

On the basis of tabular data it was deduced that the closer the desired index to the value of R.s., the lower the error. Also, for values above 100 Ω at R.s. = 51.8, the error increased in the arithmetic progression, since with the 400 ohm resistor measured, the reading was 375 ohms (1/16 ohm per step), and at a measured 300 ohms the readout was 281 ohms (1/16 ohms per step).

These results indicate a regular change in the error, which allows us to predict the measurement error.

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ПРЕПОДАВАНИЕ БИОЛОГИИ НА АНГЛИЙСКОМ ЯЗЫКЕ В ШКОЛАХ КАЗАХСТАНА

TEACHING BIOLOGY IN ENGLISH IN KAZAKHSTANI SCHOOLS

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Annotation

This article deals with some examples of CLIL-based exercises used at the lesson of biology in Kazakhstani schools. This is an attempt to demonstrate the connection of biology or any other science with the English language.

Keywords: CLIL, biology, photosynthesis, multilingualism.

Teaching science (as it is basically considered in European researches that includes chemistry, geography, biology, etc.) has the aim of formation of basic knowledge in scientific domains so that the child could have an opportunity to choose specific direction of his future profession.

This article dwells upon some general aspects of teaching biology in modern Kazakhstani schools in English. Proliferation of English penetrating into

the sphere of education for the pursue in the globalization has been justified by the programmes of rapid development of our society.

Citing the article “The Role of Multilingual Education in the Process of Kazakhstani Identity Formation” by Sh. Zharkynbekova, A. Aimoldina, D. Akynova, A. Abaidilda, Zh. Kuzar (2014, p. 218–219), we can mention that ‘according to the State Program of Education Development for 2011–2020, from 2011, English-speaking teachers for secondary, technical and vocational education and higher education are being trained by an international scholarship “Bolashak” (State Education Development Programme, 2011)’ who serve the source of the real modernized methods of education [1].

Content and Language Integrated Learning (CLIL) is defined as “a pedagogic approach in which language and subject area content are learnt in combination. The generic term CLIL describes any learning activity where language is used as a tool to develop new learning from a subject area or theme [2] (Coyle, Holmes and King, 2009).

Let us consider the lesson plan based on the elements of CLIL technology applied to the sphere of biology.

The topic of the lesson: “Photosynthesis, its phases and role in biosphere. Chemosynthesis and its meaning for biosphere”. The type of the lesson: combined

Objectives of the lesson:

Educational: SWBAT (students will be able to) solve the cases on photosynthesis in our life.

Developing: promoting the development of cognitive interest to the topic on photosynthesis, developing visual, spatial and verbal channels of the students.

Upbringing: cultivate positive attitude to study, respect and tolerance in the group.

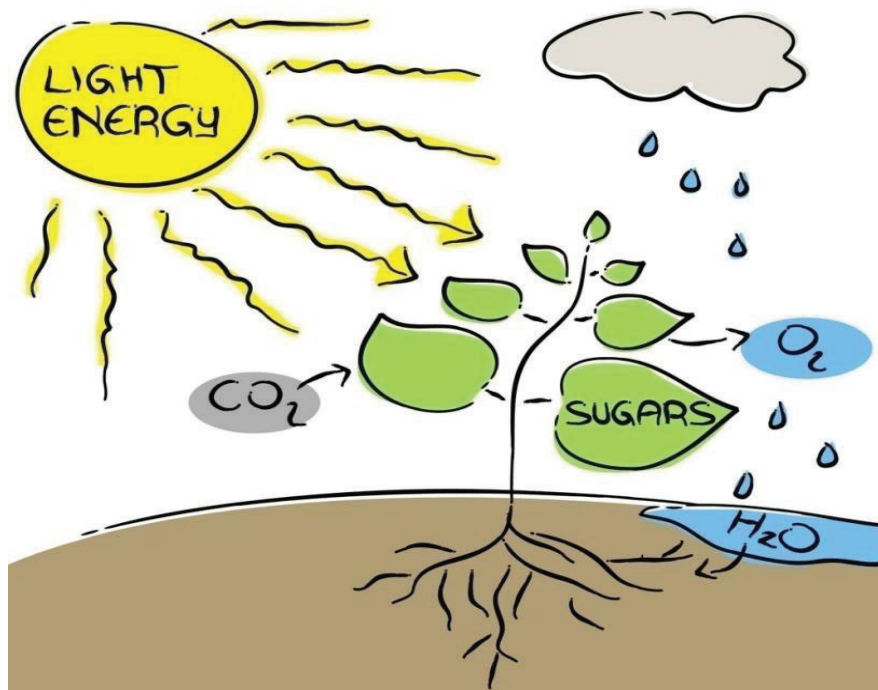
Methods: problem-based learning, CLIL elements, research activity based, demonstration, discussion, case-study.

The role of the English language (CLIL part):

- 1) Forming general notion on the topic “Photosynthesis”;
- 2) Developing basic speaking skills (clichés, conversational phrases of agreement/disagreement).
- 3) Training reading skills in English (scanning, skimming and detailed reading as a home task).

This article has the main focus on CLIL-part of the lesson. Consequently, it deals with the role of the English language.

