also in effective human resources management. The distribution of humanitarian and development assistance as a result of extraordinary events implies an innovative approach in teaching and leading the student to work independently in a planned response to an extraordinary event. The article deals with graduates of two subjects in the framework of accredited teaching of interdisciplinary territorial studies in 2012-2017[1].

[1] Based on an internal quality management survey at the University of the Defence in Brno, leaded by Zbysek Korecki, Ph.D. and Hana Kalisova in 2017.

Selected subjects prepare students for the competencies needed to develop leadership, not only in crisis situations.

Table 1 Total figures of students in academic year

	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018
Crisis Management	21	21	30	25	27	19
Transport management, Marketing and Logistics					27	18
Total	21	21	30	25	54	37

The objective of Crisis Management is to explain the basics of crisis management terminology and to reach the ability of students to respond to current crisis situations.

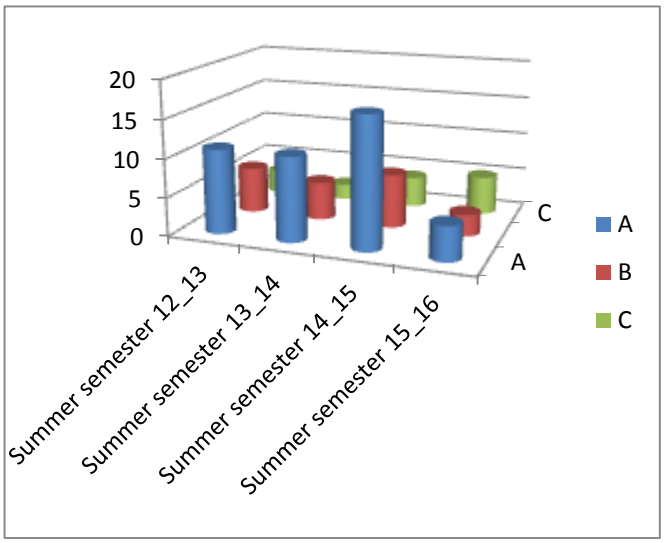

Fig. 1: Evaluation results in semesters

The national composition of students is determined by the number of contracts with educational institutions and is variable.

Table 1 National composition of students

	Summer semester					
	12/13	13/14	14/15	15/16	16/17	17/18
Ghana	3	1	8	9	16	3
Azerbaijan	1				1	
Slovakia	1	2	6	3		
Czech Republic	16	18	15	7	6	3
Ukraine			1			

Sweden				1		
England				1		
Brazil				1		
Turkey				1		
Gambia				1		
Tanzania				1		
Cyprus						1
Mexico						4
Nigeria						1
Cameroon						1
Greece						1
Zimbabwe					1	2
Spain						1
Kazakhstan						1
Nepal					1	
Russian Federation					1	
Georgia					1	
Total	21	21	30	25	27	19

Student instruction was conducted in order to build students' capacities in: analysis and identification of weaknesses in crisis management activities of the developing world; states and intervening entities; utilization of qualitative and quantitative methods of solving decisional problems characteristic of solving selected crisis scenarios; ability to analyse areas of crisis management depending on the type of emergency; ability to apply crisis management tools in the context of the emergency response phase; ability to synthesize knowledge and experience from major historical crisis events, gain knowledge of the principles and patterns of behavior and behavior of individuals and groups in crisis situations.

Subject Traffic Management, Marketing and Logistics were taught only in the last two workshops and the overall results are shown in Table 3.

