

ESP Exercises Building Strategies

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Abstract:

In the currently hyper-technologised world of information, unhindered access to limitless resources has made it possible for ESP teachers to easily retrieve ideas and inspiration for designing course activities that tackle students' needs optimally. Nonetheless, the inspiration for ESP course activities can run dry at some point. Additionally, each new generation of students brings along newly emerging needs generated by a constantly changing world, hence the necessity of ESP exercises and activities to be constantly updated and customised. The current paper proposes a personal insight into how ESP activities can be conceived starting from a technical Reading text for the engineering field. We have sought to create a wide range of exercises derived from the technical reading texts, so that they incorporate an integrated skills approach into the ESP class, serving, perhaps, as a source of inspiration for other teachers in devising their course activities.

Keywords: *ESP learning strategies, ESP materials conception, Technical English learning activities*

1. Introduction

In the current paper, the input basis for the exercises development will consist of a Reading text from the engineering field, particularly because technical English may often be perceived as a dry, non-inspirational type of ESP input source. Not only will we prove otherwise but we shall also demonstrate it to be an excellent starting point for a wide range of integrated skills activities. The reading process dwells on a variety of strategies, skills and types of texts that render the reading task multifaceted as a combination of mental processes, knowledge and abilities. As Grabe (2004, p. 55) puts it "[Reading] should be centered on the use of and training in multiple strategies to achieve comprehension." Thus, the optimal usage and effectiveness of the reading process will involve frequent practice with clear purposes and expectations.

Additionally, the use of authentic and adapted readings empowers students to access specific content-based expressions and vocabulary, and become skillful at awaringly recognizing the organization of the information and the structure of the target language. Students also require

specific training in the use of terminology related to their field of study, thus feeling more engaged (Scott & Winograd, 2001) and gaining a sense of relevance in the context of their chosen profession. Cantoni-Harvey (1987, p. 201) emphasize the importance of vocabulary in processing target language input: "Language is essential for understanding content materials and can be taught naturally within the context of a particular subject matter. "For the ESP teacher, language refers to **general lexis** that is easily understood or gathered from context and **specialised** (technical) **lexis** that requires the conception of exercises through which it will be taught. Evidently, the former will be heavily used to teach the latter.

When teacher conceive activities they focus on content, language and learning strategies working in tandem to develop multiple skills in their students while ensuring students also develop an autonomy of learning. As stated by Noles and Dole (2004:179) "Researchers have collected much evidence that supports explicit strategy instruction. The teaching of strategies empowers readers, particularly those who struggle, by giving them the tools they need to construct meaning from text. Instead of blaming comprehension problems on students' own innate abilities, for which they see no solution, explicit strategy instruction teaches students to take control of their own learning and comprehension." As students navigate through the proposed exercises, they should also be made aware of the learning path so that they can replicate it in their future independent learning.

The teacher starts by introducing the topic so that the students can define the concept of interest (warm-up). Then, they identify technical vocabulary using pictures, they will use the new words in context through guessing, scrambling, matching, and gap completion activities (while and post-reading). With this type of activities students are prepared for maximising the reading process and are also introduced to the recognition of learning strategies. After that, they read short pieces of text in groups (post-reading) and the teacher revises the reading comprehension exercises with the whole class (After-reading). Then, students reflect on their experience of strategy use. Finally, there a self-evaluation in which each student reflects on learning attitudes, content learning, development of reading comprehension skills and expand learning strategy awareness. Each stage is important as it allows for the gradual increase in difficulty and complexity, allowing students time to adjust to higher levels of effort, cognition, memorisation, abstractisation.

Preparation (Warm up): Students prepare for strategy instruction by identifying their prior knowledge and the use of specific strategies. This stage draws on students' prior knowledge of the subject matter and brings



it to the surface while setting up an environment of familiarity that students will perceive as a confidence booster.

Presentation: The teacher demonstrates the new learning content and explains how and when to use the learning strategies formulated as tasks. For instance, reading strategies include silent reading used for increased comprehension and loud reading which is particularly useful for developing fluency and correcting pronunciation. Both strategies should be used in tandem.

Practice (while Reading): Students read using the strategy with activities of adapted and increasing difficulty. The strategy may include associations between technical vocabulary and visual aids provided along the text, as we shall see in the demonstration below, the use of textual clues to elicit meaning from context,

Evaluation (While Reading): Students self-evaluate their use of the learning strategy and how effective the strategy was for them. Very commonly, most students are visual learners, which translates as being more efficient when visual aids (pictures, diagrams, charts, animations) are provided. Other students enjoy detective-like activities in which they must follow the trail of contextual clues to discover meaning.

