A22 Introduction of a Mobile Digital Database System for Standardization, Quality Assurance, and Efficiency in Forensic Anthropology Casework

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Learning Overview: The goal of this presentation is to offer a portable and user-friendly Graphic User Interface (GUI) for more efficient and standardized data collection, analysis, peer review, and reporting in forensic anthropology.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing a mobile digital database system whose widespread implementation would stimulate significant improvement of practitioners' ability to efficiently document field recoveries and laboratory analyses. Additionally, the system would enhance performance in the discipline by allowing for uniform work products, rapid peer review, and consistency in training.

Standardization of the practice of forensic anthropology has been a primary focus within the discipline since it was formalized in the 1970s with the establishment of the (Physical) Anthropology section of the American Academy of Forensic Sciences (AAFS) and the American Board of Forensic Anthropology (ABFA). The bulk of these efforts are concentrated on the improvement of inter-observer error, validation of methods for skeletal analysis, and, more recently, taphonomy and human remains recovery. Less attention has been paid to consistency in the types of data recorded during recoveries and laboratory analyses. This may be due to heterogeneity in training programs for forensic anthropologists. Furthermore, guidelines for agreed-upon best practices in this rapidly advancing discipline were last updated 5-8 years ago.[1] To address this lack of a discipline-wide data collection protocol, this presentation introduces a Mobile Digital Database System (MDDS) for the documentation, management, and analysis of data for forensic anthropology casework.

A systematized digital protocol for documentation would drive uniformity, and thus improve quality of work products across forensic anthropology. The MDDS is a custom application based on an existing and highly successful system designed for archaeological applications using FileMaker Pro® software.[2] The application, which is compatible with a wide range of mobile devices, computers, and the web, establishes a digital workflow with an easy-to-use GUI for selecting from predefined menu options (e.g., method used, character state, soil texture, etc.), entering text notes, and recording other objective data, such as photos, maps, and sketches. Additionally, the user may quickly refer to methodological references within the application. The goals of the MDDS are to: (1) streamline and systemize data entry for improved speed and accuracy; (2) link data as it is collected via a relational database; and (3) link objective data (photos, scores, etc.) with the analyst's interpretations.[2] Data can also be encrypted to maintain the security of sensitive evidentiary information. Because the data entered in these forms are linked in a relational database, the MDDS allows the user to review findings quickly and produce a formatted report. Data may also be auto-populated to existing forms, such as those for submission to the Forensic Data Bank.

This study envisions the MDDS as a practical tool for accessing references, gathering data, recording field and bench notes, and summarizing interpretations. Two or more practitioners using the system can easily and securely share files for the purpose of peer review within or between institutions. The system can also be introduced during training as a way to standardize graduate education in forensic anthropology. Within the application, users may make suggestions and comments that can be considered by a regulating body for updates to the system. Ideally, the MDDS would be reviewed for content by the ABFA and the National Institute of Standards and Technology (NIST) Anthropology Subcommittee at regular intervals.

Reference(s):

1. Discipline-specific baseline documents. (26 April 2018). Retrieved from https://www.nist.gov/topics/forensic-science/anthropology-subcommittee.
2. Bria, R.E. and K.R. DeTore. 2016. Enhanced Archaeological Data Collection and student Learning With a Mobile Relational Database. In E.W. Averett, J.M. Gordon, and D.B. Counts (Editors), *Mobilizing the Past for a Digital Future: The Potential of Digital Archaeology*. Grand Forks, ND: The Digital Press @ The University of North Dakota Grand Forks.

Mobile Digital Database, Quality Assurance, Standardization