
Research Article

Development and Validation of Disaster Risk Reduction and Management (DRRM) Integrated Lesson Exemplars in Grade 5 Science

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Abstract:

This study was conducted to develop and validate Disaster Risk Reduction and Management (DRRM)-integrated lesson exemplars for Grade 5 Science. Specifically, it sought to answer the following questions: (1) Which Grade 5 Science Most Essential Learning Competencies (MELCs) can be integrated with DRRM concepts? (2) What instructional material can be developed based on the findings? (3) What are the validation results of the developed DRRM-integrated lesson exemplars? and (4) What recommendations are provided by the validators for further improvement? The validators consisted of seven master teachers, one instructor, and two school heads with expertise in lesson exemplar development, curriculum implementation, and instructional supervision. The DepEd LRMSD Evaluation Rating Sheet for Print Resources, frequency count, weighted mean, and a four-point rating scale were used to determine the curricular validity of the developed material. Findings revealed that selected Grade 5 Science competencies related to weather disturbances, typhoons, environmental effects, warning signals, and safety preparedness were suitable for DRRM integration. The developed lesson exemplars, aligned with the SAFE Lesson Exemplar Manual and the 5Es instructional model, obtained Very Satisfactory ratings in content (3.93), format (3.86), presentation and organization (3.80), and accuracy and up-to-datedness (4.00). The validators recommended improvements in layout, competency alignment, citation of references, integration of Social and Emotional Learning (SEL), and overall presentation. The study recommends the classroom implementation, pilot testing, and continuous enhancement of DRRM-integrated lesson exemplars to strengthen disaster preparedness education among elementary learners.

Keywords: DRRM, Weather Disturbances, Lesson Exemplar, LRMSD, Grade 5 Science.

1. Introduction

Disasters such as earthquakes, typhoons, floods, and landslides continue to threaten communities by causing loss of lives, destruction of property, and disruption of education. These recurring hazards highlight the need to equip learners with knowledge and skills for preparedness, response, and recovery. Disaster Risk Reduction and Management (DRRM) education strengthens disaster awareness, preparedness, resilience, and responsible decision-making among learners.

Globally, the United Nations Office for Disaster Risk Reduction, through the Sendai Framework for Disaster Risk Reduction 2015–2030, promotes the integration of disaster risk knowledge in education systems to build resilient communities. This is aligned with the United Nations, which emphasizes inclusive and quality education that fosters relevant life skills and resilience.

In the Philippines, a disaster-prone country, DRRM is a national priority under Republic Act No. 10121, the Philippine Disaster Risk Reduction and Management Act of 2010. In support of this law, the Department of Education, together with the National Disaster Risk Reduction and Management Council (NDRRMC), implements policies and programs that integrate DRRM into school instruction and learning resources.

Integrating DRRM into Science allows learners to connect concepts such as weather disturbances, environmental changes, and safety measures to real-life situations. This contextualized approach enhances scientific understanding while developing preparedness, critical thinking, and responsible citizenship.

The Municipality of Libon, Albay, is highly vulnerable to typhoons, flooding, and landslides. The impact of Severe Tropical Storm Kristine in 2024 resulted in flooding, landslides, displacement of residents, and damage to livelihoods, underscoring the need for stronger disaster preparedness education in schools.

Despite existing policies, there remains a need for localized and curriculum-aligned instructional materials that integrate DRRM into Grade 5 Science MELCs. Thus, this study developed and validated DRRM-integrated lesson exemplars to enhance disaster awareness, preparedness, and resilience among elementary learners.

2. Research Design

This study employed a developmental research design focused on the systematic design, development, and evaluation of instructional materials. According to Thomas C. Richey and James D. Klein, developmental research involves producing and validating educational products to ensure quality, relevance, and curriculum alignment.

The study followed three phases: analysis, development, and validation. In the analysis phase, the Grade 5 Science Most Essential Learning Competencies (MELCs) were reviewed to identify topics suitable for Disaster Risk Reduction and Management (DRRM) integration.

In the development phase, DRRM-integrated lesson exemplars were designed, including learning objectives, content selection, activities, and assessment tools aligned with curriculum standards and learner context.

In the validation phase, expert validators evaluated the developed materials. Their ratings and feedback were used to determine validity, acceptability, and areas for improvement. Quantitative data were analyzed using frequency count and descriptive statistics, while qualitative responses summarized recommendations.

This design was appropriate as the study focused on developing and validating instructional materials rather than measuring learner achievement through experimental methods.

2.1 Respondents of the Study

The respondents of the study were ten (10) expert validators composed of seven (7) master teachers, one (1) instructor, and two (2) school heads. They possessed professional experience in teaching, curriculum implementation, instructional supervision, and lesson exemplars development. Their expertise made them qualified to evaluate the quality, accuracy, alignment, and usefulness of the DRRM-integrated lesson exemplars. Their professional judgment strengthened the credibility of the validation results.

2.2 Research Instrument

The study utilized multiple instruments to collect data relevant to the research problems.

Content Analysis Checklist (MELC-Based Analysis).

A researcher-developed Content Analysis Checklist was used to identify the Most Essential Learning Competencies (MELCs) in Grade 5 Science suitable for DRRM integration. The instrument was anchored on the Department of Education MELCs for Grade 5 Science and was designed to systematically examine competencies aligned with disaster risk reduction and management (DRRM), including disaster preparedness, environmental awareness, hazard mitigation, and application of scientific concepts. The checklist ensured alignment of selected competencies with curriculum standards and DRRM contextualization.

DRRM Lesson Exemplar Template.

A researcher-developed DRRM-integrated lesson exemplar template was used as the design guide for developing instructional materials. The template was aligned with the DepEd Curriculum Guide and MELC framework and included learning competencies, learning objectives, DRRM integration points, instructional procedures, learning activities, assessment tasks, and differentiated instruction strategies. This ensured consistency in structure and alignment with Science competencies and DRRM principles.