Expansion (After Reading): Students extend the usefulness of the learning strategy by applying it to new situations or learning tasks.

2. Illustration of Learning Strategies Starting from Technical Texts

In the following section we will start from a technical reading text and try to illustrate a wide range of activities that can be devised to employ a variety of learning strategies in an integrated skills approach. The aim of this approach is to demonstrate how technical texts can be the starting point for an array of different learning activities that can inspire teachers of ESP in their course materials conception endeavours.

ESP Lesson: Describing Modern Engines

Level: Intermediate

Integrated skills: Reading, Speaking, Writing

Focus- Modern Engines, Present Tense Simple

Activity 1: Pre-reading: Introduction of topic-Speaking Activity

Learning strategy: Elicitation of topic based on prior knowledge vocabulary, brainstorming,

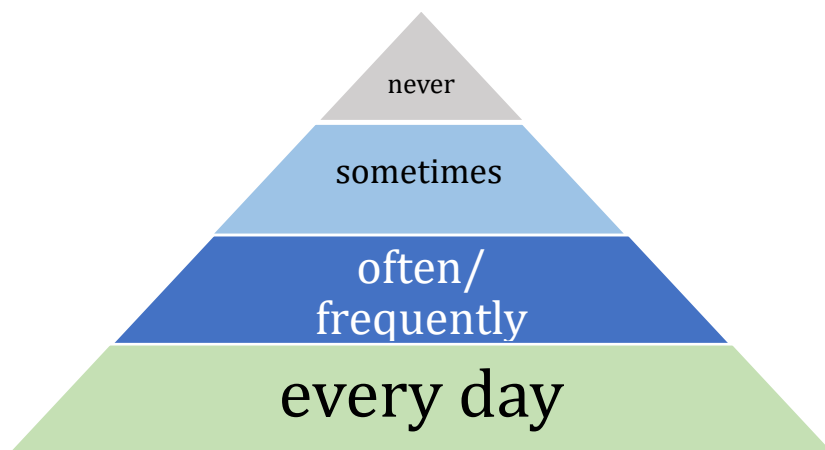
Teacher uses gradient colour and font size to render variation and frequency.

Task: Think about the engine of your car. Draw up a list of actions/activities that your car engine:

- does/doesn't do every day/ frequently



- does once in a while/sometimes
- never does



Activity 2: Reading and Technical Vocabulary Identification

Strategies: Pair-work, Following visual clues, matching

Task: Read the text below. The 4 strokes are in the right order, but the pictures are not. Draw arrows to match the strokes with their correct representation. Follow the visual clues.

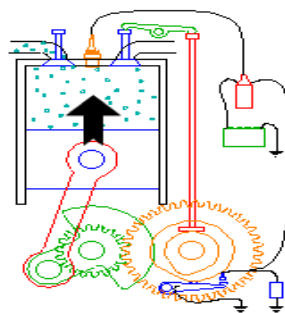
As you read, underline and extract the new vocabulary. Identify the mentioned engine components in the pictures.

The Four Stroke Engine

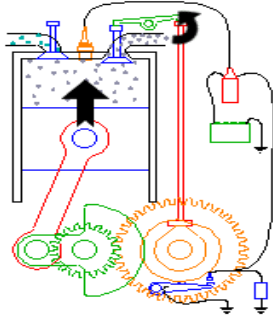
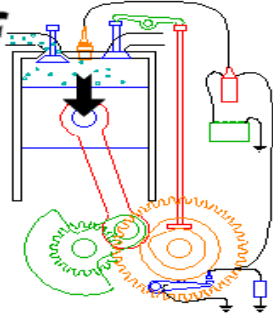
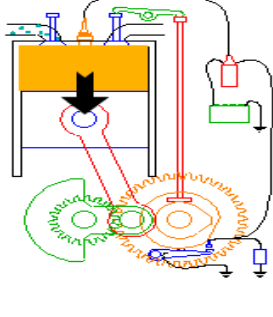
The four stroke engine (or *four stroke cycle*), the most common engine type nowadays, was first demonstrated by Nikolaus Otto in 1876, which is why it became known as the *Otto cycle*. It **powers** almost all cars and trucks. The four strokes of the cycle are *intake*, *compression*, *power*, and *exhaust*. Each corresponds to one full stroke of the piston; therefore, the complete cycle requires two **revolutions** of the **crankshaft** to complete. (Adapted from <http://www.animatedengines.com/otto.html>)

Intake

During the intake stroke, the piston moves **downward** and it draws a fresh charge of vaporized fuel/air mixture. The illustrated engine features an intake valve which opens with the help of the vacuum produced by the intake stroke. Most modern engines incorporate an extra cam/lifter arrangement as seen on the exhaust valve. The exhaust valve **shuts** with the help of a spring.





