ESP Vocabulary Teaching
at The Technical Secondary School of Civil Engineering

The Bachelor Thesis

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PROHLÁŠENÍ

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Souhlasím, aby práce byla uložena na Masarykově univerzitě v Brně v knihovně Pedagogické fakulty a zpřístupněna ke studijním účelům.

Ve Valašském Meziříčí dne 28.3.2006

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Poděkování
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INTRODUCTION

The aim of the thesis is to demonstrate how to introduce and teach English for Specific Purposes (ESP) vocabulary at the technical secondary school of civil engineering as a complement to ‘general’ English vocabulary. The first part of this thesis is a brief summary of general principles of vocabulary teaching, whereas, the second part points out the specific aspects in teaching ESP vocabulary that the teachers at technical secondary school of civil engineering should take into consideration. In the third practical part the examples of the lesson plans aimed at presenting and practising ESP vocabulary will be presented. Finally, the teaching of ELT and ESP vocabulary will be compared and the role of ESP vocabulary teaching in the English teaching at the technical secondary school of civil engineering will be discussed.

It was the rapid development of new technologies since the end of WW II that contributed to the creation of learners who learnt English not just for pleasure but for specific purposes. They needed to understand manuals, to sell products, or to read specialized textbooks. English became an international language of various industrial and trade fields. To meet the learner’s interests and requirements is why the ESP courses have developed as a branch of ELT in 1960s’. Therefore, there are two main types of ESP: English for Occupational Purposes (learners learn English for work) and English for Academic Purposes (learners learn English for study specialization). Both of these types can be distinguished in three main streams of ESP: English for Science and Technology (EST), English for Business and Economics (EBE), and English for Social Sciences (ESS). Within these streams many specialisms have developed e.g. English for Technicians.

The Czech Republic is a member of the European Union and so there are more opportunities for our students to make use of not just their ‘general’ English knowledge
but they also can study their specialized subjects in English or to perform qualified work abroad. Consequently, the students of civil engineering should also have certain knowledge of specialised English (ESP) vocabulary related to their field. Their knowledge of ESP vocabulary will help them to adapt easily to changing working environment and meet the requirements of the present day world.

“ESP must be seen as an approach not as a product. ESP, then, is an approach to language teaching in which all decisions as to content and method are based on the learner’s reason for learning” (Hutchinson and Waters 1987:19). The thesis will concentrate on the ESP vocabulary teaching since I find the knowledge of vocabulary of great importance and agree with Harmer’s statement: “If language structures make up the skeleton of language, then it is vocabulary that provides the vital organs and the flesh” (Harmer 1991:153).
1. ELT VOCABULARY TEACHING

As Harmer explains to us it is the word that must be used in connection with the language structure and grammar knowledge if we want to express meanings. However, vocabulary has not received the proper recognition for many years and was seen as something additional that just helped when learning structures. Now, acquisition and teaching of vocabulary is perceived as important as the acquisition and teaching of grammar (Harmer 1991:154).

1.1. Selecting vocabulary

The first step in teaching vocabulary is to determine what words to teach. They should be useful. However, what is useful in one situation may be quite useless in another. Therefore, the criteria given below depend on the particular teaching situation. Harmer (1991:154) provides the following general principles of vocabulary selection: the principle of frequency – words that are frequently used should be taught first, the principle of coverage – words that comprise more things and have no just one specific meaning are useful to be taught as first.

In addition to these principles Gairns and Redman (1986:59) provide also cultural factors and the principle of need and level. Learnability and teachability are other criteria we should take into consideration.

The information about the frequency of the word and coverage can be obtained from a language corpus. It is “a body of texts, selected according to explicit principles and organized to facilitate the discovery of facts about language” (Morgan and Rinvolucri 2004:65). There are many different kinds of text corpora e.g. British National Corpus, Brown Corpus or Scottish Corpus of Texts and Speech (Wikipedia, Text Corpus).
1.2. What needs to be taught about the vocabulary item

Once we have chosen what words to teach it is also necessary to know what to teach about each lexical item. There are many categories which can be taught to know the word properly; nevertheless, it is not necessary for learners to know all of them about all the words they have learnt.

According to Harmer (1991:158) to know the word involves knowing its:
- **Meaning** (its definition) - meanings in context, sense relations (synonyms, antonyms)
- **Usage** – collocations, idioms and metaphors, style and register
- **Form** – spelling and pronunciation, prefixes and suffixes, parts of speech
- **Grammar** – irregular forms, phrasal verbs, adverbs and adjectives

"The specificity of any individual’s knowledge about a word depends on the person and his or her motivation, desires, and needs for the word” (Hatch and Brown 1995:370).

1.3. Teaching vocabulary

Teaching vocabulary involves not only presentation of new words but also practice and consolidation.

