

My Earth science educator story – Zoltán Unger

What I did, why I did it and what happened



My story is important, because of my belief that students should learn in every class I teach. I believe that they can learn a lot through exams and tests too.

I am a teacher at the University of West Hungary (now the new Eötvös Loránd University), where geography students and future teachers attend my presentations. My teaching is broad – covering mineralogy and petrography in a single semester.

The students' theoretical knowledge in chemistry and physics is weak, which is a particular problem, since some of them will become school teachers of history combined with geography. My teaching strategy is as follows: every class, week by week, we start with written test. Then, after completing the mineralogy and petrology module, they take a comprehensive “big test”. The averages of the ‘weekly’ tests and the comprehensive test marks are put together to give a final average. Those near to the maximum mark (>4) need not to attend the oral exam, unless they have made big mistakes in their test.

At the start of each session, before the ‘weekly’ test, I repeat the key points and their wider relationships to the material they have been taught; the test follows. At this point the students have encountered the material being taught three times: first in my presentation, secondly at home – if he/she has been studying at home, and thirdly when I repeat the key points before the test.

In the comprehensive test, they undertake the same test twice. In their first attempt, they can use any auxiliary aids (printed or written notes, books, digital devices, or anything else). For the second attempt I move them apart, and hide any auxiliary aids so they cannot cheat (if anybody tries to cheat, they automatically leave the course with an “insufficient” mark). During the second attempt, they are given the same test sheet, with the same, previously-seen questions, and undertake the test alone, without any help. Each test contains 40-50 questions, which need to be ticked in 30-35 minutes. This gives enough time to check their background knowledge.

For the evaluation, I calculate both their average mark and the difference of the two marks from the two tests. I add these values to a graph (using Excel). Those who have a high average and low difference have done well. Those with an increased difference exhibited poor knowledge at the second attempt. Those with a low average and high difference are the least able students.

An interesting phenomenon is that in most cases the difference is negative. To my mind, this means that the second test reflects more realistic knowledge. Probably, during the first attempt he/she wasted time using the auxiliary aids. When students use no help in a natural exam-stressed environment, their efficiency is greater.

Through this overall teaching strategy, the material is repeated at least five times, which I consider “sufficient” for teaching the subject matter. Those who are motivated certainly retain a basic knowledge of mineralogy and petrography.

Unfortunately, most of the students need to return for the oral exam. There we run

through the written tests and discuss the problems. This is the time-consuming part, but students still learn through re-visiting the material for the sixth time, this time, orally.

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