

Dani kriznog upravljanja Crisis Management Days

ZBORNIK RADOVA BOOK OF PAPERS

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Velika Gorica, Hrvatska



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Dani kriznog upravljanja **Crisis Management Days**

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IZGRADNJA KULTURE SIGURNOSTI I OTPORNOSTI NA KATASTROFE KROZ OBRAZOVANJE

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Sažetak

Praktičan je način napredovanja za nacionalne institucije odigrati svoju ulogu u globalnoj obvezi smanjenja učinka katastrofa. Razumijevanje interakcije ugroza, izloženosti katastrofama i ranjivosti ključno je za učinkovitu prevenciju katastrofa. Stoga obrazovanje i obuka mogu premostiti jaz među znanstvenim spoznajama i praktičnim lokalnim djelovanjem putem prijenosa poruka i uspostavljanja standarda.

Ključne riječi: sigurnost, otpornost, katastrofa, obrazovanje

1. Introduction

Knowledge and education are recognized as key components of disaster risk management and were made a priority area in the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters. Priority 3 of the HFA focuses on increasing resilience and building a culture of safety and resilience at all levels through the use of knowledge, innovation and education.

Emphasis is placed on the university's responsibility and activities for disaster risk reduction (DRR) and how Protection and rescue directorate collaborated with other institutions. The role of university is to accumulate the knowledge and to conduct education on DRR, and, through such activities the university can promote DRR in the society and its development. In such activities, it is very important to collaborate with other institutions, at local, national and international levels. The importance of university's role in DRR should be well recognized, and furthermore collaborations, knowledge and experience sharing among the universities that are affected by mega-disasters need to be promoted.

It is strongly argued that universities should take responsibilities for DRR education, not only emphasizing on the need for inclusion of DRR education in the curricula, but also play a leading role as the provider for DRR training, and in particular to those universities already offering disaster management relevant programmes (Chen 2014).⁴⁷

2. Disaster preparedness and prevention

In the Republic of Macedonia legislation is in the process of development and adoption and some structures are yet to be established, the laws are yet to be fully implemented or enforced. Furthermore, in our country we

47 Chen, Y. F. (2014) IDRC "Integrative Risk Management - The role of science, technology & practice": Personal Statements on the Input of Science & Technology towards the Post 2015 Framework for Disaster Risk Reduction. Community-Based Reconstruction of Society and University Involvement: Coventry University Model Yung-Fang Chen, Coventry University

have a lack comprehensive national disaster management plans or clear definitions of the roles and responsibilities of different departments. It reviews existing documents, including country-level reports and HFA National Reports, to develop an understanding of current national economic environments, legislation, awareness, capacity and institutional mechanisms related to disaster risk reduction and disaster management.

According with DRR-related definition: safe school is a learning community with commitment to safe and healthy culture, aware of risk; developing well-made plan for pre-disaster, during disaster and post disaster events; and being prepared to respond to an emergency situation. Safer School creates the secure, safer, comfortable and healthy feeling to students and teachers both in normal and also in disaster situation.⁴⁸

In this paper authors analyses disaster risk reduction in the context of education at country level.

Overall, there is a need to shift the focus from response to disaster preparedness and prevention. Incorporating disaster risk reduction into educational activities at the policy and operational levels will encourage this shift.

To achieve this there is a need to promote knowledge of disaster management and behavioral change with regard to disaster risks through both formal and non-formal education, while at the same time reinforcing partnerships and encouraging cooperation on disaster risk reduction policies and practices.

Basically, the plan governing specific tasks to the participants in the implementation of protection and rescue, and the whole process is based on realistic assumptions about the possible threat and realistic assessments of their capabilities to deal with the consequences, is done in a timely manner and a continuous / continuous process who monitor the development and current developments in the environment which it applies, which provides practical applicability of the planned developments and solutions. In management in any sense, especially in the management of natural disasters and other disasters, cannot go without good planning, which includes all subjects of education, especially important role education have.

