



# Comparative studies on the perception of risk to disasters in teacher's college

*Estudios comparados sobre la percepción del riesgo a desastres en docentes universitarios*

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## Abstract

**T**he Sendai Framework states that all sectors, including the education sector, must be committed to the achievement of its goals, with a priority on understanding disaster risk (UNISDR, 2015). Understanding of disaster risk from universities begins in the classroom and throughout the university, especially in the curriculum, making it necessary to incorporate risk management into undergraduate and graduate careers. Therefore, it was considered of great importance to know the perception of disaster risk by university professors, since the figure of the professor is a key factor in the process of understanding the subject. The study was based on a comparative study between universities and faculties of the Universidad de las Américas in Panama (UDELAS) and the pedagogical faculties of the Universidad Central "Marta Abreu" de las Villas, (UCLV) Cuba, based on a non-experimental - transactional - descriptive design. The instrument developed for data collection was a questionnaire. The results of this study allowed us to compare the degree of knowledge about disaster risk, the way in which risk is identified in institutions, the relationship with the environment and the behavior towards these events of the population participating in this study.

**Keywords:** Perception, Risk, disasters, teachers.

## Resumen

**E**l Marco de Sendai, establece que todos los sectores, entre ellos el sector educativo deben comprometerse en el cumplimiento de sus metas, teniendo como prioridad, comprender el riesgo de desastres (UNISDR, 2015). La comprensión del riesgo de desastres desde las universidades se inicia en las aulas de clases y en todo el quehacer universitario, sobre todo en la currícula, por lo que se hace necesario incorporar en las carreras de pregrado y postgrado la gestión del riesgo. Por lo que conocer cuál es la percepción del riesgo a desastres de docentes universitarios, fue considerado de gran importancia, pues la figura del docente es factor clave en el proceso de comprensión de la temática. El estudio se basó en un estudio comparado entre Universidades y facultades de la Universidad de las Américas en Panamá (UDELAS) y las facultades pedagógicas de la Universidad Central "Marta Abreu" de las Villas, (UCLV) Cuba, a partir de un diseño no experimental – transeccional - descriptivo. El instrumento elaborado para la recogida de datos fue un cuestionario. Los resultados arrojados en este estudio nos permitieron comparar el grado de conocimientos sobre el riesgo ante desastres, la manera de identificar el riesgo en las instituciones, la relación con el medio ambiente y la conducta ante estos eventos de la población participante de este estudio.

**Palabras Claves:** Percepción, Riesgo, Desastres, Docentes

The impact of disasters on the minds of individuals is configured in different ways, for this reason knowing the perception of risk in a population allows us to understand their level of knowledge about risk and to be able to predict manifestations of behavior or decision making.

Vargas mentions that an individual's perception is biocultural because the physical and sensory stimuli received are selected, organized, interpreted and acquire meaning according to the ideology and culture learned from early ages<sup>1</sup>.

The establishes that man's behavior is reflected by his interaction with the environment, social context or his surroundings. Ideas, opinions and behavior must be understood taking as a reference the environment where he develops<sup>2</sup>.

The vision of disasters as dangerous natural phenomena, difficult to prevent and control, has been the prevailing conception for a long time due to the little knowledge of the hazards that constitute these phenomena and the susceptibility of the environment to them<sup>3</sup>.

Latin America is one of the most vulnerable areas of the planet<sup>4</sup>. As part of Cuba's National Platform for Disaster Risk Reduction and Resilience Building, several collaborative projects have been developed with UN agencies and local governments, involving Cuban universities, such as the project "Disaster Risk Reduction in Schools and Communities in Areas of High Recurrence of Natural Hazards in the Province of Camagüey" in which the University of Camagüey participates<sup>5</sup>.

Directing the education of the population according to the risks to which they are exposed is a successful preventive strategy, which should focus on the coexistence of human beings among themselves and with their natural environment. In this sense, training must be staggered, differentiated according to the social function and educational level of each member of society<sup>6</sup>.

Higher education institutions can be a determining factor in achieving the sustainability of strategic plans for disaster risk management and sustainable development, as they are permanent structures that can act as pillars for human resource training and programmatic applications<sup>7,8</sup>.

The leading role of university teachers in achieving sustainable styles and modes of development in society is key. The ISDR defines disasters as expressions of unresolved development problems. Therefore, the training of citizens in disaster risk reduction is a commitment of our universities<sup>8</sup>.

For this reason, the objective of the study was to understand the perception of disaster risk with a focus on socio-environmental psychology in university professors from two universities in certain areas of work, which allowed us to know from their biocultural environment how risk is understood, if the idea exists that disaster risk is considered as something inherent to nature where we can do

nothing or is a social construction where we are responsible for disasters.

Within the articulation of the teaching-learning process it's key the way the teacher perceives disaster risks. This can either cause the subject to be cross-referenced in different subjects or the lack of interest in inserting this subject into the university work.

