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PRACA W GRUPACH JAKO SPOSÓB NA PRACĘ Z TEKSTEM SPECJALISTYCZNYM

WORKING IN GROUPS AS A WAY TO WORK WITH SPECIALIZED TEXT

Abstract: The article presents my ideas for using authentic texts in the course for doctoral students *English in the Natural Sciences*. As an ESP course, it is specifically oriented towards the subject content and the teacher's role is to facilitate the process of learning by drawing on students' knowledge of the subject matter. Combining subject matter and English language learning is highly motivating for students, nevertheless it is particularly challenging for the teacher to select and adapt suitable materials, as well as use them effectively to generate communication in the classroom. For a non subject specialist, it is essential to design working with authentic materials so as to give students a meaningful context and opportunity to exchange their background knowledge and practice the language. The first part of this article is devoted to a brief discussion of the difficulties that an ESP teacher must face while adapting authentic materials for the course. The second part contains some examples of materials and activities used in the course.

Keywords: ESP, authentic materials, group work, teacher's role

Od ponad czterech lat prowadzę kurs modułowy dla doktorantów *English in the Natural Sciences*. Treść kursu stanowi przede wszystkim język specjalistyczny, a jego tematyka obejmuje szereg zagadnień, takich jak budowa komórki, fizjologia roślin i zwierząt, genetyka i inżynieria genetyczna, mikrobiologia, chemia organiczna czy ekologia. Zajęcia bardzo często są zorganizowane wokół konkretnego tematu wynikającego z treści artykułu i obejmują najpierw zapoznanie się ze słownictwem niezbędnym do zrozumienia treści i potencjalnie nieznanym, a następnie czytanie artykułu w parach lub grupach. Kolejnym etapem jest wymiana informacji oraz dyskusja – w tym momencie studenci nie tylko dzielą się informacjami z tekstu, ale również swoją wiedzą w konkretnych dziedzinach. Dalsza część zajęć to ćwiczenia na rozumienie ze słuchu – słuchanie audycji radiowych lub oglądanie filmu. Ćwiczenia na słownictwo to najczęściej praca domowa.

Największe wyzwanie, jakie stoi przed lektorem, to znalezienie odpowiedniego tekstu oraz jego opracowanie. Co znaczy „odpowiedni tekst"? Odpowiedź na to

pytanie nie jest łatwa, ponieważ nie chodzi tu wyłącznie o kwestię interesującego tematu czy trudności tekstu pod względem językowym, ale również pod względem merytorycznym. Nauki przyrodnicze obejmują dziesiątki bardzo wąskich specjalizacji, a doktoranci to fachowcy w swoich dziedzinach, z reguły na wysokim poziomie zaawansowania językowego. Tekst nie powinien więc zbyt ogólnie traktować danego tematu i powielać dobrze znanych informacji. Z drugiej strony nie może też zanadto szczegółowo analizować danego zagadnienia, gdyż może być zbyt fachowy dla studentów z innych specjalizacji. Oczywiście istotą kursu jest pogłębianie znajomości języka i rozwijanie sprawności językowych, a nie przekazywanie wiedzy z dziedzin nauk przyrodniczych. Nie jest jednak możliwe rozdzielenie tych dwóch aktywności na zajęciach, na których język specjalistyczny zajmuje czołowe miejsce. Trudność w samodzielnym opracowywaniu tekstu i przygotowywaniu ćwiczeń polega więc na tym, że umiejętności te wykraczają poza kompetencje językowe filologa i wymagają wiedzy w konkretnej dziedzinie. A przecież lektor języka angielskiego nie może być biologiem, genetykiem i chemikiem. Bez posiadania kompetencji w danym przedmiocie lub choćby konsultacji z ekspertem dużym wyzwaniem jest opracowanie ćwiczeń na zrozumienie tekstu, dlatego najczęściej ograniczamy się do ćwiczeń leksykalnych czy bardziej ogólnych, prowadzących do dyskusji na tematy zaprezentowane w tekście. Jak zatem poradzić sobie, gdy nie jest się fachowcem? Z pewnością jest to pytanie, które często zadają sobie nauczyciele prowadzący kursy ESP.

