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CORE: Trajectories into Early Career Research

David F. Feldon

Utah State University, david.feldon@usu.edu

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Data Management Plan

Overview

The proposed study collects the following three types of data: (1) a test of scientific reasoning skills; (2) participant writing samples; and (3) surveys characterizing participant experiences.

Specific Data Elements

1. Lawson's Test for Scientific Reasoning Skills

- Administered at degree completion to measure participants' abilities to draw correct deductive inferences from data and evaluate the effectiveness of strategies to control variables in presented scenarios.

2. Participant Writing Samples

- Authentic student work will be collected annually for the duration of the study until participants complete their PhD. program.
- Rubric coding scores will be generated using a modified form of the Universal Rubric for Lab Reports with 10 rubric planks appropriate for graduate work.
- Plagiarism reports from *SafeAssign*TM to ensure authenticity of student effort.

3. Interview Data

- Students and faculty will participate in face-to-face and/or telephone interviews.
- Audio will be transcribed, and transcripts will be reviewed by interview participants to ensure participant intent. Once transcripts are approved, all personally identifying information will be removed. Subsequent analyses will occur using transcripts labeled with unique numeric identifiers.

4. Participant Surveys

- Biweekly survey to document activities, time allocation, motivation, and socialization related to research, teaching, and writing experiences.

Privacy and Identifiers

For each student, all data will be tied together using a unique identifier, and identifying information of participants will be removed immediately following data collection. Because of the longitudinal nature of the study, this unique identifier must be maintained consistently throughout the study. The file in which participant names and unique identifiers are kept will be maintained separately from other data and accessible only to the PI.

During the writing sample rubric coding process, coders will have access only to unique identifiers. Writing samples will be submitted to *SafeAssign*TM after all identifying information has been removed.

Participants will complete surveys using SurveyMonkey with SSL encryption to ensure that their data remains protected. Survey results will be downloaded and names will be replaced with unique identifiers prior to analysis.

Storage

During the course of the study, all participant data will be stored on UVA computers in accordance with security protocols in a university supported database format such as SQL on a secure server with RAID 5 and remote backup data recovery systems. A server supported by the Educational Technology Office following university security protocols has dedicated space for secure long-term storage of research data and the organizing database for a minimum of seven years after the award end date. The database will be remotely accessible through a VPN client

by members of the research team located at Utah State University. Additionally, data will be securely stored externally in two formats—on UVA's secure, off-site server farm and burned to DVD and kept in a locked file drawer in the office of the PI at USU.

In preparation for archiving, all data will be reviewed in order to assure that no identifiable personal information is present.

Dissemination

To maximize the informative benefit to the institutions from which we are recruiting participants, we will provide to participating institutions an annual report of how the aggregated participants from their institution compared to the aggregate of all other students in the sample. Individual identities of participants will not be deducible from the information provided. These reports will be transmitted in confidence and not disseminated beyond the institutional point of contact. Participating institutions will not be named in any disseminated work products, though they may be identified by geographic region (e.g., Northeast, Midwest) or program type (molecular biology, microbiology, etc.).

During and upon completion of the study, findings will be shared at professional conferences in such a way that identity of individual participants cannot be determined from the data presented.