3. Safety and resilience to disasters through education

When it comes to the safety and resilience of the Republic of Macedonia disaster of great importance for their **prevention efforts**. Therefore the Republic of Macedonia is in a continuous effort to consolidate national legislation with international law, in order to get a more effective and efficient protection of the country's population.

Special attention will be paid to the institutional relationship between the Republic of Macedonia in the prevention and management of disasters.

The **Law on protection and rescue**⁴⁹ measures is established to protect and rescue, which defines the place, role and tasks of all entity in performing functional activities and measures for the protection and rescue of people and goods. With their consistent planning, preparation and implementation, largely in order to reduce the dangers of the occurrence of disasters or consequences thereof.

Planning and implementation of measures and activities to protect and rescue is the primary requirement or obligation to which you seek any organization, including the educational organization. The development of protection and rescue depends on the support from the system, the conditions for implementation, the motivation and commitment of employees, but most of the planning in the institution. It covers more already mentioned and described partial components. All components operate independently, but closely related and represent professional continuity.

Of course, modern problem in education is the dilemma of the existence of a culture of safety by creating the concept of planning and implementation of measures and activities for protection and rescue and how it is implemented in the educational process.

Disaster risk reduction in education is understood to have both structural components, such as school buildings and facilities, and nonstructural elements, such as school disaster management, school policy development, disaster drills and procedures and formal, non-formal and informal learning.⁵⁰

Hence, the subject of this research is safety culture by creating the concept of planning and implementation of measures and activities for protection and rescue in the educational process.

48 Galuh, JI. (2012) *Making School Safe from Disaster*, page 13

49 *Law on Protection and Rescue*, The Official gazette of RM" No.93/ 12

50 UNISDR/ECHO/UNICEF. Undated. *Safe Schools in Safe Territories: Reflections on the Role of the Educational Community in Risk Management*. <http://www.unisdr.org/we/inform/publications/8962>

Integration of disaster risk reduction into education is a long-term process which aims to ensure that knowledge about hazards, risks and appropriate safety behavior is deeply embedded within communities, with children as “agents of change”.

School safety is recognized as a priority in the post-2015 framework for disaster risk reduction, as part of the Third UN World Conference on Disaster Risk Reduction in 2015. A set of initiatives on school safety are being developed by various partners in an uncoordinated manner as a response to the High Level Communiqué’s call. UNISDR has the mandate and responsibility to ensure that a global holistic initiative for school safety that builds on key is presented at the World Conference on Disaster Risk Reduction in March 2015. The Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector defines a “safe school” as combining all of the following three components:

- **Safe Learning Facilities** (disaster-resilient infrastructure) (This component will aim at integrating structural safety in the construction of new schools and at retrofitting existing vulnerable ones.)
- **School Disaster Management** (This component will support National Disaster Management Organizations and Ministries of Education to engage actively in school preparedness activities, including the conduct of evacuation drills.)
- **Disaster Risk Reduction and Resilience Education** (This component will aim at mobilizing Ministries of Education to include disaster risk reduction as part of school curricula and at strengthening teacher education institutions in disaster risk reduction and resilience education to allow children to acquire critical thinking and life-saving skills in support of a global culture of prevention.)

The Worldwide Initiative for Safe Schools will focus effort in high risk and low capacity countries. Governments will lead actions with the support of key technical partners on the development of national strategies for school safety around the three key pillars (see below) of school safety. A major global advocacy component led by UNISDR will foster political commitment to school safety.⁵¹

SAFE SCHOOLS



Diagram: The Worldwide Initiative for Safe Schools will promote action on all three pillars of school safety to ensure every new

