

Virtual Tools for Critical Raw Materials Education

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Increasing reliance on electronic technology and the global need to decarbonise energy systems have fuelled societal demand for critical raw materials such as copper, lithium and rare earth elements. However, despite the increasing importance of these commodities, there has been a lack of suitable, engaging, critical raw materials teaching resources for tertiary education programs in geoscience, engineering, metallurgy and environmental science.

Mining sites are often remote from university campuses and student field trips are expensive and increasingly difficult to organise due to logistic and occupational health and safety issues. With funding from the European Union Erasmus + program, we have produced open access virtual field trips that cover all aspects of the critical raw material extraction process including; exploration and mining geology, open pit and underground mining, metallurgy and environmental management. These new virtual resources incorporate 360 degree imagery, 3D virtual models, video, audio and text-based information into interactive, immersive, non-linear educational objects that can be used to augment a wide range of teaching programs.

This presentation will showcase the content of virtual field trips developed for mining sites in Europe, Australia and Chile that document copper, lithium and tungsten production. It will provide suggestions for how these new resources can be incorporated into tertiary teaching programs and outline the results of student surveys that illustrate the efficacy of virtual field trips for undergraduate and postgraduate education.