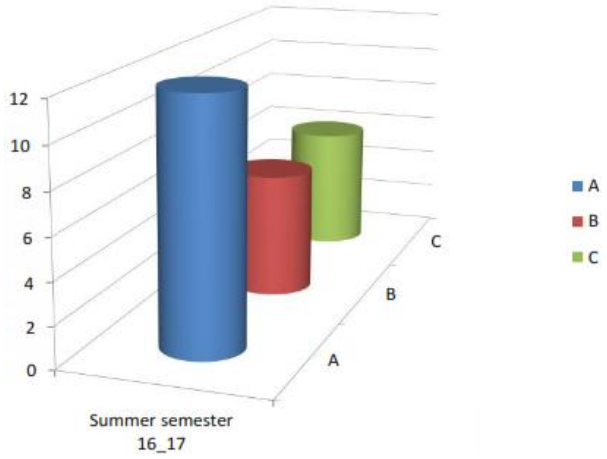

Figure 2: Evaluation results in semesters

The aim of the course is to acquire basic theoretical knowledge in the field of operational research, informatics, and logistics in transport, transport means and infrastructure. The deepening of the acquired knowledge is complemented by theoretical basics of economic disciplines in transport, management and marketing and their use in solving problems of transport processes.

The national composition of students is determined by the number of contracts with educational institutions and is variable.

Table 3 National composition of students

	Summer semester 16/17	Summer semester 17/18
Ghana	17	4
Azerbaijan	1	
Czech Republic	5	5
Cyprus		1
Nigeria		1
Cameroon		1
Zimbabwe	1	2
Spain		1
Kazakhstan		1
Nepal	1	
Russian federation	1	
Vietnam		1
Jordan		1
Georgia	1	
Total		

2. RELATION TO EXISTING THEORIES AND WORK

The general objectives of the learning process are defined in the areas of managerial skills development based on the process of leadership and management of a peer group of peers from a number of countries. The output was followed by changes in the accreditation documentation of the analyzed subjects.

The educational theory of Jean Piaget (1970, 1977, 2005, 2015) has been used, a multidimensional analysis that has been adapted to the needs of subjects that are specific in that outputs, particularly in logistics, are precisely measurable. The issue of the projection of knowledge and processes was explored when I was looking at the answer to the question: How does knowledge of processes grow and how behavior is manifested when students are entrusted with team leader. It has turned out that if students solve case studies based on standard operating processes, they are able to carry out the tasks of case studies. A visible increase was recorded in an active approach. Using a passive approach based on the activity of all members of the group took 12-18

minutes before proactive approaches to the case study were clearly visible.

Based on the Multifactor Leadership Questionnaire Comparison were analyzed the development of approaches the development of the reactive approach to the active approach, which was based on the brain tree during the individual briefing. The expected development is shown in Table 4.

Table 3 Comparison of reactive and active approach

Reactive approach	Proaktivní přístup
Focus on emergencies	Focusing on vulnerability and disaster risk
Scenario of one event	Scenarios dealing with many risks in a dynamic design
Command and operational control	Strategic and tactical management
Hierarchical links	Variable relationships
Device focus (hardware)	Focus on skills (software)
Specialized expertise	Specialized expertise respecting broad contexts and public views
Urgency, short-term timeframe	Comparison, longer timeframe
Rapidly changing information usage	Differentially of views, information management
Vertical flow of information	Scattered, wide flow of information

3. RESEARCH APPROACH

Each group in the semester was evaluated in Transformational Leadership Management and Passive-Avoidant Leadership Behavior. During the training process, a total of three case studies were created for each subject. The first study was solved by the lecturer and the procedures and processes were defined, the form of division of activities into the group, the form of documenting the partial results and the presentation of the overall conclusions.

Transformation leadership is the process of influencing subordinates when leaders define goals and work around the environment to try to get the working team to see opportunities and challenges in resolving crisis management issues in a new way. Transformational leaders are proactive and seek to exploit their synergies of individual efforts in favor of the group (Butler, Cantrell, Flick 1999). The leader works with the goal of developing the organization and innovation of existing processes. Its goal is not only to achieve "expectation-based" performance, but to leverage the potential of the team by implementing moral and ethical standards.

