

## Plan Overview

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*A Data Management Plan created using DMPTool*

DMP ID: <https://doi.org/10.48321/D1F9163275>

Title: DMSP for 'Examining the Expertise of TTRPG for STEM Education'

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Template: NEH-ODH: Office of Digital Humanities

### Project abstract:

The proposed research project aims to explore and analyze the unique skill sets of Dungeon Masters (DMs) and define and classify the concept of Table-Top Role-Playing Games (TTRPGs) to enhance the quality and applicability of STEM education. By adopting a transdisciplinary approach, this study seeks to integrate game-based strategies into educational contexts, ensuring that gamification supports rigorous learning outcomes while enhancing student engagement.

The project will employ a mixed-methods approach, utilizing qualitative and quantitative data collection techniques. A comprehensive survey instrument will be developed and administered to DMs and other TTRPG experts, gathering data on their skills, experiences, and perspectives. This data will be supplemented with in-depth interviews and focus group discussions, providing rich qualitative insights.

The data collected will be securely stored and preserved using NJIT's Digital Commons, a state-of-the-art institutional repository. This repository offers robust physical and cyber resources, including regular backups, redundancy measures, access controls, and data integrity checks, ensuring the long-term preservation and accessibility of the research data. Data sets will be meticulously documented with comprehensive metadata and

assigned persistent identifiers to facilitate easy referencing and use by other researchers.

In alignment with contemporary educational trends prioritizing experiential and student-centered learning, this research emphasizes the need to adapt TTRPG-based strategies to STEM education. The findings will be disseminated through NJIT's institutional repository and published under a Creative Commons license, promoting open access and broad dissemination. This approach supports the principles of timely and rapid data distribution advocated by NEH, while ensuring compliance with ethical and legal standards.

This project aims to contribute significantly to education and gamification by fostering a collaborative and transparent scientific community. It provides valuable insights and practical tools for educators seeking to integrate innovative, game-based strategies into their teaching practices. The ultimate goal is to create a dynamic and enjoyable learning process that effectively enhances STEM education outcomes.

**Start date:** 01-01-2025

**End date:** 12-31-2025

**Last modified:** 05-16-2024

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## DMSP for 'Examining the Expertise of TTRPG for STEM Education'

### Roles and responsibilities

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The DMP should clearly articulate how sharing of primary data is to be implemented. It should outline the rights and obligations of all parties with respect to their roles and responsibilities in the management and retention of research data. It should also consider changes to roles and responsibilities that will occur if a project director or co-project director leaves the institution or project. Any costs stemming from the management of data should be explained in the budget notes.

The Data Management and Sharing Plan (DMSP) outlines the roles and responsibilities of all parties involved in managing and retaining research data and ensuring compliance with institutional and legal requirements.

#### Principal Investigators (PIs)

Lead PI: Dr. James Lipuma

Responsibilities: Oversee the entire research project, including data collection, analysis, and dissemination.

Ensure that the project adheres to all ethical guidelines and compliance standards.

Supervise team members and coordinate with Cristo Leon to maintain compliance with the DMSP.

#### Co-PI: Cristo Leon

Responsibilities: Assist Dr. James Lipuma in ensuring compliance with institutional and legal requirements.

Oversee the implementation of data management protocols.

Coordinate data collection, documentation, and storage processes.

Manage the dissemination of data and oversee data-sharing agreements.

Ensure all team members are trained in data management practices and understand their roles and responsibilities.

#### Research Team Members

##### Survey Administrators

Responsibilities: Administer surveys to Dungeon Masters (DMs) and other experts on Table-Top Role-Playing Games (TTRPGs).

Ensure data is collected accurately and securely.

Follow protocols for obtaining informed consent from participants.

##### Data Analysts

Responsibilities: Analyze collected data to identify key trends and insights.

Ensure data analysis is conducted following ethical guidelines and best practices.

Collaborate with Cristo Leon to prepare data for dissemination.

##### Data Managers:

Responsibilities: Maintain secure research data storage on institutional servers and cloud storage platforms.

Implement regular data backup procedures to prevent data loss.

Manage data access controls and ensure only authorized personnel can access sensitive information.

##### Contingency Planning

Changes in Personnel: If a project director or co-project director leaves the institution or project, the following steps will be taken: The remaining PI (Dr. James Lipuma or Cristo Leon) will assume the responsibilities of the departing

director until a suitable replacement is appointed.

A transition plan will be developed to ensure data management and compliance continuity.

All team members will be informed of changes in roles and responsibilities to ensure a smooth transition.

### **Budget Considerations**

**Data Management Costs:** The project budget notes will detail any costs associated with data management, including storage, backup, and dissemination.

Funding will be allocated to ensure adequate resources are available for effective data management and compliance with the DMSP.

## **Expected data**

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The DMP should describe the types of data, samples, physical collections, software, curriculum materials, or other materials to be produced in the course of the project. It should then describe the expected types of data to be retained.