## Materials and methods

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he study was based on a comparative analysis between different areas of the Universidad de las Americas (UDELAS) in Panama, and the pedagogical faculties of the Universidad Central "Marta Abreu" de las Villas of Cuba (UCLV), through a non-experimental-descriptive-transversal-survey type design. The type of sampling was intentional non-probabilistic, being criteria of selection of the sample, being a professor in exercise and that will work in the headquarters of the University of the Americas or the capital of Panama and in the campus "Felix Varela", where the pedagogical faculties are located, of the Central University "Marta Abreu" of the Villas of Cuba. The applications of the questionnaire or data collection instrument were carried out in meetings convened by the faculties, and the participation of the subjects was voluntary.

The survey was an instrument made up of single- and multiple-answer selection questions, and was validated by experts who deal with the subject in both institutions. The analysis of the results was based on their description.

## Results

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ased on the results obtained by means of the data collection instrument, it allowed for the description and comparison of aspects of this study in the teachers of both houses of higher education:

With regard to the population by sex, we must indicate that the sample included a number of 125 university teachers in UDELAS, so we can see the following characteristics in table 1.

**Table 1. Gender Population according to sex in study**

Sex	UDELAS	UCLV	Total population the study
Female	69	85	154
Male	56	21	77
Total	125	101	226

According to gender, the sample was composed of a greater number of women than men, with a difference of 10%, which makes a slight increase in the number of female representatives, and with respect to job placement, the highest percentage of teachers perform their teaching work only at the UDELAS headquarters. With regard to years of service at UDELAS, the highest percentage works in a period of 1 to 4 years, the second block of teachers with more than five years to reach 21 years.

The population studied at the UCLV, the sample selected in the pedagogical faculties was determined to be 101 university teachers. According to sex, the UCLV sample was composed of a greater number of women than men, which makes female representation significant. With respect to work placement, the highest percentage of teachers carry out their work as professors in these faculties and also in Municipal University Centers such as the one in Sagua la Grande, where this line of research is directed and worked at the country level.

In relation to the years of service in the UCLV, the highest percentage of teachers work in a period of more than five years to reach 25 to more than 30 years, and a small number of teachers from 1 to 4 years, so we have a very experienced and aging faculty.

Based on these elements, an in-depth study was carried out with university professors on the information, knowledge, adverse events experienced, as well as the emotional impact of an adverse event on disaster reduction issues in both institutions and selected areas, as well as the adverse events experienced according to the most frequent ones in each country and the emotional impact of an adverse event. The results of the study carried out on the teachers of UDELAS and the pedagogical faculties of the UCLV, are expressed in tables 2, 3 and 4.

ANSWER	UDELAS	UCLV
N/A	7 (5.6%)	3 (3%)
NO	19 (15.2%)	10 (9.90%)
SI	99 (79%)	91 (91,1%)
TOTAL	125 (100%)	101 (100%)

A qualitative analysis of these elements previously evaluated shows that in the cognitive area more than half of the participants in this study of UDELAS, expressed information on the subject of disaster risk reduction, but did not adequately identify the degrees of vulnerability present or to which they could be exposed.

The cognitive area 91% of the participants in this study of pedagogical faculties in UCLV, expressed information on the subject of disaster risk reduction, and most of them adequately identified the degrees of vulnerability to which they could be exposed, based on the preparation that has been systematized by the civil defense bodies over decades.

ADVERSE EVENTS	UDELAS	UCLV
Earthquake	105(84%)	41(40%)
Flooding	46(37%)	27(26.7)
High temperatures	45(36%)	101(100)
Hurricane	22(18%)	101(100)
Fire	17(14%)	64 (63)
Tides	16(13%)	16(13%)
Rought	15(12%)	15(12%)
Total	125 (100%)	101 (100%)

Based on experiences from the plane of social alterations produced by adverse events, the great majority of teachers mentioned having lived through scenarios of earth movement or earthquakes and floods, as the most relevant events, in addition to indicating that Panama is not a safe country.

The experiences from the level of social alterations resulting from adverse events, the vast majority of teachers mentioned having experienced scenarios of intense rains in seasons that cause flooding in low areas, high temperatures and strong winds, since Cuba is a country hit by hurricanes and tornadoes, as the most relevant events.

Emotional distress	UDELAS	UCLV
HIGH	22(18%)	48 (59%)
MEDIUM	65(52%)	34 (50%)
LOW	28(22%)	17 (66.7)
NONE	8(6%)	7 (24%)
N/A	2(2%)	1 (1.1%)
TOTAL	125 (100%)	101 (100%)

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And in the emotional area the teachers expressed having an average level of affectation. Most of them were based on an event such as the earthquake.

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In the emotional area: teachers expressed having a medium/high level of affectation based mostly on events such as strong winds caused by tropical cyclones.

