	<p style="text-align: center;"><b>PEDAGOGY OF LEARNING</b> <b>International Refereed/ Peer Reviewed Journal of Education</b> Vol. 7 (2) July 2021, 01-07, E-ISSN: 2395-7344, P-ISSN: 2320-9526 <i>Abstracted and indexed in:</i> Google Scholar, Research Bib, International Scientific Indexing (ISI), Scientific Indexing Services (SIS), WorldCat, Cite Factor, Impact Factor: 0.787(GIF) Website: <a href="http://pedagogyoflearning.com">http://pedagogyoflearning.com</a></p>
---	---

**Recommended citation for this Article:**

Das, S. (2021). A comparative study of academic achievement of students in disaster risk reduction exposed and non-exposed secondary schools of Odisha. *Pedagogy of Learning*, 7(3), 01-07.

## **A Comparative Study of Academic Achievement of Students in Disaster Risk Reduction Exposed and Non-Exposed Secondary Schools of Odisha**

**Swagatam Das**Teacher Educator, DIET, Puri, India. E-mail: [drswagatamdas@gmail.com](mailto:drswagatamdas@gmail.com)Article DOI: [10.46704/pol.2021.v07i03.001](https://doi.org/10.46704/pol.2021.v07i03.001)Corresponding Author: Swagatam Das, E-mail: [drswagatamdas@gmail.com](mailto:drswagatamdas@gmail.com)

Article Publication Date: 30 July 2021

---

**ABSTRACT**

School safety initiative is an endeavour of Odisha State Disaster Management Authority (OSDMA) to protect the young lives and provide them with a safe learning environment. This involves training of children on life saving skills and effective response, strengthening schools buildings to withstand natural disasters, hunting hazards in schools through non-structural mitigation measures, developing school safety plans. It is therefore required to assess the extent of knowledge and skills gathered by the students through disaster education and to compare the academic achievement of students of DRR exposed schools with that of DRR non-exposed schools in regard to disaster management education. The results of the test of statistical significance between two group Means have been found to be significant. The students of DRR exposed schools have achieved significantly larger scores on the achievement test in respect of disaster management education despite their internal variance. It is recommended that teaching and learning about DRR in disaster prone areas may be accelerated and risk mitigation and reduction measures should be incorporated in the resumption of teaching and learning. School-based and child-led disaster risk reduction programme should be mobilized.

**Keywords:** Achievement of Students, Disaster Risk Reduction Programme, Secondary Schools.

---

**INTRODUCTION**

Odisha is one of the most vulnerable States in the country to disaster of various kinds. Every year one or more natural disasters (Flood, Cyclone, Land slide, Heat wave, etc.) visit the state claiming hundreds of lives. Manmade disasters like road accidents, rail accident, boat capsizes, stamped, food poisoning etc. are more close to the state. On the aftermath of any disaster, school buildings are often used for shelter as well as for coordinating relief works. Many times school buildings are used as shelter of many like police & other Government officials and temporary shelter for refugees.

It is needless to emphasize that children are vulnerable to various disasters that may affect the school. The experience of Kumbhakanam fire tragedy, Bhuj & Muzaffarbad earthquakes and also

other disaster incidents took heavy toll of students due to lack of both the safety measures in the school as well as awareness among school authorities in dealing with hazards. A fire incident during a school prize-giving ceremony in Haryana in 1995 killed nearly 400 people, many of them were children and teenagers.