In accordance with the Multifactor Leadership Questionnaire Feedback Report presented by Bernard M. Bass and Bruce J. Avolio (1997), it has been pointed the following factors which are crucial for the process of shaping the Transformation leadership: Idealized Behavior, Idealized Behavior, Inspirational Motivation, Intellectual Stimulation, Individual Consideration Transaction Leaders and Transaction Leadership define expectations and support performance to achieve these levels. The supervisor supports performance and monitors the achievement of those levels that have been defined in the process of preparing leaders at the strategic level. Another form that was examined was passive management, when the members of the group were given a task in the form of a simple assignment and all other activity was left on a personal approach. Therefore, the manager did not actively enter the process of making variants, did not systematically address the problems solved and only controlled the outputs.

In the area of Transactional Leadership - Management, the author has explored Constructive - Contingent Reward and Corrective - Management - by - Exception: Active. The last track was Passive-Avoidant Leadership Behavior, where the Passive –Management-by-Exception: Passive and Avoidant - Laissez faire has been studied.

Comparison of leadership capabilities was rated as a percentage of 0-100, the results of the calculations were rated 0-100 according to the accuracy of the delivered results and their comparison with the sample examples, and finally the last parameter was the time to complete the task.

4. FINDINGS

Transformational Leadership level of change has shown that groups are able to work in an international environment and perform tasks. A detailed explanation of the operational processes is required, after which the students are able to perform the tasks independently. It was found that the key differences of group management were visible and even though the groups worked according to the same scenario.

The difference was based on the level of knowledge of subjects and the personal courage to divide work in a group where there was no visible profit. It can also be appreciated that the reaction time was dependent on the way the task was explained. Different times were recorded only at the beginning of the works. The processing itself

was already solved according to the standard operating procedures

In general, it can be confirmed that Passive Management is definitely a time lag, but above all it has a negative impact on the desired results. Even though the level of knowledge was the same for both case studies, missing leadership resulted in an increase numbers of an errors.The authors take full responsibility for the contents and scientific correctness of the paper. The selection of the texts to include depend on the result of the peer review process announced.

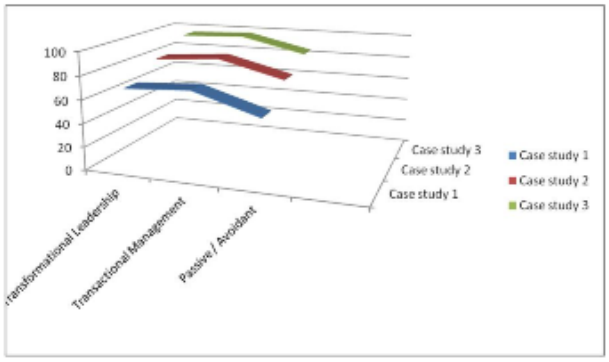

Fig. 3 Changes in Transformational Leadership, Transactional Management and Passive / Avoidant by the number of case studies solved in Crisis Management

It can be stated that the reaction and working time for the delivery of the results was also dependent on the way of management, but in general the approximation of the times according to the number of case studies solved.

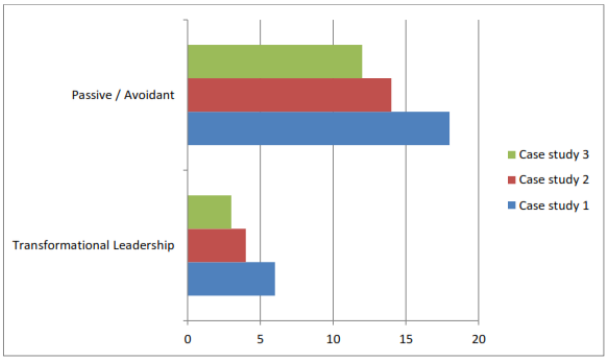

Fig. 4 Delivering results in the Crisis Management course

The control of the level of results in the subject of crisis management is based on procedural control and it is not possible to evaluate the documented results empirically.