Jednym z moich rozwiązań jest praca w grupach, która daje możliwość nie tylko wykonania ćwiczenia i wymiany informacji zawartych w tekście, ale przede wszystkim stworzenia sytuacji autentycznej konieczności wymiany specjalistycznych informacji bazujących na wiedzy studentów. Tym samym przeniesiona zostaje rola specjalisty w danym temacie z osoby nauczyciela na samych studentów. Nauczyciel utrzymuje swoją bezpieczną funkcję eksperta w kwestiach językowych. Idealne do zaadaptowania na zajęcia są artykuły składające się z kilku wyraźnych sekcji, gdy każda z nich stanowi samodzielną całość, a zrozumienie części tekstu nie jest warunkowane przeczytaniem poprzedniego paragrafu. Przykładem takiego właśnie artykułu jest zaprezentowany poniżej *What happens when...* z czasopisma „BBC Focus". Artykuł w bardzo ciekawy, czasem nieco humorystyczny sposób przedstawia mechanizm powstawania licznych sensacji i doznań ludzkiego organizmu, jak np. dreszcze, skurcz, uczucie zgagi, choroba lokomocyjna czy burczenie w brzuchu. Każdy paragraf artykułu to odrębny miniartykuł, co pozwala na dużą dowolność w doborze zarówno ilości tekstu, którą potrzebujemy zaadaptować, jak i samych informacji, które możemy potraktować bardziej wybiórczo, bez potrzeby uwzględniania logicznej całości, jak dzieje się w przypadku pracy nad artykułami zwartymi.

Innym bardzo ciekawym rozwiązaniem jest przygotowanie kilku osobnych artykułów na wspólny temat i umożliwienie studentom dokonania wyboru, który z nich chcieliby przeczytać. Przykładowy plan zajęć lub ich części przedstawia się następująco:

1. Studenci dyskutują w grupach na zaproponowane pytania odnoszące się kolejno do wszystkich tekstów, a następnie podsumowujemy dyskusje na forum całej grupy. W podanych przykładach tekstów zaprezentowanych w dalszej części artykułu są to pytania z ćwiczenia pierwszego dla każdego tekstu.
2. Studenci indywidualnie dokonują wyboru tekstu, który chcieliby przeczytać. Ten etap, jak również kolejny wymagają sporej elastyczności ze strony nauczyciela, gdyż może się zdarzyć, a w zasadzie zdarza się bardzo często, że niektóre teksty są wybierane przez wiele osób, a inne przez dwie lub nawet jedną. Studenci czytają swój artykuł i przygotowują się do zaprezentowania jego treści innym osobom z grupy.
3. Kolejny etap to przeorganizowanie studentów w takie grupy, aby w każdej były osoby, które przeczytały inny artykuł, co pozwoli na wymianę informacji.
4. Ponowne przeorganizowanie studentów w grupy pracujące nad tym samym artykułem w celu wykonania ćwiczeń leksykalnych.
5. Podsumowanie treści artykułów, dyskusja i wnioski.

Zaproponowany powyżej plan pracy w grupach nadaje zajęciom sporo dynamiki, a możliwość wyboru artykułu do przeczytania to dodatkowa motywacja do pracy z tekstem.

W załączniku znajduje się prezentacja konkretnych tekstów i towarzyszących im ćwiczeń, które sprawdziły się na zajęciach kursu. Najczęściej wykorzystywane czasopisma to: „Newscientist", „The Economist", „Scientific American" oraz „BBC Focus Magazine".

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WHAT HAPPENS WHEN...

(*BBC Focus*, August 2009)

I. Look at the list of different everyday body functions. Can you explain their mechanisms? – Discuss in pairs.

What happens when...

