English for Geology Students. 1

Lidija Beko

ENGLISH FOR GEOLOGY STUDENTS

LIDIJA BEKO

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ENGLESKI JEZIK ZA GEOLOGE

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ENGLISH FOR GEOLOGY STUDENTS 1

Mom bratu Milanu

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Predgovor

Udžbenik Engleski jezik 1 za geologe je univerzitetski priručnik čiji je glavni cilj da obezbedi informativnu bazu i bude upotrebljiv akademski model za učenje osnovnih principa i pojmova iz oblasti engleskog jezika za geologe. Čitljivim i razumljivim tekstovima, za studente koji pohađaju svoj prvi kurs metodom CLIL, želeli smo poboljšati naučnu pismenost naših studenata na konkretan, realističan i koherentan način. Udžbenik je jednostavan i jasno organizovan oko 6 tematskih celina:

1. Minerali
2. Fosili kroz vreme
3. Vreme i starost stena – istorijat geoloških teorija
4. Kretanje kontinenata
5. Stenski ciklus, magmatske stene i vulkani
6. Površinsko raspadanje, erozija i sedimentne stene.

Teme se dele na tri manje celine ili teksta, svaki prateći C1 nivo Zajedničkog evropskog referentnog okvira za jezike, pri čemu se čestim podelama na naslove i podnaslove, polaznicima omogućava da lako prate i identifikuju važne ideje. U nastojanju da tekst učinimo što razumljivijim, u knjizi smo ponudili fotografije i vizuelne materijale visokog kvaliteta, koji su pažljivo odabrani sugestijama pozvanih profesora kako bi unapredili autentičnost i realizam geologije i njenog pratećeg jezika.

Naučna istraživanja iz oblasti jezika pokazuju da polaznici najbolje uče kada se aktivno angažuju, na primer u kombinaciji teksta i prakse, teksta i realnog života ili teksta i umetnosti. Kako bismo obezbedili da se studenti sećaju akademskih termina, geoloških koncepata i jezika relevantnog u komunikacionim događajima, to jest da se sećaju predavanja dugo nakon što završe uvodni kurs, nastojali smo da organizaciju udžbenika nakon tekstova upotpunimo inoviranim aktivnostima. Naime, geološka čuda, profesije, misterije geologije i geologija u mitovima, osmišljeni su da integrišu informacije iz umetnosti, nauke, prirodnog i društvenog okruženja i otvore studentima mogućnost da se uključe u takvu interakciju u kojoj bi svoja znanja, rešenja i razumevanja iskazali na ličan i konkretan način. Ovakva vežbanja otvorenog tipa pružaju odlične mogućnosti govornih i pisanih vežbanja koja bazične teorije iz geologije razvode u mnoštvo lingvističkih vežbi i istraživačkih mogućnosti.

Koristim priliku da izrazim iskrenu i duboku zahvalnost svim onim koji su mi pomogli da se osposobim za rad na pisanju udžbenika. To su pre svega moje kolege sa Rudarsko-geološkog fakulteta koji su mi pružili dragocenu pomoć, literaturu, mišljenja i ukazali na pojmove i prevode termina kako bi ih pravilno upotrebila.

Moje recenzentkinje, prof. dr Julijana Vučo i prof. dr Dragoslava Mićović, ukazale su mi poverenje i pružile pomoć svojim strpljivim čitanjem i sugestijama bez kojih ovaj udžbenik ne bi bio finalizovan.

Zahvaljujem se dr Mariji Đurić, profesorki Medicinskog fakulteta, na stručnoj pomoći koja mi je bila dragocena u prvim saznanjima iz oblasti forenzike.

Predgovor

Posebnu zahvalnost dugujem strip crtaču Mijatu Mijatoviću koji je oživeo udžbenik svojim majstorskim radovima.

Želim da iskažem zahvalnost Ani Stojanović koja je bila dragocen saradnik na velikom broju zadataka, obrada i idejnih rešenja. Bez nje ovaj udžbenik ne bi imao svoju strukturu.