Protection and rescue directorate is setting up a national disaster management educational and training network. This will include universities, vocational schools and other educational institutions and police training facilities (by planning to include disaster management modules in their existing curricula). The formula noted demonstrates that disaster risk can be reduced by increasing the capacity of a society to protect itself against hazard. The one of the dimension of Disaster risk reduction learning engages learners in processes of resilience building in their own community through grassroots level initiatives such as undertaking local vulnerability assessment and mapping initiatives, identifying hazards, developing resilience action plans, and implementing those plans. The learning dimension of Disaster risk reduction offers hands-on experience of participatory citizenship education. Resilience building embraces both **mitigation and adaptation**. **Mitigation**, at one level, is about redu-

51 UNISDR, Developing a Worldwide Initiative for Safe Schools “As of 2016, every new school will be safe from disasters”

cing or limiting the potential threat from hazard. At this level, it overlaps considerably with **adaptation**, (i.e., adjusting human or natural processes to modify the effects of hazard, for example, changing an agricultural method to cope with drought). At a deeper level, mitigation concerns examining how and to what extent human activities may contribute to increasing frequency and severity of hazard, and how to effect fundamental changes in human behavior (e.g., encouraging consumer behavior changes toward sustainable consumption). In practice most Disaster risk reduction has stopped short of this deeper level, limiting itself to mitigating the effects of hazard.⁵²

In the Review of the Role of Education and Knowledge in Disaster Risk Reduction covers '**any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts**.'⁵³

4. From knowledge to awareness and action

4.1 Analytical overview about the research results

Investing in formal education is a tenuous enterprise when the safety of school students is not ensured. Resilient construction techniques, building codes, land use planning and zoning can help minimize human and material losses. The Macedonian National Survey for Seismic Protection, The Institute of Earthquake Engineering and Engineering Seismology, University "Ss. Cyril and Methodius" (IZIIS) has initiated a seismic risk reduction project for schools, as school students who know how to react in the event of a disaster can make a difference in protecting others. With that thought the main goal of the research is to observe the developments in the educational process in connection with the planning of measures and activities for protection and rescue. That means, to investigate and determine whether and how to exercise the provisions of the Law on Protection and Rescue who are in charge of. Main objectives of our study were:

1. To determine the extent to which staff is ready - capable of making a risk assessment and planning process of disaster management;
2. To determine how employee personnel in education sector are familiar with the dangers that may threaten the safety of school;
3. To determine how many staff employed apply preventive measures for protection and rescue;
4. To examine the training of staff employed to extinguish fires, handling fire vehicles...etc.

The most appropriate method for this research is **descriptive-analytic method**, in accordance with the defined object with the purpose and objectives of the research. The determination of this method arise from the subject of research, by its purpose and tasks that actually refer us to analyze and determine the actual documents, measures and activities for protection and rescue to be represented there. Techniques for collecting empirical data were used, Technique of analysis of documents, Technique polls and Interview.

Questions were divided into several groups. The first set of questions we want to obtain general information on the educational attainment of respondents, seniority go to work at the school and their educational profile. The second group of questions aimed to discover whether and how to implement the tasks in the field of protection and rescue in education. The main content of this instrument is comprised questions that seeks to gain insight into the field of information protection and rescue, as well as their views and opinions on the importance of prevention and preparedness against disasters.

The survey was implemented in the Republic of Macedonia. The survey targeted 42 schools, 42 school principals, 368 teachers and 50 assistants. Schools were selected randomly. The survey includes 12 elementary schools from the area of the City of Skopje and 30 schools in the interior (rural areas) territory of Macedonia. In each school surveyed by 3 people, one teacher, one director and one associate of the school.