- you've got a cramp
- you're seeing stars
- you're shivering
- you get travel sickness
- you blush
- your stomach rumbles
- you've got a runny nose
- get an itch
- you've got butterflies in your stomach
- you crack your knuckles
- you've got a lump in your throat
- you've got heartburn

II. Put the following words into suitable categories.

septum pituitary gland ventricle pineal gland thalamus bile duodenum hydrochloric acid thymus incisor pancreas thyroid saliva capillaries valve gall bladder atrium salivary gland cerebellum Bronchus (pl. bronchi) cerebral cortex larynx oesophagus alvelous (pl. alveoli)

CIRCULATORY SYSTEM DIGESTIVE SYSTEM

RESPIRATORY SYSTEM NERVOUS AND ENDOCRINE SYSTEMS

III. Match the words to their definitions.

tear duct diaphragm calf mucus socket synovia sphincter breastbone retina lactic acid

1. a clear smooth liquid that is produced inside the nose and other parts of the body
2. the part that covers the inside surface of the eye and sends signals to the brain along the optic nerve
3. the large sheet of muscle that separates the cavity in the chest from the cavity in the abdomen
4. the back part of the leg between the ankle and the knee
5. a substance that forms in muscles after physical exercise as a result of anaerobic respiration
6. a viscous fluid found in the cavities of joints, its principal role of the fluid is to reduce friction between the cartilage of joints during movement
7. a hollow place where one thing fits inside another thing
8. the long, flat vertical bone in the centre of your chest
9. a muscle that surrounds an opening in the body and can tighten to close it
10. a passage carrying tears from the lacrimal sac into the nasal cavity

IV. In groups read the passages and find out if you guessed properly, then take turns to explain what actually happens when... Have you learnt anything new or have any pieces of information surprised you?

V. Complete the sentences with the verbs listed below.

DIVERT CONSTRICT DISSOLVE SCRATCH INGEST RUBSQUEEZE SWALLOW AMPLIFY POUND

1. Avoid clothing that ..... the blood circulation in your legs.
2. Critics say the Internet has ..... the problem of medical misinformation.
3. The crystals ..... in water to create a purple liquid.
4. If you drink some water it will make the pills easier to ..... .
5. Environmentalists keep quiet because concern over radon in houses would ..... attention from the campaign against nuclear power.
6. Jessica felt her heart ..... but forced herself to remain calm.
7. ..... the lemons and pour the juice into a jug.
8. Tom spread sun cream onto the baby's back and began to ..... it in.
9. He sat ..... his head, trying to think of the answer.
10. There was an initial suspicion that this poison had been ..... by our two patients.

VI. Find an explanation for another activity, sensation or function of the body and share it with the group.

VII. You are going to watch a short video explaining why bruises change their colour. In pairs discuss what processes actually take place which result in the colourful effect? Then watch the video and answer the questions.

https://www.youtube.com/watch?v=EOZN4lyWhsI

1. Which chemicals are involved in the process?
2. What colours are these substances responsible for?
3. Match the colours with the substances.

hemoglobin	biliverdin	bilirubin
green	red	yellow

TEACHER'S NOTES

As there are twelve passages, ideally students should be seated in fours, each of them reading three texts.

Key to exercises

II.

CIRCULATORY SYSTEM	DIGESTIVE SYSTEM	RESPIRATORY SYSTEM	NERVOUS AND ENDOCRINE SYSTEMS
septum valve atrium ventricle capillaries	oesophagus incisor gall bladder duodenum bile salivary gland hydrochloric acid saliva	larynx bronchus (pl. bronchi) alveolus (pl. alveoli)	pancreas thymus cerebral cortex thalamus pituitary gland thyroid cerebellum pineal gland

III.