Verbal forms in the Simple Present: The piston moves← to move New vocabulary: intake, stroke, vacuum, cam/lifter, exhaust, to shut, spring.	
Compression As the piston rises, the valve shuts by the increased cylinder pressure. Flywheel momentum drives the piston upward and compresses the fuel/air mixture. Verbal forms in the Simple Present: New vocabulary:.....	
Power At the top of the compression stroke, the spark plug fires and ignites the compressed fuel. As the fuel burns it expands and thus drives the piston downward. Verbal forms in the Simple Present New vocabulary:.....	
Exhaust At the bottom of the power stroke, the exhaust valve opens with the help of the cam/lifter mechanism. The upward stroke of the piston drives the exhausted fuel out of the cylinder. Verbal forms in the Simple Present New vocabulary:.....	



Activity 3: Reading Comprehension

Strategy: While reading clues identification

Task: Mark the statements as True or False:

- a) **During the intake stroke, the piston moves upward.**
- b) **The exhaust valve shuts with the help of a cam/lifter mechanism.**
- c) **As the fuel burns it expands.**
- d) **The valve shuts by the flywheel momentum.**
- e) **The fuel/air mixture is compressed by the descending piston.**
- f) **The flywheel fires and ignites the compressed fuel.**
- g) **The exhaust valve opens with the help of the cam/lifter mechanism.**

Activity 4: After-Reading

Strategy: Defining new vocabulary by matching halves

Task: Match the terms from the text with their definitions:

to power	in the direction of the ground
revolutions	to close
crankshaft	rotating mechanical device that is used to store rotational energy.
downward	part of an engine that translates linear piston motion into rotation
to shut	the inertial energy of a body or object, the energy stored in a moving mass
flywheel	fire used to ignite the fuel
momentum	in the direction of the sky
spark	to feed energy to a system
upward	rotation movement

Activity 5: Diagram Completion and Guided Speaking

Strategy: Self-assessment: students will detect retention of technical data and ability to formulate statements that include the given vocabulary.

Task: Write the names of the THREE REMAINING strokes. Speak about what happens in each stroke. Include the following engine components: **flywheel, spark plug, cam/lifter, piston, air/fuel mixture, spring, exhausted fuel, cylinder.**

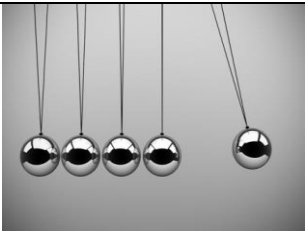




Activity 6: Abstract Vocabulary Development

Strategy: Group work, Using visual aids clues to generate abstract technical vocabulary; using Thesaurus dictionaries for research

Task: Work in groups of 3. Identify the **abstract concept(s)** that each picture makes reference to. Use a Thesaurus Dictionary to find synonyms for each concept. Match the part of speech with the right synonyms. (E.g. Concept **spark** (**noun**)->**synonym** (**noun**))

	
Concept: Synonyms:	Concept: Synonyms:
	
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Concept: Synonyms:	Concept: Synonyms:

Activity 7: Grammar extension- The Present Simple Negative and Interrogative- rule elicitation and application

Task: Identify the present forms of the verbs. Write each verb in its base form. Turn into the Present Simple negative and interrogative.



Text citation:	Base form of the verb	Turn into the negative	Turn into the interrogative
Rule S+ base form-s/-es (3 rd pers sg)		Rule S+ do/does (3 rd singular) +not+ base form	Rule
The piston moves downward.	move		Does the piston move downward?