4.1.1 The preparedness of making risk assessment document

One question in this component of our research is: to what extent you know the legal provisions and tools for

52 Kagawa, F. & Selby, D. 2012. 'Ready for the Storm: Education for Disaster Risk Reduction and Climate Change Adaptation and Mitigation', *Journal of Education for Sustainable Development*, 6 (2) (forthcoming). Page 21

53 <http://www.unisdr.org/we/inform/terminology> See also: Wisner, B. 2006. *Let Our Children Teach Us! A Review of the Role of Education and Knowledge in Disaster Risk Reduction*. Bangalore: Books for Change. p. 32, 44.

disaster, majority of them (60,33%) teachers and associates (42,00%) believe that know a few the contents of the laws and regulatory disaster, which gives responsibilities and obligations of employees in primary education as a vulnerable category or critical infrastructure in terms of school building, important to take preventive measures and previous activities to implement legal solution as a prerequisite training students to the disasters. Directors as managers of primary school (52.38%) believed to know the legal provisions and instruments for disasters of which 23.81% reported that ignorant or (21.40%) fully aware that the legal provisions regulate the management of disasters in the school.

Table 1. Extent of knowledge to legal provisions for disasters

Categories of responses	Principals		Associate		Teachers		Total:	
	f	%	f	%	f	%	f	%
Lack of knowledge	1	2,38	5	10,00	38	10,33	44	9,57
Very little knowledge	10	23,81	21	42,00	222	60,33	253	55,00
Enough knowledge	22	52,38	21	42,00	94	25,54	137	29,78
Fully knowledge	9	21,40	3	6,00	14	3,80	26	5,70
Total:	42	100	50	100	368	100	460	100

$$X^2 = 46,019 \quad df = 6 \quad p < 0,01$$

Almost equal is the position regarding the knowledge of regulation, of which the largest number of respondents (52.38%) responded that they know enough legal solutions and tools for protection and rescue, and 23.81% that few knowledge.

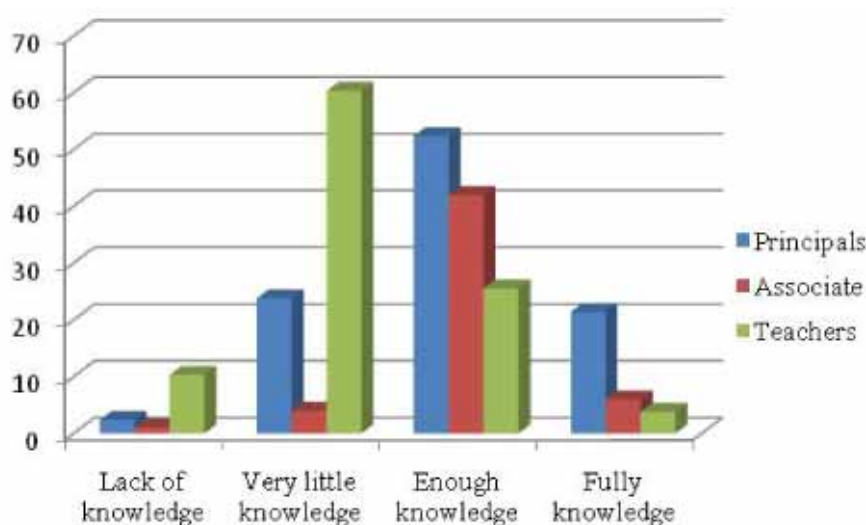
In terms of the answers they give associates the issue may be noted that the highest percentage reported for equal knowledge of normative acts and instruments of protection and rescue or 42.0% ignorant

These results give us the right to conclude that almost all respondents correctly understand the essence of knowledge of content protection and rescue, consider desirable and useful their knowledge, especially in situations of extraordinary character, where it is necessary to properly act in a situation.

If there is sufficient knowledge of legal content the document in terms of protection and rescue and has gained previous knowledge and skills, all the easier way would contribute to adequate planning and implementation of measures and activities for protection and rescue in elementary education, or will prepare documents preventive primary school appropriate response in event of an emergency.

Chi-square test is important; there are statistically significant differences in the responses of the subjects examined in terms of to what extent they know the legal provisions for the protection and rescue

To get a clearer picture, the data present in the following figure.