1. mucus
2. retina
3. diaphragm
4. calf
5. lactic acid
6. synovia
7. socket
8. breastbone
9. sphincter
10. tear duct

IV.

a. Avoid clothing that **constricts** the blood circulation in your legs.
b. Critics say the Internet has **amplified** the problem of medical misinformation.
c. The crystals **dissolve** in water to create a purple liquid.
d. If you drink some water it will make the pills easier to **swallow**.
e. Environmentalists keep quiet because concern over radon in houses would **divert** attention from the campaign against nuclear power.
f. Jessica felt her heart **pounding** but forced herself to remain calm.
g. **Squeeze** the lemons and pour the juice into a jug.
h. Tom spread sun cream onto the baby's back and began to **rub** it in.
i. He sat **scratching** his head, trying to think of the answer.
j. There was an initial suspicion that this poison had been **ingested** by our two patients.

1. BACTERIA FROM BEES POSSIBLE ALTERNATIVE TO ANTIBIOTICS

http://www.lunduniversity.lu.se/article/bacteria-from-bees-possible-alternative-to-antibiotics

I. Discuss the following questions:

- What do you know about the properties of honey?
- The discovery of antibiotics has been one of the most momentous breakthroughs in the history of mankind. Now it seems they are becoming less and less effective. What are the reasons? What can replace antibiotics in the future?

II. Read the article and find how the bacteria from honey might be helpful in solving the problem of antibiotic resistance.

III. Match the highlighted words in the article with the definitions below.

1. if something you do is _____, you do not succeed in getting what you want
2. to reduce or prevent the bad effect of something, by doing something that has the opposite effect
3. continuing to exist or happen, especially for longer than is usual or desirable
4. an acid produced by muscles after exercising and found in sour milk
5. very many

IV. Look at the collocations in the bold type and remember them.

V. Complete the sentences with suitable words from the article.

1. I remember seeing a tooth being stripped of its enamel by soaking in _____ .
2. There are _____ ways to help children learn to read.
3. We searched the whole area but all _____ . Robbie had disappeared.
4. He has a _____ cough because of his smoking.
5. Sometimes people buy complementary medicines to _____ an unhealthy lifestyle.

VI. What is the singular form of millenia and the plural form of spectrum?

TEACHER'S NOTES

The following words should be highlighted in the text of the article: **lactic acid**, **persistent**, **myriad**, **counteracted**, **to no avail**

The following words should be underlined in the text: **millennia**, **spectrum**

III.

1. to no avail
2. counteract
3. persistent
4. lactic acid
5. myriad

V.

1. lactic acid
2. myriad
3. to no avail
4. persistent
5. counteract

VI.

millenium – millenia; spectrum – spectra

2. GENOME ENGINEERING MAY HELP MAKE PORCINE ORGANS SUITABLE FOR USE IN PEOPLE

http://www.economist.com/news/science-and-technology/21674493-genome-engineering-may-help-make-porcine-organs-suitable-use-people-no-pig

I. Discuss the questions.

- What are the problems of transplantology?
- Have you heard of any recent developments in the field of transplantology? What kind of alternative methods of obtaining organs have you heard of?
- What do you know about CRISPR/Cas9? How is it used?

II. Read the article and compare your ideas with the article.

III. Look at the following topic sentences from the text. Try to predict the content of the paragraphs.

a. Dr Church and his fellow researchers analysed the genetic sequences of one family of PERVs, with a view to attacking them with CRISPR/Cas9.
b. The animal most commonly suggested as a donor is the pig.
c. Since PERVs rely on this gene to infect human cells as well as porcine ones, deleting it should stop them jumping into human hosts.
d. One idea is to harvest animal organs.
e. Dr Church and his colleagues thought PERVs ideal candidates to test the mettle of one of the rising stars of biotechnology, CRISPR/Cas9.
f. Transplanting organs brings life to the dying.
g. Until now, though, two technical problems have stood in the way of routinely transplanting animal organs into people.