Dragocenu pomoć imala sam od mojih saradnica Marije Đorđević i Teodore Mihajlov kojima se srdačno zahvaljujem.

Zahvaljujem se prof. Draganu Milovanoviću i Vladimiru Pavloviću na ustupljenim divnim fotografijama.

Na kraju, prijatna mi je dužnost da se zahvalim gospodinu Robinu Foksu koji je na sebi svojstven način, originalnošću, savesnošću, dobrotom i nesebičnim trudom pomogao u svim segmentima izrade udžbenika i kome dugujem mnoga znanja o jeziku, umetnosti i kulturi. Ovom prilikom upućujem mu svoje veliko i srdačno hvala.

Marmatite (black), siderite (brown) and quartz (white) >

UNIT 1

- Mineral evolution
- Physical properties
- Chemical properties

MINERALS

Part 1 Mineral evolution

BANG!

That's how it all began, scientists believe, around 13.77 billion years ago. Our own part, as geologists, in this ongoing story began much more recently with the systematization of the scientific study of the Earth in the 18th century. Earth science began to investigate the air we breathe and the waters that surround our continents; the land itself, the rocks, minerals, soils, the geographical features such as mountain ranges and deserts; the living creatures with which we share our planet – every aspect of the Earth. Earth scientists, like their colleagues in other fields, have developed a scientific method based on observation and collection of data, formulation and testing of hypotheses, leading to the formulation of laws or principles.

This study expanded in the 1950s, as humanity began to explore space. One aspect of this expansion has been that Earth could now be studied from a new perspective, using instruments carried into orbit by satellites. This has resulted in an increased ability to test and prove hypotheses, and also created new ways of studying the interactions of terrestrial cycles and systems on a truly global scale, leading to a new field of research known as Earth system science.

Meteorite

As well as looking back towards Earth, humanity has also begun to look outward, with unmanned probes studying and exploring out neighbouring planets, and beyond – as a spaceship has now travelled beyond the boundary of our solar system. Alongside unmanned probes, humans have visited the Moon, bringing back rocks and dust for further study; samples have also been collected from Mars. Such explorations and studies allow scientists to construct a picture of the similarities and differences between the Earth and other extraterrestrial bodies, much as doctors might build up a picture of genetic similarities and differences in a family.

While many people would associate the term 'evolution' with the biosphere, the study of palaeomineralogy allows us to see

The Naica Caves, Chihuahua, Mexico

A series of astonishing caves containing crystal formations have been discovered by miners in the Naica Mine in Mexico. The first to be explored was the Cave of Swords, which was discovered in 1910 and contains selenite or gypsum ($CaSO_4 \cdot 2H_2O$) crystalline formations averaging about 1m (3 feet) long.

Drilling work in 2000 opened the Cave of the Crystals (Cueva de los Cristales – also the Giant Crystal Cave) some 120m (390 ft) deeper below the surface than the Cave of Swords. In this latter cave, gigantic selenite crystal up to 11.4m (37.4ft) long extend like beams through the air. Temperatures in the cave vary between roughly 40 and 60 degrees centigrade, and this, coupled with the high humidity and acidity of the atmosphere, mean it is necessary for anyone visiting the Cave to wear a protective "ice suit".

The Caves have been flooded for much of their history, and the unique conditions of the heat and the solute content of the water is thought to account for the formation of the crystals.

A team of scientists have discovered imperfections or inclusions within some of the crystals, the liquids in which contain bacteria which may be up to 50,000 years old. The scientists claim to have been able to reactivate these lifeforms.

The Cave of the Crystals was only accessible due to the pumping equipment used by the mining company. In 2015, the Cave was allowed to flood when mining operations cease and so the crystals may once again begin to grow!

Using the web pages below, and any others you can find, write a description of how selenite crystals form.
https://www.nationalgeographic.com/science/article/photos-mexico-cave-of-crystals
https://en.wikipedia.org/wiki/Cave_of_the_Crystals
https://www.britannica.com/science/gypsum
https://www.bbc.com/news/science-environment-39013829

The Naica Caves, Chihuahua, Mexico