Graph. 1 Extent of knowledge to legal provisions for disasters

In terms of the answers they gave subjects examined this issue, therefore the level of education the results show in Table 2.

Table 2. What is the level of knowledge of the legal provisions for the protection and rescue in terms of the level of education?

categories of responses	Level of education						Total:	
	Higher education		Post secondary education		Other			
	f	%	f	%	f	%	f	%
Lack of knowledge	35	9,94	9	11,11	0	0,00	44	9,91
Very little knowledge	182	51,70	55	67,90	7	63,64	244	54,95
Enough knowledge	111	31,53	16	19,75	4	36,36	131	29,50
Fully knowledge	24	6,82	1	1,23	0	0,00	25	5,63
Total:	352	100	81	100	11	100	444	100

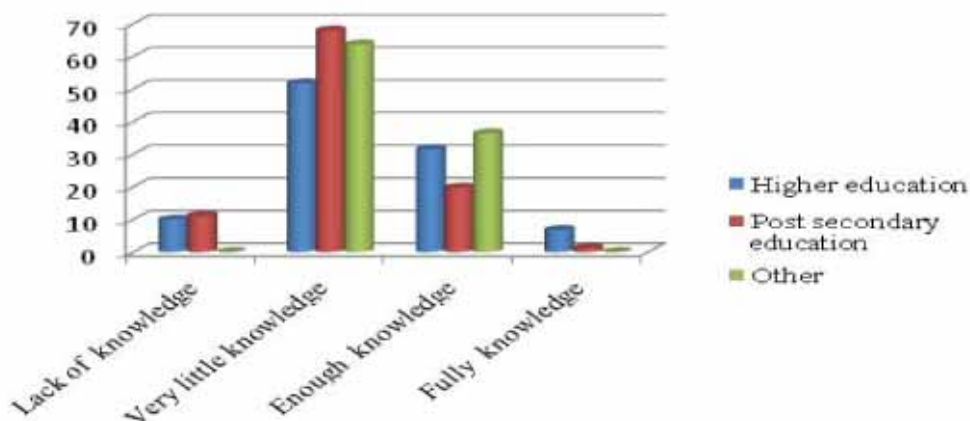
$$X^2 = 12,065 \quad df = 6 \quad p > 0,05$$

With this issue we wanted to know what opinion have examined subjects according to their level of education on to what degree they know the legal provisions for the protection and rescue.

These results give us the right to conclude that the majority of respondents know only a few of legal provisions for making this kind of document for further evaluation of hazards in primary school.

In calculating the chi-square test, it was determined that there were no statistically significant differences.

To get a clearer picture of this relationship, the data present in the following graph



Graph 2. What is the level of knowledge of the legal provisions for the protection and rescue in terms of the level of education?

Regarding the question to what extent you know go model for assessing the risk from disasters, 42, 39% said they know a little or something for risk assessment and only 3.04% fully know.

In terms of the answers that gave teachers, 42.39% do not know the model, and a large percentage reported for both knowledge models for risk assessment, 54.00% of the associates know little, and they like other respondents. The results are shown in Table 3rd

Table 3. What is the extent of knowledge about risk assessment of disasters?