To make the schools disaster resilient, lots of initiatives are needed from different sources. Initially, OSDMA with the support of UNICEF and Seeds India School safety programme had implemented in different parts of the state, later on with the support of UNDP and Government of India different school safety activities were undertaken in different schools of Odisha to create culture of preparedness among school students, teachers and non-teaching staff to make a fear free environment for education. In this school safety process, district administrations, Municipal Corporation, ODRAF, School administration are extending their cooperation to make the schools safe. For making schools an environment of safety, different activities are being implemented like-

- i. Training of teachers on school safety
- ii. Orientation of teaching and non-teaching staff on school safety
- iii. Orientation of School Safety Committee on school safety
- iv. Training of School Disaster Management Team on search, rescue and first aid
- v. Preparation of school safety plan
- vi. Training of teachers on hazard bunt in schools
- vii. Awareness generation among students through various activities
  - a. Observation of Disaster preparedness day, Street play, Wall painting;
  - b. Essay competition/quiz competition/Art Competition among students on Disaster management
  - c. Conducting mock drill

When a natural hazard strikes, children are among the most vulnerable population group, especially those attending schools in times of disaster. In all societies, they represent hope for the future. Protecting our children during natural hazards, therefore, requires two distinct yet inseparable priorities for action: disaster risk reduction and school safety. Disaster Risk Reduction (DRR) in education sector is a newer concept being incorporated in educational curriculum both at national and state level respectively. OSDMA with the support of United Nations Development Programme (UNDP) and Ministry of Home Affairs (MHA), Government of India is implementing School Safety Programme (SSP)- a subcomponent of GOI-UNDP Disaster Risk Reduction Programme on pilot basis in collaboration with the School and Mass Education Department.

The researcher selected the topic to know the extent of implementation of School Safety Programme in Odisha and to derive sound generalizations that can be applied to the solutions of real problems. It is intended to assess the extent of knowledge understating and skills of students in disaster education.

### **Objectives of the Study**

1. To assess the extent of knowledge and skills gathered by the students through disaster education.
2. To compare the academic achievement of students of DRR exposed schools with that of DRR non-exposed schools in regard to disaster management education.
3. To find out various problems in implementing Disaster Risk Reduction programme.
4. To suggest various interventions for improvement of the programme.

### **Hypothesis of the Study**

1. Students of DRR exposed schools and non-exposed schools will not differ significantly in respect of their academic achievement in regard to Disaster management education.

---

### **PEDAGOGY OF LEARNING (POL)**

International Refereed/ Peer Reviewed Journal of Education  
Vol. 7 (3), July 2021 (E-ISSN: 2395-7344, P-ISSN: 2320-9526), Impact Factor: 0.787(GIF)  
Copyright @ Authors. Web: <http://pedagogyoflearning.com>

## Scope and Delimitations of the Study

The scope of Disaster Risk Reduction Programme is broad and multi-dimensional. But the study will be delimited to Disaster Preparedness in secondary schools of Odisha under the Disaster Risk Reduction Programme (DRRP). The study was delimited to the various expected outputs of the Disaster Risk Reduction programme as fixed by the project implementing authority.

## METHODOLOGY OF THE STUDY

The investigator took the following samples for his study. To represent the State as a whole, it was decided to take eight districts (more than 50 per cent) out of the total number of 15 districts covered under school safety programme which would represent Northern, Western, Southern, Central and Eastern Zones of Odisha. Accordingly, the districts of Balasore, Sambalpur, Jharsuguda, Koraput, Ganjam, Angul, Puri and Cuttack were selected for the study. Zone-wise distribution of districts is represented in Figure No.1 and Table-1.

**Table-1: Distribution of Sample Districts**

Zone	Districts	Total
Northern	Balasore	1
Western	Sambalpur, Jharsuguda	2
Southern	Ganjam, Koraput	2
Central	Angul	1
Eastern	Cuttack, Puri	2
Total		08

The objective of the present study was to compare the academic achievement of students of DRR exposed schools with that of the DRR non-exposed schools in regard to disaster management education. Keeping the requirements of this objective in view, the investigator selected the sample comprising 90 DRR exposed students and the same number of DRR non-exposed students of Class-X of different sample secondary schools of Odisha. The sample was selected on the basis of random sampling procedure.

**Tools for the study:** Achievement Test for DRR exposed and non-exposed students in regard to disaster management education. To test hypothesis, the achievement test was required to be developed. The investigator took Class-X students of both DRR exposed schools and non-exposed schools as his sample for the administration of the achievement test. For developing the tests, a table of specification was prepared by the investigator. He developed the test items in accordance with the table of specification.