Activity 8: Reading and Writing (summarising and creative writing)

Strategy: Reading for gist, summarisation, role-play

Task a): Read the information below and complete the summarisation chart:

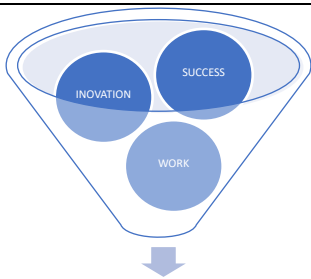
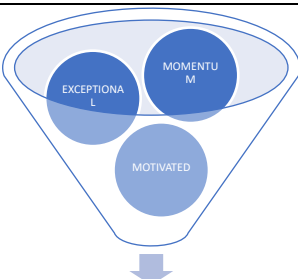
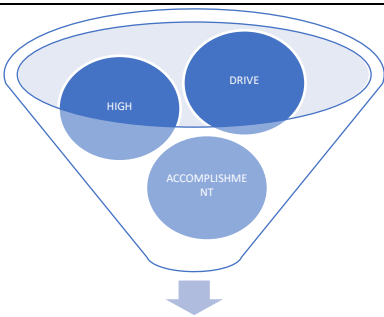
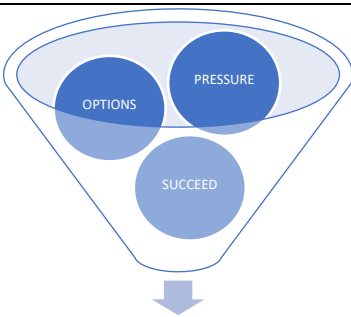
	Nikolaus August Otto (1832-1891), German engineer. Otto worked on several early internal combustion engines, improving the existing design of Etienne Lenoir. Otto's engine of 1862 was followed by the Otto-Langen engine of 1864 which won the Grand Prize at the 1867 Paris World Exhibition. The most successful engine was the Otto Silent Engine of 1876. Using in-cylinder compression and the principle of the Otto cycle, it forms the basis of modern car engines. This design went against what was considered prudent at the time. Most engineers believed that every stroke had to provide power, as in the steam engine. They thought Otto's design would be inefficient if only one stroke out of four provided power. But of greater importance to Otto was the concept of the stratified charge. While watching how smoke left a chimney densely, then spread out into the air, he realized that he could use the same principle within a cylinder to make an engine run cleaner and smoother. Although the four-stroke engine was an immediate success, the stratified-charge theory was disputed and discredited. In this, Otto was a century ahead of his time, for the Honda Motor Company of Japan would find great success with a stratified-charge engine in its automobiles beginning in the 1970s. The four-stroke engine became known as the Otto engine, and the concept was called the Otto cycle. It was another big success
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Summary:
Full Name:
Nationality:
Life:
Accomplishments:
Innovations:
Important role in historic events/periods:

	for the Deutz works, and once again the factory fell short of the capacity needed to meet demand. It was the peak of the worldwide Industrial Revolution, and Deutz was able to sell 8,300 Otto engines between 1876 and 1889, more than eleven a week on average.
Task b) Creative Writing (Role play): Imagine you are the famous engineer Nikolaus Otto. Write a diary page in the present tense describing a day in your life as a successful engineer. Refer to the specific challenges Otto might have faced as described in the reference above.	

Activity 9 Grammar extension
Strategy: Self-assessment of elicited rules
Task: Identify the actions expressed with past tenses and rewrite them in the historic present.
Example: In 1832, Nikolaus August Otto **is** born. He **works** on early internal combustion engines and **improves** engine design.

Activity 10: Creative writing: Motivational Mantras
Strategies: Expansion of abstract vocabulary into personally motivating statements.
Task: Use the words provided to Create statements that you can use as motivational mantras:

 Statement:	 Statement:
 Statement:	 Statement:



3. Conclusion

The endeavour of materials development allows teachers the opportunity to design inovative as well as motivating activities for their students. It also broadens students minds to becoming proactive and take responsibilioty for their learning while developing learning autonomy. Moreover, the use of creative course activities encourages students to participate more actively, increases general interaction, and retrives an enhanced sense of meaningfulness to both students and teachers. Designing customised course materials is also an excellent opportunity to foster thinking about the current teaching practices and the need for teacher-generated materials that cater for students' personal and professional needs, likes and expectations. In the context of a globalised world in which students can work anywhere in the world with English as their *lingua franca*, ESP teachers need to customise the learning experience so that it proves maximally beneficial to their students in whichever corner of the world they might choose to practise it professionally.

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Online resources

- <http://www.animatedengines.com/otto.html>
- <https://www.encyclopedia.com/history/encyclopedias-almanacs-transcripts-and-maps/nikolaus-otto>