1.3.1. Presentation techniques

The aim of presentation stage is to establish the basic meaning and the correct form of the word in the learner’s memory. There are many ways how to present the meaning of new items. “Most of these are means which tend to be associated with a more teacher-centred approach and consequently the items taught through these means are usually selected by the teacher rather than the learner” (Gairns and Redman 1986:73).

It is important to decide which form is suitable for the particular situation. It is often possible to use visual techniques such as objects and pictures.
Actions are better to be presented by gestures or by mime. There are also verbal techniques involving the use of synonyms, antonyms, and scales. With intermediate learner’s we can use concise definitions, explanation, examples of the type, and context. It is also possible to use translation, however, as Harmer (1991:162) suggests it is not always the best way since it is sometimes difficult to find the appropriate translation of the word and the process of translating does not encourage the manipulation with words which is very important for the consolidation stage. At intermediate levels we can use discovery techniques. They employ the learner’s previous knowledge and activate the work with words. Discovery techniques together with using dictionaries and asking others activities belong to more emphasised strategies that allow the learner more autonomy than the above mentioned techniques.

1.3.2. Practice and consolidation

The aim of this stage is to store the new word in the long-term memory and to turn passive vocabulary into active vocabulary. The practice should be carefully organized so that the load of new lexis would not discourage the learner. In addition, it is important to emphasize “that experiments on vocabulary seem to suggest that students remember best when they have actually done something with the words they are learning” (Harmer 1991:160).

Consequently, there are many techniques that involve more than just repeating vocabulary and that help to fix the new word in the learner’s memory. To name some of them: filling in gaps in sentences, matching words to other words, replacing words with their synonyms or antonyms, memory games, paraphrasing, using words in sentences or dialogues, role plays, discussions, picture stories, using prefixes and suffixes to build new words from given words etc.
2. **ESP VOCABULARY TEACHING**

In the previous chapter we described the situation in ELT vocabulary teaching. However, as it has been mentioned in the introduction the students at the technical secondary school of civil engineering should be trained in the ESP vocabulary, namely English for Technicians that is covered by English for Occupational Purposes.

According to Kennedy and Bolitho (1984:65) ESP vocabulary teaching has been also neglected as ELT vocabulary teaching. "Perhaps this is because of the difficulties involved in teaching vocabulary rather than merely testing it" (Kennedy and Bolitho 1984:65). Before the special aspects of teaching ESP vocabulary is discussed, we will first define what the ESP vocabulary is.

2.1. **What is ESP vocabulary**

In addition to `general` English vocabulary which include grammatical words, basic lexical words, auxiliaries, "special lexical items appear in most professions, and every field has special vocabulary to cover abstract concepts” (Hatch and Brown 1995:312). Kennedy and Bolitho (1984:56-58) provide the following specialist word categories for teaching purposes:

- **Technical Abbreviations** – e.g. kph, km, m³ they usually do not cause a problem, however, learners should listen to them and practise them in note-taking exercises.

- **Symbols and Formulae** – they are the subject matter of the learner’s speciality, and teacher may explain their function in the text, or if abbreviations are concerned, to demonstrate their transfer from the written form into the spoken version and vice versa.

- **Sub-technical vocabulary** – “words that have one or more `general` English meanings and which in technical contexts take on extended meanings (technical, or..."
specialized in some fashion)” (Trimble 1985:129) or as the Kennedy and Bolitho´s definition states “words which are not specific to a subject speciality but which occur regularly in scientific and technical texts – e.g. reflection, intense, accumulate, tendency, isolate and dense” (1984:57-58). According to Inmann sub-technical vocabulary seems to be involved in almost 80 per cent of scientific texts which is a quite high occurrence (qut. in Kennedy and Bolitho 1984:58). Furthermore, as Trimble (1985:129) emphasized the sub-technical lexis have their meanings in ´general´ English and take on specialized meanings within a technical context, which often represent a problem for both the learner and the teacher. Consequently, it is the sub-technical lexis that teacher should give high priority when teaching ESP vocabulary.

- **Highly technical vocabulary** – these terms are very specific and so may be less comprehensible. Every subject has its set of highly technical vocabulary and the gap between the generally known terms and those known just by real specialists is quite wide in some fields. Kennedy and Bolitho suggest that these terms “should arise, in context, in the specialist classes and are not normally the teacher’s responsibility” (1984:57).

On the other hand Kennedy and Bolitho admit that there may be situations when the learner has little knowledge both of his subject and English. Then the teacher should collaborate with subject teachers and get the basic knowledge of the subject (1984). This situation may often happen at the technical secondary school of civil engineering. Gairns and Redman (1986:59) point out that the discrepancy between the lexical level and learner’s general knowledge seems to be a problem for writers designing Technical English material for low level students. Then it is the motivation that must help the teacher reconcile the need for highly technical vocabulary and the learner’s inability to
manage basic grammatical structures.