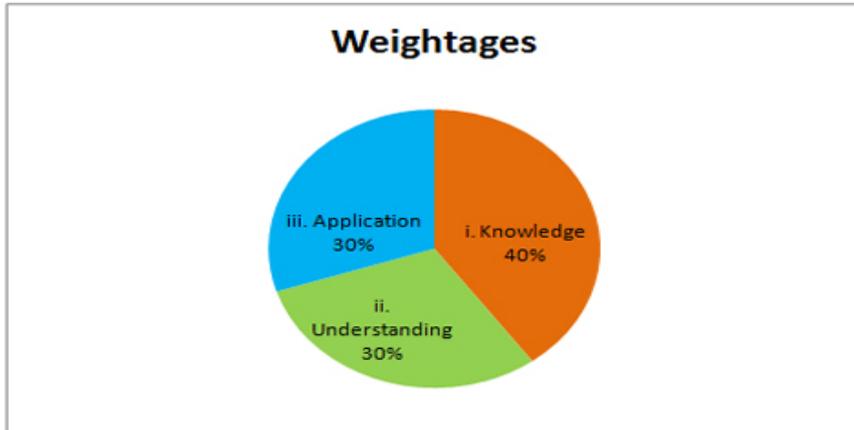
The Weightage to different core components of DRR Education and the terminal competencies were given in consultation with and 4 experts in the area of Measurement & Evaluation, 6 educationists associated with the Programme of DRR education, 4 experienced high school teachers and 5 DRR functionaries. While preparing the items, care was taken to see that the items were properly structured to test the knowledge, understanding and application competencies of students in different core-components of Disaster management education.

The achievement test consisted of 50 multiple choice type of items. The test intended to measure the learning outcomes on knowledge, understanding and application competency of the students. Weightage to these objectives were determined as given in Table-2

## PEDAGOGY OF LEARNING (POL)

**Table-2: Distribution of Weightage on different Objectives in Achievement Test**

Sl. No.	Objectives	Weightage	No. of Items
i.	Knowledge	40%	20
ii.	Understanding	30%	15
iii.	Application	30%	15
	Total	100%	50

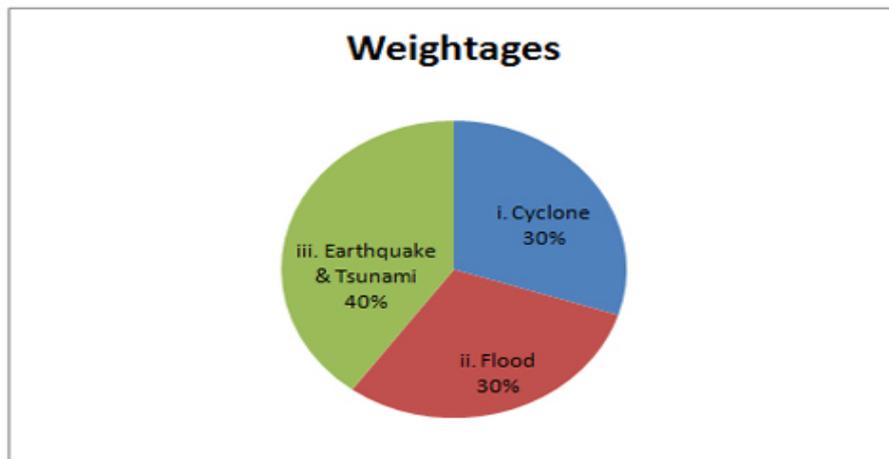


(Figure-1: Distribution of Weightage on Objectives)

For the achievement test, three core learning areas were identified namely cyclone, flood, earthquake and tsunami. Weightage were given to these core learning areas as per the details given in Table-3.