Project directors should address matters such as these in the DMP:

- the types of data that their project might generate and eventually share with others, and under what conditions;
- how data will be managed and maintained until shared with others;
- factors that might impinge on their ability to manage data, for example, legal and ethical restrictions on access to non-aggregated data;
- the lowest level of aggregated data that project directors might share with others in the scholarly or scientific community, given that community's norms on data;
- the mechanism for sharing data and/or making it accessible to others; and
- other types of information that should be maintained and shared regarding data, for example, the way it was generated, analytical and procedural information, and the metadata.

### Types of Data to be Generated

#### Survey Data:

**Quantitative Data:** Responses to structured questions, including Likert scale ratings and multiple-choice questions, which quantify the skills, experiences, and perspectives of Dungeon Masters (DMs) and TTRPG experts.

**Qualitative Data:** Open-ended responses provide detailed insights into the experiences, challenges, and strategies that DMs and TTRPG experts employ.

#### Audio/Video Recordings:

**Interviews and Focus Groups:** Recordings of in-depth interviews and focus group discussions with DMs and TTRPG experts to gather rich, qualitative data.

### **Transcripts**

**Textual Data:** Audio/video recordings transcripts for detailed analysis and coding.

### **Analytical Data**

**Data Analysis Files:** Files generated during data analysis, including coding frameworks, thematic analyses, and

statistical outputs.

### **Curriculum Materials**

Educational Resources: Materials developed to integrate TTRPG strategies into STEM education, including lesson plans, instructional guides, and activity templates.

Metadata: Descriptive Information: Metadata describing the data collection processes, instruments used, context of data collection, and procedures followed.

### **Data Retention and Management**

Data Storage: To prevent data loss, all data will be securely stored on NJIT's institutional servers, with regular backups on secure cloud storage platforms.

Data Documentation: All data sets will be documented in detail, including the context of data collection, instruments used, and procedural details.

Data Maintenance: Data will be regularly reviewed and maintained to ensure accuracy, completeness, and security until it is ready for sharing.

### **Conditions for Data Sharing**

Anonymization: Data will be anonymized to protect the privacy and confidentiality of participants before sharing.

Ethical and Legal Restrictions: Any legal and ethical restrictions on access to non-aggregated data, including IRB guidelines and consent agreements, will be strictly adhered to.

Aggregated Data: Based on community norms and ethical considerations, the lowest level of aggregated data that can be shared with the scholarly community will be determined.

### **Mechanism for Data Sharing**

Institutional Repository: Data will be shared through NJIT's institutional repository, ensuring controlled access and compliance with data-sharing agreements.

Data Use Agreements: Formal data use agreements will govern the sharing and use of data, specifying the conditions under which data can be accessed and used by other researchers.

Metadata Sharing: Comprehensive metadata will be shared alongside the data to provide context and facilitate its use by other researchers.

### **Additional Information**

Data Generation Details: Detailed information on how the data was generated, including the instruments and procedures used, will be maintained and shared to ensure transparency and replicability.

Analytical and Procedural Information: Documentation of the analytical methods and procedures used in the study will be provided to support further research and validation efforts.

### **Period of data retention**

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**NEH is committed to timely and rapid data distribution. However, it recognizes that types of data can vary widely and that acceptable norms also vary by discipline. It is strongly committed, however, to the underlying principle of timely access. In their DMP applicants should address how timely access will be assured.**

### **Data Retention Period**

**Duration:** All data collected and generated during the project will be retained for at least three years beyond the end of the grant period. This extended retention period ensures that the data remains accessible for validation, replication, and further research.

**Compliance:** This retention period complies with NEH guidelines and ensures that data is available reasonably to support ongoing scholarly inquiry and public access.

### **Ensuring Timely Access**

**Initial Access:** Preliminary data will be accessible to the scholarly community and the public as soon as it is appropriately anonymized and processed, ensuring timely access in accordance with NEH's principles.

**Data Availability:** Data will be uploaded to NJIT's institutional repository and other relevant platforms shortly after collection and processing, with appropriate metadata and documentation to facilitate use by other researchers.

**Regular Updates:** Data will be reviewed and updated throughout the project to ensure accuracy and completeness.

Updates will be communicated to stakeholders to maintain transparency and engagement.

### **Data Maintenance and Review**

**Regular Review:** Data will be periodically reviewed during retention to ensure its continued relevance and integrity. This includes verifying the completeness of metadata and documentation.

**Preservation Strategies:** Strategies for long-term preservation will be implemented, including regular backups and using stable, secure storage solutions to prevent data loss and degradation over time.

### **Data formats and dissemination**

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**The DMP should describe data formats, media, and dissemination approaches that will be used to make data and metadata available to others. Policies for public access and sharing should be described, including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements. Research centers and major partnerships with industry or other user communities must also address how data are to be shared and managed with partners, center members, and other major stakeholders.**

#### **Data Formats**

**Quantitative Data:** Collected through surveys and stored in common formats such as CSV and Excel files to facilitate easy analysis and sharing.

