Introduction

EOSC 331: Introduction to Mineral Deposits provides an introduction to one deposit model and models related to mineral exploration. Study includes typical deposit types and their plate tectonics. There are typically 40-50 students in each fall class and course units are worth the teaching of a 0.5 credit. The course is expected to have about 2 one-hour lectures and 3 two-hour labs. We have three 50-minute lectures per week over two years (2009-2012) as part of the 2-year CWSEI (Carl Wieman Science Education Initiative) and unoffically since then. The students, instructors, and the remainder of the official transformative were: the mentors of an EOSC (Earth, Ocean, and Atmospheric sciences, environment) class “lab” (Gateway). The basis was used in the first year to recuse one of the projects in the second year of the course and in the second year of the course the students were asked to ask the radicals if the proposed a complete conceptual model to understand the generation of mineral deposits.

Learning Activities

One of the main features of the course is a focus on active construction of knowledge during the lectures. In general there are between 5 and 7 goals for each lecture. These were developed so clarity is an important factor. The course level goals are:

1. Describe the essential mineralogic and geologic characteristics of banded iron formation and high-grade iron ores.
2. Describe the essential geological setting (mineralogical, geochemical, structural, tectonic, temporal) of the paragenetic character of mineral deposits and their associated host rocks.
3. Describe the essential mineralogic and geochemical characteristics of the main deposit types and their associated host rocks.
4. Describe the essential mineralogic and geochemical characteristics of the main deposit types and their associated host rocks.
5. Develop a conceptual model for understanding the genesis of mineral deposits.

By the end of the course students should be able to:

1. Describe the essential mineralogic and geologic characteristics of banded iron formation and high-grade iron ores.
2. Describe the essential geological setting (mineralogical, geochemical, structural, tectonic, temporal) of the paragenetic character of mineral deposits and their associated host rocks.
3. Describe the essential mineralogic and geochemical characteristics of the main deposit types and their associated host rocks.
4. Develop a conceptual model for understanding the genesis of mineral deposits.

Instructor workload while developing new expertise and redeveloping the class simultaneously can be extremely high. It is possible to increase student workload and also increase enthusiasm for more engagement with the content. Conclusions

For more information, please visit the project website.

Evaluating the effectiveness of educational change is difficult, especially if you are unable to get a pre-measurement of the course prior to development. We used a variety of metrics to evaluate the class over the years.

Final Grades

Assessment in the course consists of Midterm Exam (20%), Lab Exams (30%), Poster Projects (5%), and Final Exam (20%). Grades change over time, however new change was expected. Though most assessments have changed, marking and grading procedures, policies, and philosophies are similar.

Final Exams

Instructors – Pre- and post-transformation interviews were conducted with both instructors prior to and after development of the course.

Future work will focus on changes attitudes between interviews (4 to 3 year gap).

Conclusions

It’s not necessarily about increasing grades

• It is possible to increase student workload and also increase enthusiasm for more engagement with the content.
• The rewards of transforming the class simultaneously can be extremely high.
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