DepEd LRMDs Evaluation Rating Sheet for Print Resources.

The Department of Education Learning Resources Management and Development System (LRMDs) Evaluation Rating Sheet for Print Resources was used to determine the validity of the developed instructional materials. The instrument evaluates materials based on content, format, presentation and organization, and accuracy and up-to-dateness. Ten (10) expert validators assessed the materials using a four-point scale: Very Satisfactory (4), Satisfactory (3), Poor (2), and Not Satisfactory (1). Results were used to determine the acceptability and quality of the developed lesson exemplars.

2.3 Data Gathering and Analysis

The study utilized several instruments to gather data and ensure alignment with the research objectives.

A Content Analysis Checklist based on the Department of Education Most Essential Learning Competencies (MELCs) for Grade 5 Science was used to identify competencies suitable for Disaster Risk Reduction and Management (DRRM) integration. It systematically examined competencies related to disaster preparedness, environmental awareness, hazard mitigation, and real-life application of scientific concepts to ensure alignment with curriculum standards.

A DRRM-integrated Lesson Exemplar Template, developed by the researcher and aligned with DepEd curriculum standards, served as the guide in constructing the instructional materials. It included learning competencies, objectives, DRRM integration points, instructional procedures, activities, assessment tasks, and differentiated instruction strategies to ensure structured and contextualized lesson development.

To evaluate the developed materials, the Department of Education Learning Resources Management and Development System Evaluation Rating Sheet for Print Resources were used. This standardized instrument assessed content, format, presentation and organization, and accuracy and up-to-datedness using a four-point scale (4–Very Satisfactory to 1–Not Satisfactory). Ten expert validators evaluated the materials using this tool.

The instrument ensured that the developed lesson exemplars met DepEd quality standards in terms of relevance, accuracy, organization, and usability, thereby strengthening the validity and acceptability of the instructional materials for classroom implementation.

3. Results and Discussion

3.1 Content

The curricular validation of the DRRM-integrated lesson exemplars in terms of content obtained a total score of 23.60 (Passed) and an average weighted mean of 3.93 (Very Satisfactory). The indicators on suitability to learners' developmental level, alignment with subject objectives, development of higher-order thinking skills, freedom from ideological, cultural, religious, racial, and gender biases, enhancement of desirable values and traits, potential to arouse learners' interest, and provision of adequate safety and cautionary notes all obtained Very Satisfactory ratings. This indicates that the lesson exemplars met the content standards for Grade 5 Science print learning resources. The exemplars were well aligned with the Grade 5 Science competencies and promoted critical thinking, inquiry, problem solving, disaster preparedness awareness, and desirable values among learners. Furthermore, the materials were free from identified biases and incorporated appropriate cautionary notes for safety- and health-related topics and activities, supporting their effective use in classroom instruction.

3.2 Format

The curricular validation of the DRRM-integrated lesson exemplars in terms of format obtained a total score of 69.40 and an average weighted mean of 3.86 (Very Satisfactory). The indicators on prints, illustrations, design and layout, paper and binding, and size and weight all obtained Very Satisfactory ratings. This indicates that the material is readable, visually clear, and appropriately designed for Grade 5 learners. The font style, spacing, layout, and illustrations support ease of use, while its physical characteristics make it suitable for classroom use as a print learning resource.

3.3 Presentation and Organization

The curricular validation of the DRRM-integrated lesson exemplars in terms of presentation and organization obtained a total score of 19 (Passed) and an average weighted mean of 3.80 (Very Satisfactory). The indicators demonstrated a logical flow of ideas, appropriate vocabulary, and sentence structures suited to the learners' level of comprehension. This indicates that the lesson exemplars are well organized and coherent. The activities are sequenced from simple to complex, supporting the development of Science concepts and DRRM awareness. Moreover, the SAFE framework contributed to the logical organization of the lessons and learning tasks.

3.4 Accuracy and Up-to-Datedness of Information

The curricular validation of the DRRM-integrated lesson exemplars in terms of accuracy and up-to-datedness of information obtained a total score of 24 (Passed) and an average weighted mean of 4.00, indicating that conceptual, factual, grammatical, computational, obsolete, and typographical errors were not present. This indicates that the material is accurate, up-to-date, and free from errors. The findings confirm the technical quality and reliability of the lesson exemplars, particularly in providing accurate information on disaster preparedness and safety.

3.5 Overall Validation Results

The overall validation results show that the DRRM-integrated lesson exemplars obtained Very Satisfactory ratings across all criteria, indicating that the material is valid, acceptable, and appropriate for classroom use. This implies that the integration of DRRM concepts into Grade 5 Science enhances learners' understanding of real-life hazards and promotes meaningful learning through contextualized instruction.

4. Conclusion

The study developed and validated DRRM-integrated lesson exemplars in Grade 5 Science. The findings revealed that selected Most Essential Learning Competencies (MELCs) related to weather disturbances, typhoon effects, warning signals, and safety preparedness are appropriate for integrating Disaster Risk Reduction and Management (DRRM) concepts.

The developed instructional material, SAFE: Exploring Science and Preparedness, utilized inquiry-based and experiential activities that connect scientific concepts with real-life disaster preparedness. Validation results showed that the lesson exemplars were rated Very Satisfactory in terms of content (3.93), format (3.86), presentation and organization (3.80), and accuracy and up-to-datedness (4.00), indicating that the material is valid, acceptable, and suitable for classroom use.

Overall, the study concludes that the DRRM-integrated lesson exemplars are appropriate instructional materials that can enhance learners' understanding of science concepts while strengthening disaster awareness, preparedness, and resilience.

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