For example, before writing the topic of the lesson, the students may be given a picture below (see Pic. 1):



Pic. 1. Warm-up phase of the lesson – guessing the topic of the lesson

After that the students can share their knowledge on the topic of the lesson and work with the text below [3].

“What Is Photosynthesis: Chlorophyll and Photosynthesis for Kids”

What is Photosynthesis? Plants, just like humans, require food in order to survive and grow. However, a plant’s food looks nothing like our food. Plants are the greatest consumer of solar energy, using power from the sun to mix up an energy rich meal. The process where plants make their own food is known as photosynthesis.

Photosynthesis in plants is an extremely useful process whereby green plants take up carbon dioxide (a toxin) from the air and produce rich oxygen. Green plants are the only living thing on earth that are capable of converting the sun’s energy into food. Almost all living things are dependent upon the process of photosynthesis for life. Without plants, we would not have oxygen and the animals would have nothing to eat, and neither would we.

The tasks aimed at general understanding of the text include:

1. *True or False:*

- A. Plants require food in order to survive and grow.
- B. The process where plants produce their own food is known as photosynthesis.

C. Plants take up carbon dioxide from the air and produce rich oxygen.

2. *Discuss the following:*

- A. What is photosynthesis in your own words?
- B. How do the plants make their own food?
- C. What would happen on the Earth without plants?
- D. Draw the mind map on photosynthesis.

Expected results of the lesson include: SWBAT know that:

- photosynthesis is a type of air consumption;
- the ability to have photosynthesis is the unique ability of plants;
- the conditions necessary for photosynthesis;
- the result of photosynthesis is the organic substance;
- atmospheric oxygen is the side product of photosynthesis.

Apart from the traditional scheme of the lesson planning (three stages – Engage, Study, Activate – J.Harmer), it must be mentioned that the role of English is the secondary one aimed at widening the outlook of students and forming basic terminological foundation of biology.

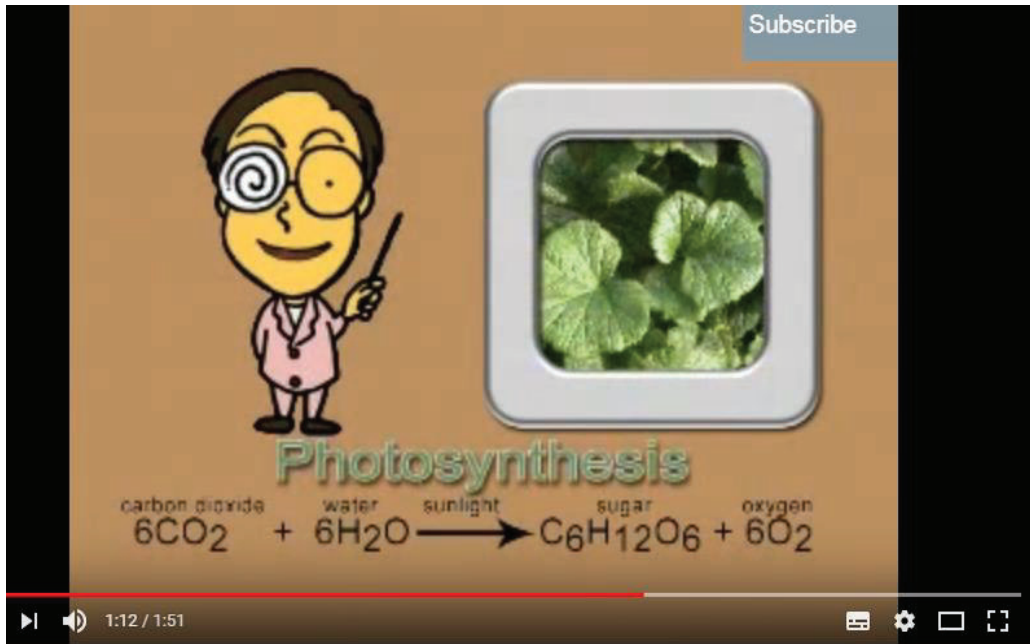
Thus, when explaining the topic the teacher can present the matching exercise. The table 1 of matching is presented below:

Table 1

The matching definition table (photosynthesis)

Catabolism	is a term that is used to describe all chemical reactions involved in maintaining the living state of the cells and the organism [4].
Metabolism	the breakdown of molecules to obtain energy [4].
Anabolism	the synthesis of all compounds needed by the cells [4].
NADP	nicotinamide adenine dinucleotide phosphate [4].
ATP	adenosine triphosphate [5].
Glycolysis	is a metabolic pathway that is a sequence of 10 reactions that are enzyme catalyzed [5].
Anaerobe	an organism that can survive and grow in an oxygenated environment [6].
Aerobe	an organism, such as a bacterium, that can live in the absence of free oxygen [6].

As a reflexive part of the lesson, the Photosynthesis song by Peter Weatherwall – https://youtu.be/C1_uez5WX1o [7] – see the screenshot 1.



Pic. 1. The screenshot of the YouTube posted song on Photosynthesis by Peter Weatherwall

The reflexive stage of the lesson may be based on the filling in the table below (see Table 2):

Table 2

Reflexive table on the feedback of the lesson on biology

What I knew before	What I got to know	What I would like to know more

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