

Engaging the Non-Specialists in XRF: Reconsidering the Learning Process

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XRF, as a non-invasive, *in situ* technique, is frequently used as one of the first analytical tools, if not the only one, applied in the study of materials comprising works of art, yet XRF analysis and interpretation are not always straightforward for these complex objects, and the responsibility for operating and interpreting frequently falls to the non-specialists, who may or may not have sufficient scientific background to correctly utilize XRF. Teaching XRF to non-specialists requires a different, more proactive approach that requires hands-on application to the challenges of cultural heritage objects. In addition, these non-specialists might not use XRF on a daily, routine basis so the need for refresher training is needed. The Getty Conservation Institute, in collaboration with the Yale Institute for the Preservation of Cultural Heritage, have created a unique teaching approach for their intended audience and objects of study, such that the students are taught in an engaged, project-based methodology. Mock-ups to simulate real world challenges in a systematic manner, fundamentals and how they are applied to specific examples observed in cultural heritage materials, and application to actual objects and on-the-ground scenarios are the bedrock of the methodology. In addition, the non-specialists bring with them knowledge and expertise of the objects' history, and an important part of the teaching is to empower the students to identify the questions to be answered and incorporating their expertise with the XRF interpretation for a fuller understanding of the objects.