The subject of Transport Management, Marketing and Logistics is based not only on the human resource management capabilities, but it is significantly dependent on the level of knowledge of the calculation of transport, storage and handling costs. Here depends on the choice of individual processors. They are supposed to work independently for individual areas and will only consult changes in assignments, or changes in commodities and traffic times.

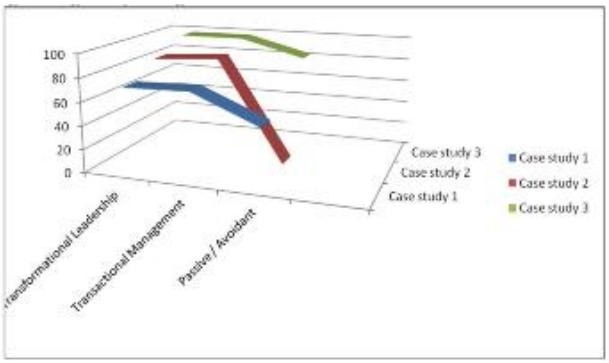

Figure 5: Changes in Transformational Leadership, Transactional Management and Passive / Avoidant by the number of case studies solved in Transport Management, Marketing and Logistics

The commencement of the activity in the subject was significantly influenced by the knowledge of the computational knowledge and the orientation in the map for calculation of transport costs. It was clear that everyone was able to engage in all activities, which allowed confirming the way in which the calculation of logistic variables was done.

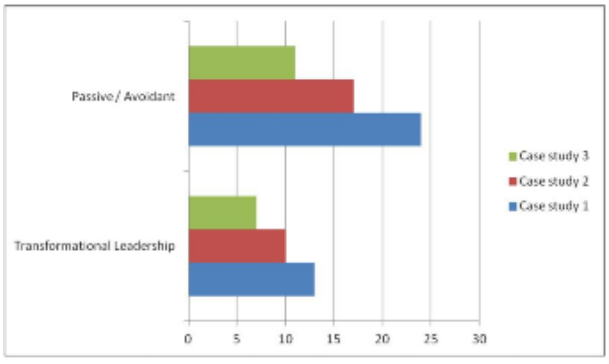

Fig. 6. Delivering results in the Transport Management, Marketing and Logistics

The subject requires the use of good practices for the calculation of logistics costs, and it was clear that students from the African Union were unwilling to cooperate when dealing with the first case study, and only after a strong alert from the head of the group began to deliver corresponding

results. It is obvious; therefore, that the absence of control was visible when calculating logistics costs.

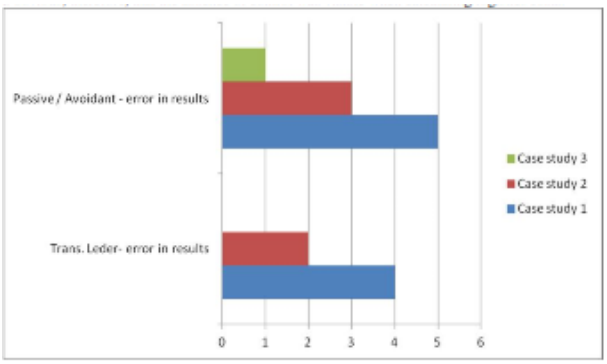

Fig.7 Accuracy of delivered results in the Transport Management, Marketing and Logistics

5. CONCLUSIONS & ACKNOWLEDGMENT

The transport sector is one of the important areas of the national economy that has an impact on all areas of public and private life and the business sphere. The sector's cost is obvious, but on the other hand it should be noted that the transport sector is a major contributor to public budgets. The development of the transport sector has a direct impact on increasing the competitiveness of the Czech Republic. Achieving the objectives of transport policy presupposes harmonization of conditions in the transport market, permanent modernization, development of rail and water transport, while improving the quality of road transport. Transport policy also aims to reduce the environmental and public health impacts of transport, which are a prerequisite for a synergy for the development of society.