2.2. Needs analysis

“All courses are based on a perceived need of some sort. It is often argued that the needs of the General English learner […] are not specifiable. In fact, there is always an identifiable need of some sort.” (Hutchinson and Waters, 1987) What I would like to emphasize here is Hutchinson and Water’s suggestion that “it is not so much the nature of the need which distinguishes the ESP from General course but rather the awareness of a need” to communicate in English (1987:53). Therefore “if we had to state in practical terms the irreducible minimum of an ESP approach to course design, it would be needs analysis” (Hutchinson and Waters 1987:54) which determines what skills are needed. When doing needs analysis we should distinguish between target needs and learning needs. According to Hutchinson and Waters (1987:55) target needs represent what the learner needs to do in the target situation and involve necessities, lacks and wants, whereas learning needs represent what the learner are expected to do in order to learn.

When we make decision about what ESP vocabulary to teach it is necessary to look at the above mentioned necessities, lacks and wants in more details. According to Hutchinson and Waters necessities can be understood as “what the learner needs to know in order to function in the target situation effectively,” which in terms of vocabulary means to know vocabulary which is “commonly used in the situation identified” (1987:55).

However, it is not enough to identify the necessities. It is also necessary to define, what the learner already knows. The learner’s lack is then the gap between what he knows and the target necessities. In terms of vocabulary it means to determine which of the
words that are commonly used in the identified situation are in the learners lexicon and which are necessary to be taught.

So far, the objective aspects of the target needs were taken into consideration, but also the learner has his own idea of his needs. Since the learner motivation is of high importance in both the learning and teaching process, the learner’s wants is the area that the teacher has also to pay attention to when teaching ESP vocabulary. In short “if the student does not perceive the vocabulary input to be useful it will be difficult to engage his interest and so effective learning of everything else will also be reduced” (Gairns and Redman 1986:60)

Altogether, as Kennedy and Bolitho (1984:22-23) point out that the more the teacher specifies the learner’s needs the more the learner’s expectations are increased and the teacher has something to live up to.

2.3. **Important aspects of ESP vocabulary teaching**

With respect to what was mentioned in section 1.2.”What needs to be taught about the vocabulary item” it is the meaning and form of the word that should be focused on in ESP vocabulary teaching. Consequently, Kennedy and Bolitho state that “the study of word formation and word relationships” (1984:59), or sense relations, constitutes the two important aspects of teaching ESP vocabulary.

2.3.1. **Word formation**


Many specialized lexical items either technical or sub-technical consist
of a root, a prefix and a suffix of Latin or Greek origin, such as *mono*, *hyper*, -logy, or -meter, -ate. Students “need to know how suffixes and prefixes work” (Harmer 1991:157). It is useful for a learner to guess the meaning of a word by using his knowledge of the meaning of a prefix or a suffix.

Kennedy and Bolitho (1984:61) emphasise the learner’s ability to identify the word class (a noun, a verb or a modifier) in the process of deducing the meaning a text. Suffixes often help to identify the grammatical function of a word and can carry a meaning which may help identify the word. In other words “there is a strong relationship between the root of the word and its suffix” (Kennedy and Bolitho 1984: 61), which could be used in many exercises in order to practise the identification of word classes.

Furthermore, there is technical vocabulary which is represented by noun compounds or “noun strings” (Trimble 1985:130). Noun compounds consist of two or more nouns and necessary adjectives (sometimes a verb or an adverb can be a part of noun strings). The whole nouns string “expresses a ‘single noun´ idea” and so long phrasing in texts can be avoided (Trimble 1985:130-131). However, as Trimble points out, noun compounding is not common to all languages. Thus, both understanding and producing noun compounds makes problems for many non-native students and to analyse them is useful to practise (1985:131,163). “Compounds are usually formed from prepositional phrases or relative clauses and many can be back-formed into one or the other of these” (Trimble1985:131). Trimble states basic rules how to understand and produce noun strings, and provides the following categories of noun compounds:

I. Simple :  metal shaft = a shaft made of metal

II. Complex:  liquid storage vessel = a vessel for storing liquid

III. More complex and IV. Very complex  (1985:131-135)
The last two categories present difficulties also for native speakers and so these “types of compounds are best left out of teaching plans, except, perhaps, for a few demonstrations of their difficulty” (Trimble 1985:163).