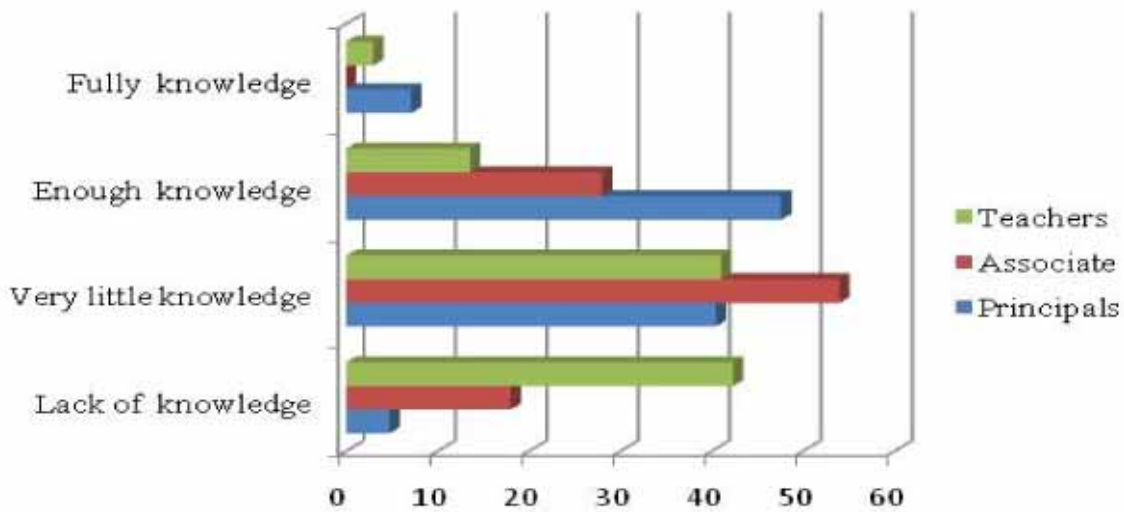
Categories of responses							Total:	
	Principals		Associate		Teachers			
	f	%	f	%	f	%	f	%
Lack of knowledge	2	4,76	9	18,00	156	42,39	167	36,30
Very little knowledge	17	40,48	27	54,00	151	41,03	195	42,39
Enough knowledge	20	47,62	14	28,00	50	13,59	84	18,26
Fully knowledge	3	7,14	0	0,00	11	2,99	14	3,04
Total:	42	100	50	100	368	100	460	100

$$X^2 = 52,334 \quad df = 6 \quad p < 0,01$$

These results give us the right to conclude that a small percentage of knowledge, almost negligible, indicating that respondents as carriers of that activity do not know the model for assessing the risk of disasters.

The calculated chi-square value with 52.334 and $df = 6$ indicates that there are statistically significant differences in the responses of the surveyed subjects about to what degree go familiar model for assessing the risk of disasters.

To get a clearer picture of this relationship, the data present in the following figure.



Graph 3. What is the extent of knowledge about risk assessment of disasters?

In this research we were interested to know whether the directors, associates and teachers follow the right settings for early warning. In this matter the results are presented in Table 4.

Table 4. Tracking real parameters for early warning from disasters

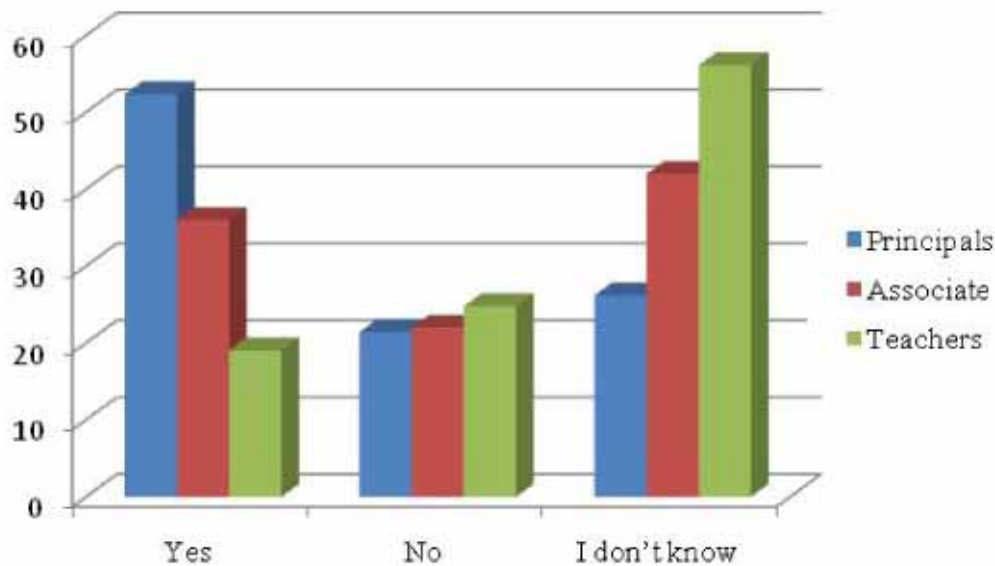
Categories of responses							Total:	
	Principals		Associate		Teachers		f	%
	f	%	f	%	f	%		
Yes	22	52,38	18	36,00	70	19,07	110	23,97
No	9	21,43	11	22,00	91	24,80	111	24,18
I don't know	11	26,19	21	42,00	206	56,13	238	51,85
Total	42	100	50	100	367	100	459	100