The Czech Republic's anchoring in the European Union also sets requirements for increasing the level of operational and technical interoperability of the European rail system and envisages the development of the trans-European transport network. Transport infrastructure and its facilities belong to factors that affect the competitiveness of not only individual regions, but also the Czech Republic as a whole. The impact of transport on regional development needs to be seen in the context of other infrastructure, high quality and educated workforce and the use of modern technology. Telematics is a system engineering that deals with the creation and efficient use of the information environment for homeostatic processes (compensation of interference for maintaining robust processes according to defined criteria, f. ex. comfort, economy, etc.) of territorial units to global network industries.

The public sector is responsible for the development of transport infrastructure because it is a "public good". The financial difficulty of the transport infrastructure, which represents the realization of the construction, operation and maintenance of the transport infrastructure, assumes the use of European co-financing. Although the density of the transport network in the Czech Republic is above average in terms of ensuring competition is not enough. The attractiveness of the territory for investors in terms of transport accessibility is due to the relative availability, by comparing the availability of individual states and regions.

High-quality transport infrastructure that allows for regular deliveries in the transport of goods is important for reducing logistics chain costs. Logistics based on regular deliveries make it possible to reduce stockpiles and speed up the turnover of goods. As a result, there is a reduction in production costs for companies operating in the regions. The use of modern logistics technologies must also ensure the sustainability of processes. Logistics chains must be able to take advantage of all modes of transport by applying the principle of co-modality. Further development of the area and its security requires a progressive innovation environment that enables effective and rapid acquisition of theoretical and practical knowledge and processes in modern technologies.

The aim is therefore to focus on security issues, which are of a highly interdisciplinary nature. Interdisciplinary approach allows greater interconnection of research programs into teaching and practical implementation of theory into real life. The development of educational competencies should now be directed to the following areas: minimizing risks and addressing emergency situations affecting the population, personnel management in crisis situations and crisis management, analysis, identification and control of risks in the corporate sphere, environmental management in the context of sustainable economic development, geo-informatics and geo-ecology as a contextual component of integrated economic studies.

BIBLIOGRAPHY

1. Bass, B. M., & Avolio, B. J. (1997). *Full range leadership development: Manual for the Multifactor Leadership Questionnaire*. Menlo Park, CA: Mind Garden.

2. Butler Jr, J. K., Cantrell, R. S., & Flick, R. J. (1999). Transformation leadership behaviors, upward trust, and satisfaction in self-managed work teams. *Organization Development Journal*. 17(1). 13.
3. Coombs, W. T. (2007). Crisis management and communications. *Institute for public relations* [online]. URL: http://www.facoltaspes.unimi.it /files/_ITA_/COM/Crisis_Management_and_Communications.ppd, accessed: 26.04.2018.
4. Cooper, M.C., Lambert, D. M., & Pagh, J. D. (1997). Supply chain management: more than a new name for logistics. *The international journal of logistics management*. 8(1). 1-14.
5. Ivančík, Radoslav, Nečas, Pavel, Jurčák, Vojtech. (2014). Theoretical view of some current global security challenges. *Incas Bulletin.* Vol.6. no.1. 99-107.
6. Parsons, W. (1996). Crisis management.*Career Development International*. 1(5). 26-28.
7. Piaget, J. (2005). *The psychology of intelligence*. London: Routledge.
8. Piaget, J. (1977). *The development of thought: Equilibration of cognitive structures.* Translated by A. Rosin. New York: Viking.
9. Piaget, J. (2015). *Structuralism (Psychology Revivals)*. London: Psychology Press.
10. Roberts, A. R. (2000). An overview of crisis theory and crisis intervention. In A.R. Roberts (ed.), *Crisis intervention handbook: Assessment, treatment, research.* 2nd Edition. New York: Oxford University Press. 3-30.
11. Sapriel, C. (2003). Effective crisis management: Tools and best practice for the new millennium. *Journal of communication management*. 7(4). 348-355.