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## Plan Overview

*A Data Management Plan created using DMPTool*

**Title:** Integrating advanced computing in STEM education

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# Integrating advanced computing in STEM education

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## Types of data

**The Data Management Plan should describe the types of data, metadata, scripts used to generate the data or metadata, experimental results, samples, physical collections, software, curriculum materials, or other materials to be produced in the course of the project.**

A total of three surveys will be given to the students at separate times. The first survey will collect the basic information about students such as their first and the last name, gender, academic standing, whether or not specific classes were taken, proficiency in computer programming, preference of the programming language, knowledge of computer science skill applicable to domain specific problem, targeted application of CS skill and delivery platform and students' willingness to take credits to learn those skills. The second survey will be similar to the first survey before a team of selected students enters into hands-on exploration provided computer solution to their chosen problem. The third survey is after the student goes through hands on exploration of how students felt about their strengths and weaknesses in understanding the concept and ease of using the language. Any personal identifiable information beyond student name will not be collected in this survey.

## Data and metadata standards

**The Data Management Plan should address the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies). It should also cover any other types of information that would be maintained and shared regarding data, e.g. the means by which it was generated, detailed analytical and procedural information required to reproduce experimental results, and other metadata.**

The metadata such as time of survey, place of survey, institution surveying, name of the manager and overseeing the survey will be tagged with data.

## Policies for access, sharing, and privacy

**The Data Management Plan should address the policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements. It should cover any factors that limit the ability to manage and share data, e.g. legal and ethical restrictions on access to human subject data.**

The student name will be used only to verify potentially duplicate data, and once that is verified and entered into the database, the participating student name will be discarded. Any other information that could lead to the identification of a specific student will not be shared with the public. The University of Idaho's Northwest Knowledge Network's (NKN) ([www.northwestknowledge.net](http://www.northwestknowledge.net)) service will be used for storing making anonymized data publicly available for download.

## Policies for re-use, re-distribution, derivatives

**The Data Management Plan should address the policies and provision for re-use, re-distribution, and the production of derivatives.**

The data will be shared among participating institutions for the purpose of the objectives of this proposal. The aggregated database and statistical analysis will be made freely available to the public using the University of Idaho's Northwest Knowledge Network's (NKN) ([www.northwestknowledge.net](http://www.northwestknowledge.net)) service. Also the relevant data will be made available as an appendix to the journal publication.

## Plans for archiving and preservation

**The Data Management Plan should address the plans for archiving data, samples, and other research products, and for the preservation of access to them. It should cover the period of time the data will be retained and shared; how data are to be managed, maintained, and disseminated; and mechanisms and formats for storing data and making them accessible to others, which may include third party facilities and repositories.**

PI from each institutions will have a copy of original data collected in this project. The tabulated data without any personal information will be archived and made available to public through NKN service.

## Roles and responsibilities

**The Data Management Plan should clearly articulate how the PI and co-PIs plan to manage and disseminate data generated by the project. The plan should outline the rights and obligations of all parties as to their roles and responsibilities in the management and retention of research data, and consider changes that would occur should a PI or co-PI leave the institution or project. It should describe how the research team plans to deposit data into any relevant and appropriate disciplinary repositories that are appropriately managed and that are likely to maintain the metadata necessary for future use and discovery. Any costs associated with implementing the DMP should be explained in the Budget Justification.**

The PI of this project Dev Shreshta will oversee the data management in collaboration with PIs from collaborating institutions.