**Table -3: Distribution of Weightage on Different Core Learning Areas**

Sl. No.	Core learning areas	Weightage	No. of Items
i.	Cyclone	30%	15
ii.	Flood	30%	15
iii.	Earthquake & Tsunami	40%	20
	Total	100%	50



(Figure-2: Distribution of Weightage on Core-learning areas)

Keeping in view the above distribution of weightage on objectives and core learning areas of DRR education, the table of specification was prepared. Six (06) questions were knowledge type, five (05) questions were understanding type and four (04) questions were application type which were

**PEDAGOGY OF LEARNING (POL)**

prepared from the core learning areas of cyclone. Similarly, Six (06) questions were knowledge type, four (04) questions were understanding type and five (05) questions were application type which were prepared from the core learning areas of flood. Likewise, twenty (20) questions were prepared from the core learning areas of earthquake and tsunami which include Eight (08) questions of knowledge type, Six (06) questions of understanding type and Six (06) questions of application type. The distribution of objectives and core learning areas has been given in the table of specifications as presented in Table 4

**Table-4: Table of Specifications for Achievement Test**

Sl. No.	Core learning areas & Weightage	No. of Items	Knowledge 40%	Understanding 30%	Application 30%	Total 100%
i.	Cyclone (30%)	15	6	5	4	15
ii.	Flood (30%)	15	6	4	5	15
iii.	Earthquake & Tsunami (40%)	20	8	6	6	20
	Total (100%)	50%	20 (50%)	15 (50%)	15(50%)	50 (50%)

Thus the achievement test consisted of 50 items, out of which 20 items measured knowledge, 15 items understanding and the remaining 15 items intended to measure the application competency of the students. After the items were prepared according to the table of specifications, the content experts, methodologists, the experienced high school teachers and DRR functionaries were also consulted. They were requested to scrutinize the tests particularly with respect to coverage of component of DRR Education, clarity of question, difficulty of materials, adequacy of directions and the extent of sensitivity of items to instructional effects. Thus the test was subjected to the critical review of many experts and teachers and their suggestions and views were taken into consideration for the improvement and modification of test items.

After the test was thus prepared, those were tried-out on a group of high school students. On the basis of feedback obtained through the try-out, the ineffective or weak items were dropped and the final items were constructed.

#### **Validity of the Achievement Test**

As the test was subjected to the scrutiny and judgment of various experts, experienced teachers, DRR functionaries, it may be rightly referred to have content validity.

#### **Reliability of Achievement test**

While developing the test, sincere efforts were made to have a wider coverage of the core components of DRR and to make all the items properly sensitive so that they could measure the intended terminal competencies effectively. Hence, the test can be accepted to have high reliability, even though no conventional methods of reliability estimation were adopted as normally done in norm-referenced testing.

#### **Procedure of Data collection**

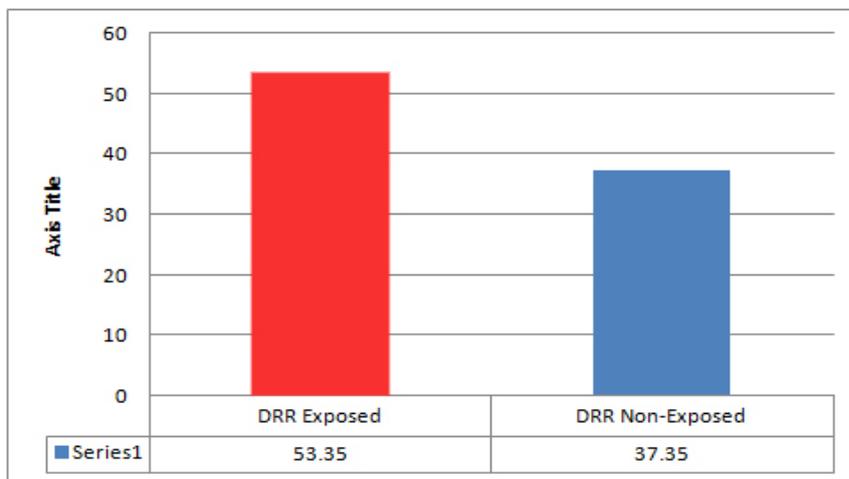
The test was administered on 90 Class-X students of secondary schools exposed to DRR education and on the same number of Class-X students of secondary schools non-exposed to DRR education. The investigator collected the sample learners through random sampling procedure and established rapport with them. The test was then administered on them. While administering the test, care was taken to observe similar conditions and setting for the test in respect of both the groups of students. The responses of the students were later scored according to the scoring key prepared for the purpose.