Based on all these criteria in both universities, the safety of the institutions was also investigated based on the most significant risks, the responsibility before them. In the case of UDELAS and UCLV, the results are shown in tables 5 and 6.

ANSWERS	UDELAS	UCLV
YES	50(40%)	90 (89%)
NO	67(53.6%)	5 (5.8%)
N/A	8(6.4%)	11(12.9%)
TOTAL	125	101

ANSWERS	UDELAS	UCLV
YOU	10(8%)	8(7.9%)
MANTEINANCE	1(0.8%)	6(5.9%)
ADMINISTRATION	8(6.4%)	8(7.9%)
CGRD	8(6.4%)	2(1.9%)
ALL	98(78.4%)	60(%)
TOTAL	125	101

In the institutional area, the majority of teachers who have worked at UDELAS facilities for four years expressed, with a slightly high percentage, that they do not feel safe in the facilities.

In addition, most of the university professors indicated that they were unaware of the existence of the institution's conditions of vulnerability and, based on their knowledge of the existence of hazards at UDELAS, the university professors identified the following: a. Structural threats (falling walls) b. Anthropogenic threat (fire) c. Natural phenomenon threat (flooding).

In the case of the pedagogical faculties at UCLV, most of the teachers with experience in their performance, expressed with a high percentage, feel safe in the facilities, as well as in the behavioral area the data thrown allows to deduce that the participating subjects consider in a coincident way with the case of UDELAS, that the responsibility of Reducing the Risk of Disasters corresponds to the whole university community and to themselves.

Based on their training in civil defense, most of them indicated that they had mastered the conditions of vulnerability of the institution, based on their knowledge of the existence of threats in the teaching faculties.

University teachers identified the following threats according to their experiences: a. Structural threats (falling

windows) b. Anthropogenic threats (fire) c. Natural threats (hurricanes and tornadoes)

Table 7 and 8 shows the main events or threats to which teachers and students in both institutions are exposed, as well as the effects and behavior of those affected both universities.

EVENTS	THREATS	UCLV
HURRACINE	Natural Phenomenon N	85 %
FIRE	Anthropic	15 %
WINDOW FALLS	Structural	1 %

The teachers at UDELAS indicated in a percentage slightly above 50% that the university would be affected in the structural and socio-economic areas at a medium-high level. They considered that the academic areas would not be affected by these events.

They also consider that among the behaviors that would increase the risks in an educational institution are throwing garbage on the streets and in the rivers, the construction of houses near rivers and deforestation.

The teachers in the pedagogical Faculties of UCLV indicated in a percentage higher than 50% that hurricanes and fires in the structural and socio-economic areas at a medium-high level would affect the university. They considered that academic areas would not be affected by these events.

They also consider that among the behaviors that would increase the risks in an educational institution are burning the grass adjacent to the institution, throwing garbage and deforestation.

## Discussion

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he professors participating in this study, even when they offer their services in the facilities of the University of the Americas in Panama, are unaware of them, which makes them more vulnerable to any adverse event, which reaffirms the low information on the subject of disaster risks.

In order to achieve the objectives, set out in the process of disaster reduction, postgraduate education in Cuban institutions, while meeting the training demands of the present, is articulated with the requirements of society, creating the capacities to face new social, productive and cultural challenges, such as the case of preparation to prevent or mitigate disasters<sup>6</sup>.

In the case of the pedagogical faculties of the UCLV, even though there is a small group of teachers with this lack of knowledge, most of them feel prepared both in theory and in practice to face risk situations based on the actions developed by the civil defense.

Teachers are unaware of the subject of disaster risk, specifically basic concepts and the relationship between fires and earthquakes and the continuity of services at the educational level, where classes, facilities, academic records and their working hours will be affected.

Teachers at both universities and colleges recognize that it is the responsibility of the entire university community to take action to reduce disaster risk, and they are considering the possible participation of this population in disaster risk reduction programs.

Training programs for emergency and disaster preparedness are required throughout the university community, especially for teachers, who are the cornerstone of transferring knowledge to the student body<sup>1,9,10</sup>.

The perception of unsafe facilities at UDELAS and in the pedagogical faculties can lead to a decrease in adequate teaching performance, which can increase emotional and behavioral effects.

Participating teachers do not identify the possible effects that events such as earthquakes, fires and hurricanes can have on education<sup>11,12</sup>. This suggests that the importance of disaster risk reduction may be interfered with for its adequate insertion in the curriculum or as a transversal axis in the subjects, if the teacher maintains this opinion of the low relationship between an event and the academic level<sup>13,14</sup>.

The perception of disaster risk by teachers is possibly based on their personal experiences and on information from the mass media, which can lead to the conclusion that the phenomenon of disasters is related to their closest biocultural environment, which should continue to develop in the academic, extracurricular, extensionist and scientific order<sup>15,16</sup>.

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