$$x^2 = 28,690 \quad df = 4 \quad p < 0,01$$

The presented data show that the directors (52.38%) believe that follow the true parameters for early warning, unlike them associates the highest percentage (42.00%) and teachers with 56.13% said they did not know whether the follow the right settings for early warning.

Chi-square test is important; there are statistically significant differences in the responses of the surveyed entities regarding whether to follow the true parameters for early warning

To get a clearer picture of this relationship, the data present in the following figure.



Graph 4. Tracking real parameters for early warning from disasters

Timely and appropriate information to the staff and students in school will contribute to taking timely preventive measures and prevent or mitigate the adverse effects of disasters. Given the activity performed by educational institutions, timely information for stays negative effect of the disaster, and the measures necessary to be taken. We think it is very important information warning of a disaster is clear and known to every member of the school of mutual information and communication.

The key points were concluded from the Survey:

1. **Strengthening capacity is an urgent and important matter in Macedonia.**
2. Professors and students are not adequately protected against major potential disasters in Macedonia; necessary measures to secure their safety and livelihoods should be a priority.

The survey faced some challenges due mainly to an initial lack of information on school safety, and because of the discrepancy between the actual level of hazard and the level of resistance of existing school buildings and facilities. The survey sought to build local capacity and awareness through:

- development and enhancement of learning tools;
- training of facilitators and teachers;
- participatory extracurricular activities;
- organizing extracurricular sessions/activities;
- testing children's cognitive response;
- drawing lessons for scaling up; and
- school and community workshops.
- With those we can help children:

Understand and identify risks and communicate these to others, and explore ways to raise community awareness;

- **Engage in participatory hazard risk mapping of their surroundings, community, village, etc.;** and
- **Engage in family and school risk reduction planning and management.**

Investing in prevention and preparedness, multiple effects and reduce the resources needed for response and recovery. In this context, in order to streamline operations to improve the efficiency of the unique system of protection and rescue.⁵⁴

In the light of these facts, and given that a large section of Macedonian society is lack of understanding of hazards and disasters, it was necessary to provide with some knowledge of hazards and risk reduction measures.

⁵⁴ National strategy for protection and rescue, „The Official gazette of RM“ No. 6 /14

Prevention begins with information. Awareness is the first step toward action. Awareness can trigger interest, interest can lead to attention, and attention can prompt action. As education institutions are the best venue for sowing collective values, school students and teachers can serve as vehicles for building a culture of prevention, these include training of teachers, bringing disaster risk reduction into the classroom, organizing disaster quiz competitions, school contests on disaster risk reduction knowledge, campaigning for disaster safety, and turning school students into catalysts and initiators. Some initiatives described also include “awareness” components. The awareness-raising activities described are carried out by disaster risk reduction practitioners and/or school teachers or students themselves.⁵⁵

In accordance with the provisions of the Law on Protection and Rescue in chapter 6 the rights and duties of citizens in the protection and rescue exercise in the protection and rescue of citizens in the country have the following rights and duties:

- **To participate in the protection and rescue;**
- **To perform a material obligation**
- **To be trained and prepared for self-protection.**

Pursuant to Article 119, paragraph 1 of the same law provided a **Regulation on the content and manner of conducting the training for self-protection in educational institutions.**

Considering the powers of the state authorities for training and preparation for personal and mutual protection, evident is the need to improve public awareness of the possibility of the occurrence of disasters, as well as processing of content for self-protection in educational institutions.