## RESULTS OF THE ACHIEVEMENT TEST

In order to ascertain the level of difference in the impact between DRR exposed students and non-exposed students, an Achievement Test was administered. The obtained data were analyzed in respect of different DRR components. A null-hypothesis was formulated in this regard as: “Students of DRR exposed schools and non-exposed schools will not differ significantly in respect of their academic achievement in regard to Disaster management education”. The computed results are presented in Table-5.

**Table-5: Pooled Estimate for Variance Showing Difference between DRR Exposed Students and Non-DRR Exposed Students in respect of Achievement in Disaster Management Education**

Group	Mean	Gross Difference	SED	df	't'	P
DRR Exposed Students	53.35	16.00	2.42	178	6.61	<0.01
DRR Non-Exposed Students	37.35					



(Figure-3: Comparative mean achievement levels of students of DRR Exposed schools and DRR Non-Exposed Schools)

An examination of Table-5 would exhibit that the gross difference was 16.00 and the SED value was 2.42. Besides the 't' value was found to be 6.61 being significant at 0.01 level. Thus, the results of the test of statistical significance between two group Means have been found to be significant. This shows that the students of DRR exposed schools have achieved significantly larger scores on the achievement test in respect of disaster management education despite their internal variance. In view of the above, the null-hypothesis set to indicate that “Students of DRR exposed schools and non-exposed schools will not differ significantly in respect of their academic achievement in regard to Disaster management education” was proved to be incorrect and hence rejected.

It may be concluded that students exposed to DRR education do fairly well than the students not exposed to DRR education. Hence, the DRR programme may be implemented in the remaining fifteen districts of Odisha.

### Findings of Achievement Test

- i. An examination of the results of the achievement test exhibits that the gross difference between DRR Exposed students and Non-DRR Exposed students was 16.00 and the SED value was 2.42. Besides the 't' value was found to be 6.61 being significant at 0.01 level.
- ii. The results of the test of statistical significance between two group Means have been found to be significant.

## PEDAGOGY OF LEARNING (POL)

- iii. The students of DRR exposed schools have achieved significantly larger scores on the achievement test in respect of disaster management education despite their internal variance.
- iv. The null-hypothesis set to indicate that “Students of DRR exposed schools and non-exposed schools will not differ significantly in respect of their academic achievement in regard to Disaster management education” was proved to be incorrect and hence rejected.

#### **RECOMMENDATIONS**

- i. Teaching and learning about DRR in disaster prone areas may be accelerated.
- ii. Skills-building and resources development should be scaled up.
- iii. Children should be engaged as effective agents of change and key actors in disaster risk reduction.
- iv. Risk mitigation and reduction measures should be incorporated in the resumption of teaching and learning.
- v. School-based and child-led disaster risk reduction programme should be mobilized.

#### **EDUCATIONAL IMPLICATIONS**

- i. It will increase the capacity of students, teachers and school management to build up a culture of disaster resistance.
- ii. It will provide scope and possibilities for teachers and students to participate in local disaster management and mitigation activities.
- iii. It will spread awareness among the stakeholders and will involve them in school safety and disaster risk reduction programme.
- iv. It will inculcate a culture of preparedness at school level among school management, students and other stakeholders.
- v. It will promote DRR as the foundation of school preparedness and safety.

#### **REFERENCES**

- OSDMA (2012). School safety programme. Odisha State Disaster Management Authority, Govt. of Odisha.
- OSDMA (2012). School-cum-cyclone project. Odisha State Disaster Management Authority, Govt. of Odisha.
- OSDMA (2017). State disaster management plan. Odisha State Disaster Management Authority, (OSDMA), Govt. of Odisha.

\*\*\*