**Qualitative Data:** Transcripts of interviews and focus groups will be stored in text formats such as Word documents and PDFs. Audio and video recordings will be saved in standard formats like MP3 and MP4.

**Analytical Data:** Analysis files, including coding frameworks and statistical outputs, will be stored in formats compatible with common software tools (e.g., SPSS, NVivo, R).

**Metadata:** Comprehensive metadata will be created and stored in formats such as XML or JSON to ensure interoperability and ease of use.

#### **Dissemination Approaches**

**Institutional Repository:** Data and associated metadata will be available through NJIT's institutional repository, ensuring controlled access and long-term preservation.

**Creative Commons License:** All published articles and related data will be disseminated under a Creative Commons license, allowing for broad accessibility and use while respecting intellectual property rights.

### **Public Access and Sharing Policies**

**Privacy and Confidentiality:** Data will be anonymized to protect participant privacy and confidentiality before sharing. All participants will be given informed consent outlining how their data will be used and shared.

**Security Measures:** Secure storage solutions and regular backups will be used to protect data from unauthorized access and loss. Access controls will be implemented to ensure that only authorized personnel can access sensitive information.

**Intellectual Property:** Data sharing will respect intellectual property rights, with appropriate licensing (e.g., Creative Commons) to facilitate use while protecting authors' rights.

#### **Collaboration with Partners and Stakeholders**

**Research Centers and Industry Partnerships:** For projects involving major partnerships with research centers, industry, or other user communities, data sharing, and management practices will be collaboratively developed and agreed upon with partners. This includes clear agreements on data access, use, and distribution.

**Stakeholder Engagement:** Regular communication with stakeholders, including center members and other major participants, will ensure that data-sharing policies and practices are aligned. This engagement will also help address any concerns related to data privacy, security, and intellectual property.

### **NJIT Policies for Data Sharing**

**Institutional Guidelines:** We will follow NJIT's policies and guidelines for data sharing, ensuring compliance with institutional, legal, and ethical standards. These policies provide a framework for responsible data management and sharing, supporting the integrity and impact of the research.

### **Data storage and preservation of access**

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**The DMP should describe physical and cyber resources and facilities that will be used to effectively preserve and store research data. These can include third-party facilities and repositories.**

#### **Storage and Preservation Facilities**

**NJIT Digital Commons:** We will utilize the NJIT Digital Commons as the primary repository for storing and preserving research data. The Digital Commons is a secure, institutional repository that provides robust storage solutions and ensures long-term data preservation.

**Physical Storage:** NJIT Digital Commons leverages state-of-the-art data centers with physical security measures, including controlled access, environmental controls, and disaster recovery plans.

**Cyber Resources:** The repository offers advanced cyber resources, including encryption, regular backups, and secure data transfer protocols, to protect the integrity and confidentiality of the stored data.

#### **Data Preservation Strategies**

**Regular Backups:** Data stored in the NJIT Digital Commons will be backed up regularly to prevent data loss and ensure continuity. Backup copies will be stored in geographically distributed locations to safeguard against local disasters.

**Redundancy:** Multiple copies of data will be maintained to ensure redundancy. This includes storing data on secure cloud platforms in addition to the primary repository.

**Access Controls:** Strict access controls will ensure that only authorized personnel can access sensitive data. Role-

based access permissions will be used to manage and monitor data access effectively.

**Data Integrity Checks:** Regular integrity checks detect and correct data corruption issues, ensuring the long-term usability and reliability of the stored data.

### **Long-Term Accessibility**

**Metadata Documentation:** Comprehensive metadata will be provided for all data sets to facilitate long-term access and usability. This includes detailed descriptions of the data collection methods, context, and relevant analytical procedures.

**Persistent Identifiers:** Data sets will be assigned persistent identifiers (e.g., DOIs) to ensure stable and reliable referencing over time. This facilitates citation and tracking of data usage in scholarly research.

**Open Access:** Where possible, data will be made "openly" accessible to the research community and the public following NJIT's policies and Creative Commons licensing. This promotes transparency, reproducibility, and collaboration in research.

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## Planned Research Outputs

### Event - "RIJR Conference "

La Red de Investigadores de Juegos de Rol (RIJR) y la Universidad Autónoma Metropolitana – Unidad Azcapotzalco, los invita a participar en el 8° Coloquio Internacional de Estudios sobre Juegos de Rol. Fechas importantes: Fecha límite de registro de propuesta: 24 de mayo de 2024. Envío de dictamen: 28 de julio de 2024.

### Text - "specialized survey instrument"

Developing a specialized survey instrument aimed at gathering insights from Dungeon Masters (DMs) about their techniques in preparing and executing sandbox and railroading adventures, as well as their preferences for using official modules versus homebrew content.

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### Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
RIJR Conference	Event	2025-12-30	Open	OHSU Digital Commons		Creative Commons Attribution Non Commercial No Derivatives 4.0 International	Dublin Core	No	No
specialized survey instrument	Text	2025-12-30	Restricted	OHSU Digital Commons		Custom Data Use Agreements/Terms of Use	Dublin Core	No	No