Quantitative Analysis of Database Use: Post-Secondary Expert and Novice Characteristics ANDRIA SCHWORTZ, University of Wyoming, Quinsigamond Community College, ANDREA BURROWS, University of Wyoming — Database skills are used in many STEM fields, from healthcare work with hundreds of patients, to astronomy research with tens of thousands of galaxies. However, few fields explicitly teach students the necessary skills to analyze such data. The authors studied a matched set of 87 participants working with large datasets, using astronomical data from the Sloan Digital Sky Survey as the specific data. Participants were university students, in-service and pre-service K-12 teachers, science graduate students, and science and science fiction authors. An eight question multiple choice pre-/post-test was administered, on the skills of analyzing datasets and the astronomy content. Scores were compared and a t-test performed for males vs. females and undergraduates vs. non-undergraduates, for both the pre- and post-tests, for the test as a whole and with questions split by novice/expert level and by skills/content. Participants exhibited gains in both recall and synthesis questions, indicating learning of astronomy content and database skills are non-linear. Participants also exhibited learning in both database skills and astronomy content. Implications include a stronger database focus, both in the creation and analysis, in K-20 STEM education.

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