Learning about rocks by experimenting and using ICT

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Students' interest in studying science is not very high in Slovenia. Therefore, the execution of science lessons is very important in primary and secondary schools. Using experimental methods and ICT make our students more motivated and engaged.

Slovenian institute for education is the connecting spot for Scientix - the community for science education in Europe. Its main goal is to make science more popular by sharing ideas through Scientix Activity Sheets. The community leads students to active, independent and collaborative learning.

I have used one such Sheet with 11 - year - old students (6th graders) for discovering the properties of rocks and minerals. Students learn about rocks and acquire different skills like: being able to use tools and technology for experimenting, collecting and presenting data, being able to share new information. Students explore rocks by observing and experimenting. When observing they try to describe the colour, lustre and surface. Other properties are explored by experimenting: solidity (using fingernails, coins, knives, glass and trying to find out which object makes a visible scratch), magnetic attraction with the use of magnets, presence of calcium carbonate with acid, density by weighing and measuring volume, porosity by watering rocks with drops, soundness by dropping weighs on rocks.

Students collect the data and at the end they make labels about rocks and a simple dichotomous key to find out the name of each rock.

They work in groups and for higher motivation during the activities they can be allowed to use the smart phones. At first they colour a volcano and make it alive with application Quiver. When studying rocks they can take pictures and at the end make a video with applications Storyo, PicPac or Animoto. To revise the subject matter I have created a quiz at www.quizizz.com and used it as a homework assignment. If I want to use it like a live game in class, I can also use Kahoot or Plickers. Students like quizzes, because they get immediate feedback and gamification elements like collecting points, and leader boards, make it even more fun. At the end teacher gets a detailed class and student-level reports that can be send to parents with just one click.

Students can also prepare their own quizzes by using the same applications or other tasks like crosswords, cloze tests, word grids or hangman by using the web application LearningApps.org or Educaplay.

Online applications are good, because you can use them on any smart device or PC, you can access them everywhere with online connection; if you lose your data, you can find it on the cloud. But we must be very careful because our data can be stolen and used against us. Those activities are also good because we can teach students how to use internet safely. But when we teach about nature we must use real life material and experimental work, ICT being a great support in the learning process.