IV. Complete the article with the missing sentences.

V. Match the words from the article to their definitions.

tweak *porcine* *grieve* *mettle* *shortfall*
wax and wane *strain* *snip* *to be on a roll*

1. courage and determination to do something even when it is very difficult
2. looking like or relating to pigs
3. to feel extremely sad, especially because someone you love has died
4. to increase and decrease over time
5. to be having a lot of success with what you are trying to do
6. to cut something by making quick cuts with scissors
7. to make small changes to a machine, vehicle, or system in order to improve the way it works
8. someone who fails to win a competition, election etc.
9. a type of animal, plant, or disease
10. the difference between the amount you have and the amount you need or expect

VI. Make phrases.

1. for the purpose	in a poke
2. to address	result
3. to hitch	of research
4. a striking	a lift
5. to buy a pig	a problem

VII. Complete the sentences with suitable words from previous exercises.

1. Maybe you should _____ a few sentences before you send in the report.
2. People need time to _____ after the death of a loved one.
3. She _____ crisp green stalks with a pair of scissors.
4. Buchanan, who did best among the three _____, got only 14 percent.
5. We've had to trim our budget to compensate for a $1.5 million _____ in revenue.
6. He was an outstanding fighter pilot who proved his _____ in a variety of tough assignments, including two wars.

TEACHER'S NOTES

First sentences from each of the paragraphs (except for the last one) should be removed and the gaps should be numbered **1–7**. They are listed in random order in ex. III.

The following words should be highlighted in the text: **porcine**, **shortfalls**, **grieving**, **tweaked**, **strain**, **snip**, **waxes and wanes**, **also-ran, is on a roll**, **mettle**.

IV.

1f 2d 3g 4b 5e 6a 7c

V.

1. mettle
2. porcine
3. grieve
4. wax and wane
5. to be on a roll
6. snip
7. tweak
8. also-ran
9. strain
10. shortfall

VI.

1. for the purpose	of research
2. to address	a problem
3. to hitch	a lift
4. a striking	result
5. to buy a pig	in a poke

VII.

1. tweak
2. grieve
3. snipped
4. also-rans
5. shortfall
6. mettle

3. CAN FRUIT FLIES BE BRED TO DETECT CANCER?

http://www.smithsonianmag.com/innovation/can-fruit-flies-be-bred-detect-cancer-180949647/?no-ist

I. Answer the questions.

1. Have you heard of any animals which can detect some diseases?
2. How are they able to do that?

II. Read the article and put the missing fragments into suitable gaps, choosing from the ones below.

a. to distinguish cancerous cells from healthy ones
b. to better understand how our own bodies work
c. to move toward certain odors
d. to examine the fluorescent patterns
e. to swarm into the test chamber
f. to diagnose tumors comes from a recent experiment
g. to recognize the presence of faint metabolic gases

III. Read the article and find out **what insects** and **methods** the scientists have used.

IV. Match the words to their definitions.

tumor volatile chamber antenna
to swarm to tweak merely olfactory

1. used to emphasize how small or unimportant something or someone is [= only]
2. to congregate or occur in large groups or multitudes
3. a mass of diseased cells in your body that have divided and increased too quickly
4. a movable organ of sensation attached to the heads of insects and crustacea
5. an enclosed space in the body of an organism
6. (of a substance) changing readily from solid or liquid to a vapor; (of a situation) likely to change suddenly and without warning

7. connected with the sense of smell
8. to make small changes to a machine, vehicle, or system in order to improve the way it works

V. Make collocations.

1. clinical	gases
2. handheld	settings
3. metabolic	imaging
4. odor-sensing	device
5. diagnostic	receptors

VI. Complete the phrases with suitable prepositions.

1. to be paired ……. sth
2. to come …… contact
3. experiment carried ……. by researchers
4. to differentiate …… two things
5. to be ideally suited …… sth

VII. 'Antenna' is an example of a word with irregular plural, characteristic for foreign nouns. Give plural forms of the following nouns.

	SINGULAR	**PLURAL**
1.	alga	…….
2.	stimulus	…….
3.	bacterium	…….
4.	ovum	…….
5.	vertebra	…….
6.	medium	…….
7.	axis	…….
8.	index	…….
9.	hypothesis	…….
10.	criterion	…….