In terms of an efficient system of social partnership and joint action of all relevant factors, creates education experts that you can engage in egregious domestic and international competition in all areas. Terms of not only the participation of all stakeholders in society but creating efficient and effective educational system at all levels, a performance for which imposes new position in the socio-economic context, are respected and principles of sustainable development.

It means providing the opportunity to adopt knowledge, skills and abilities, basic concepts, the basic characteristics of natural disasters, the consequences of their occurrence, measures for protection and rescue, prevention and operational before the occurrence, during the occurrence and the occurrence of hazards, resources and equipment used to protect and rescue exercise procedures and preventive operational measures for personal and collective protection in case of disaster, further education and learning with respect to the guidelines for sustainable development of the whole society. We found that the following four activities are extremely important for higher educations

- Knowledge Creation,
- Knowledge Transfer/Dissemination,
- Advocacy, and
- Community Service.

Knowledge Creation is to conduct research on disaster, to organize and systematize the disaster knowledge. **Knowledge Transfer/Dissemination** is to pass the disaster knowledge to future generations through various ways, such as educational courses and programs, trainings, workshops, conferences, publications, etc. **Advocacy** is to strengthen the capacity of local & national governments in disaster related issues based on our researches and studies. And **Community Service** is to enhance community's resilience through science based disaster risk management.⁵⁶

Conclusion

Based on our research data and experiences, we could conclude the following points. Collaboration is a **KEY** for building a culture for safety. Due to university's significant roles in recovery and in mainstreaming Disaster

55 UN/ISDR (2007) Towards a Culture of Prevention: Disaster Risk Reduction Begins at School, Raising Awareness Within School Communities

56 Samsul, R., () University Involvement on Disaster Management and Recovery

risk reduction (DRR), universities should strengthen their capacity in disaster knowledge. It is therefore important to promote knowledge and experiences sharing among the universities affected by disasters. To conduct the Disaster risk reduction activities as discussed above, it is essential to collaborate with the national governmental organization for disaster management, as well as with the international organizations. To initiate such DRR collaborations, it is necessary to establish a multi-disciplinary master program in disaster science. Also disaster related contents must be included into the academic curriculum, and doctoral program in disaster field. Examples of DRR collaboration with the central government are close partnerships with Macedonian National Disaster Management Agency (Protection and Rescue Directorate). Also contributions to several legal documents related to disaster management: Macedonian National Disaster Management Plan, National Strategy for Protection and Rescue (2014-2018), etc.

As to our future plans, we aim at establishing Military Academy as a Center of Excellence in disaster management, consisting of activities such as higher education in disaster for under- and post-graduate studies, research center activities, and producing knowledge products as journal publications & books, and field laboratory activities on ancient disaster. Education in order to introduce disaster risk reduction issues into schools. As part of the curriculum initiative, teachers are being educated on how to deal with disasters before they occur, during their occurrence, and their consequences. Once they are equipped with this knowledge, the teachers then share it with other teachers and pupils. It is therefore important to promote knowledge and experiences sharing among the universities dealing with disasters.

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BUILDING A CULTURE OF SAFETY AND RESILIENCE TO DISASTERS THROUGH EDUCATION

Abstract Practical way forward for national institutions is to play their part in the global commitment reducing the impact of disasters. Understanding the interaction of hazards, exposure and vulnerability is crucial to effective disaster prevention. Hence, education and training can bridge the gap between scientific knowledge and practical local action by transmitting messages and setting standards.

Key words: safety, resilience, disaster, education

