REPRODUCIBILITY

WHAT IS REPRODUCIBLE OPEN SCIENCE AND HOW TO ACCOMPLISH IT

Date: 04/28/2022

Transparency, collaboration, and reproducibility are all prerequisites for open science. It promotes scientific debate and the sharing of data, code, and resources to assure the findings' authenticity and veracity. It contributes to the reduction of publication bias and increases citations. According to a recent survey, only 54% of scientists feel that all data should be freely accessible to the public, and more than half (58%) would withhold unpublished data from peers if given the chance. Open research brings a plethora of benefits. It fosters international cooperation and expedites the creation of novel ideas. As a result, scientists can track how their work is perceived by others. This advances research and enables us to predict and handle issues before they arise. We live in a continually evolving scientific world. Open research encourages scientists to be more frank about their work, provides access to cutting-edge technologies to individuals in developing nations, and stimulates collaboration. This requires the adoption of reproducible science, which means making data, resources, and design plans universally available, reusable, adaptable, and extendable. While it may appear complicated at first, it is not. Clearly, the outcome is significant. By increasing the accessibility of our research, we can stimulate scientific advancement, raise awareness of potential impediments, and contribute to accessible and inclusive science for all. As a result, why isn't all science publicly available? How can you ensure that your study is reproducible? We will cover the importance of open science and the numerous tools and services available to aid us across the various stages of an engineering research endeavor that involves software development and data management. We will discuss the four pillars of FAIR data (Findable, Accessible, Interoperable, and Reusable) as well as data storage services (HPC, CyVerse Discovery Environment), as well as data management tools, that are available to University of Arizona researchers.

CONSTRUCTIVIST PARADIGM

Constructivist learning: When students are actively learning, they are encouraged to take responsibility for their own learning.

Teacher-centered: When teachers give information to students, and they passively take it in.

Learn by doing

Learning happens when you do something new

It Emphasized the Importance of practice in learning

It Emphasizes the Role of Learner in making sense

BENEFITS OF MULTIDISCIPLINARY LEARNING

Enhances creativity

Lifelong learning

See things from different perspectives

Communicate effectively across different fields

Strong foundation for future studies

Critical thinking skills

Problem solving abilities