VIII. Complete the sentences with suitable words from previous exercises.

1. Like many other mammals, bats are also particularly well endowed with _____ receivers and transmitters.
2. Certainly, few entomologists doubt that the amazingly intricate structure of moths' _____ are specific pheromone detectors.

3. A team of geneticists _____ the genes of mice and worms to create animals with muscles that are twice as strong as normal.
4. We have large quantities of plutonium already separated and in forms ideally _____ for nuclear weapons.
5. The committee does not blame any individual; we are _____ trying to find out how the accident happened.
6. People are afraid to change jobs in today's _____ economy.

TEACHER'S NOTES

Fragments listed in ex. II should be removed from the article and the gaps should be numbered 1–7.

II.

1g 2c 3e 4f 5a 6d 7b

IV.

1. merely
2. to swarm
3. tumor
4. antenna
5. chamber
6. volatile
7. olfactory
8. to tweak

V.

1. clinical settings
2. handheld device
3. metabolic gases
4. odor-sensing receptors
5. diagnostic imaging techniques

VI.

1. to be paired with sth
2. to come into contact
3. experiment carried out by researchers
4. to differentiate between two things
5. to be ideally suited for sth

VII.

1. algae
2. stimuli
3. bacteria
4. ova
5. vertebrae
6. media
7. axes
8. indices
9. hypotheses
10. criteria

VIII.

1. olfactory
2. antennae
3. tweaked
4. suited
5. merely
6. volatile

4. STANCHING POST-OPERATIVE BLEEDING. VIPER VENOM MAY HELP SAVE LIVES IN THE OPERATING THEATRE

http://www.economist.com/news/science-and-technology/21678739-viper-venom-may-help-save-lives-operating-theatre-snake-charm

I. Discuss the questions.

1. Have you ever heard anything about applying snakes in scientific or medical research?
2. What kind of dangers are involved in undergoing a surgery? What kind of diseases pose an additional threat?
3. Look at the title of the article. What do you know about the subject? Can you predict how the venom might be useful?

II. Look at the following terms. Do you know what their properties/effects are? Then read the article quickly and check what they are and what their significance in the research is.

hydrogel **warfarin** **batroxobin** **heparin**

III. From memory complete the sentences from the text with the following words.

seal *spearhead* *inevitable* *stanch*
incision *regardless of* *laced* *adhesive*

1. The researchers then operated on the rats' livers, making _____ in those organs...
2. These barriers include the simple application of pressure to a wound, various foams and _____ that create a more permanent _____, and experimental treatments using substances called hydrogels which consist of fragments of protein _____ together to trap water molecules...
3. The _____ of a new approach, as it were.
4. Batroxobin-laden hydrogel stopped the flow in 5–6 seconds, _____ whether a rat had been given heparin.

5. Loss of blood is an _____ consequence of surgery.
6. …a variety of physical barriers designed to _____ blood flow…

IV. Match the words from previous exercise to their definitions.

1. a person or group of people who lead an attack or organized action
2. without being affected or influenced by something
3. a neat cut made into something, especially during a medical operation
4. to stop the flow of liquid, especially of blood from a wound
5. a piece of rubber or plastic that keeps air, water, dirt etc. out of something / a piece of wax, paper, wire etc. that you have to break in order to open a container, document etc.
6. to weave or twist several things together / to include something all through something you write or say / to have some of a quality
7. a substance such as glue that you use to stick two things together
8. certain to happen and impossible to avoid

TEACHER'S NOTES

The following words should be highlighted in the article: **inevitable**, **stanch**, **adhesives**, **seal**, **laced**, **incisions**, **regardless of**, **spearhead**.

III.

1. incisions
2. adhesives, seal, laced
3. spearhead
4. regardless
5. inevitable
6. stanch

IV.

1. spearhead
2. regardless of
3. incision
4. stanch
5. seal
6. lace
7. adhesive
8. inevitable