2.3.2. **Word relations**

Kennedy and Bolitho stress that “words do not exist in isolation” (1984:62) and so they should be taught in context. Furthermore, “the meaning of a word can only be understood and learnt in terms of relationship with other words in the language” (Gairns and Redman 1986:22). In order to practise these word relationships the learners should do activities involving synonyms (words with similar meaning), antonyms (words with opposite meaning), hyponyms (subordinate terms), collocations, phrasal verbs (a base verb and an adverbial particle) and exercises focused on some other types of relations (e.g. cause and effect). Contextual clues is an exercise designed to practise word relationship whereas “building up sets of words related to one another not only practises vocabulary skills but also develops the concept of classification” (Kennedy and Bolitho 1984:64).

Gairns and Redman point out that “the use of synonyms is often a quick and efficient way of explaining unknown words” (1986:23). However, it is important to emphasize that “words seldom have absolute synonyms” (Harmer 1991:156).

The ´oppositness´ may take the form of complementarity, converseness, gradable antonyms and multiple incompatibles (Gairns and Redman 1986:24-28).

“When two or more words frequently occur together they make what is known as a ´collocation´. Examples are *intense heat, dense system* (of roots), but *complex system* (of analysis), *to rule out a possibility*, etc.” (Kennedy and Bolitho 1984:65). To know collocations means to use a word naturally (Radman 2003:26)
To sum up, word relations not only help the learner of ESP vocabulary understand the meaning of a word and learn how to use it appropriately but they are also valuable means of presentation in ESP vocabulary teaching.

2.4. Presentation techniques

Bearing in mind the special aspects of ESP vocabulary teaching (See sub-sections 2.3.1. and 2.3.2.) “many of the techniques traditionally used in ELT work can be exploited in ESP vocabulary teaching especially at the early stages when both subject and linguistic content are at an elementary level” (Kennedy and Bolitho 1984:59). Thus presentation and practising can be realised by means of visual techniques and other techniques mentioned above in sub-section 1.3.1. Sometimes even translation will be useful and necessary.

However, at the intermediate and higher levels the learners should be given the definition, explanation or detailed description of the meaning of a new word. When presenting ESP vocabulary teachers should use the context, associated ideas or make use of synonyms or antonyms to explain the meaning of an unknown word.

In order not to discourage the learners the teacher’s presentation of ESP vocabulary should be interesting, not complicated, motivating, memorable and amusing.

2.5. Practice and consolidation techniques

As Kennedy and Bolitho assert the process of the introduction of the systems of vocabulary to the learners and teaching them to classify and guess the meaning of an unknown word is linked with “the study skill of noting and ordering vocabulary for future reference, and with decisions about the priorities of different items” (1984:65). It means that a student should be encouraged to think about whether the word is very
important for him and so an example in context would be useful or whether he just needs a short definition to recognize the word next time (Kennedy and Bolitho 1984:66).

Learners can organize new items in different ways. However, since “words are not learnt mechanically, as little packets of meaning, but associatively” (Morgan and Rinvolucri 2004:7) the most effective and favourite strategies in ESP vocabulary teaching are diagrams, mind maps, word trees, grouping words by activity or process, by categories (building materials: stone, sand, wood), by word families (to build, builder, building), by topic (at a building site), synonyms or antonyms. “As organization is the key to memory, this is an important part of teaching your students how to be efficient learners” (Gairns and Redman 1986:100)

ESP vocabulary can be practised by means of similar techniques used for practising ELT vocabulary (See sub-section 1.3.2). Thus, the discussions and simulations focused on working environment and technical issues (dimensions of a product, materials and their properties, processes and technologies etc.) requiring the learners´ knowledge of ESP vocabulary are useful.

Written tasks involve writing reports and instructions for use, giving summaries from technical articles, describing processes, filling in diagrams, describing graphs and tables, or classifying items into lists etc. In addition, these days many students participate in various competitions where they introduce their projects and so they may try to develop a brief English summary of their presentations and their teacher should encourage them.
2.6. **Dictionaries**

Dictionaries are the best resources where new words and new uses for old words can be encountered. Whereas the students at elementary level prefer using a good bilingual dictionary, the students at the intermediate level should be encouraged to use a monolingual dictionary since it is the best source of information about meaning, spelling, pronunciation, word formation, grammar, and idiomatic use of a word (Harmer 1991:175). As to the ESP vocabulary teaching special attention should be paid to the sub-technical vocabulary (See section 2.1) when working with both monolingual and bilingual dictionaries. When students discover that the meanings of some familiar words may be very different and strange, they will understand that it is worth to buy a good dictionary in their subject-matter (Trimble 1985:129).
3. **PRACTICAL PART**

In this part of the thesis I am going to provide examples of lesson plans reflecting the theoretical information about the ESP vocabulary teaching i.e. presentation and practising. The lesson plans are designed for the pre-intermediate and students of the technical secondary school of civil engineering.

3.1. **Class Profile**

**Lesson Plan I**

The group of 14 students aged 16 at the pre-intermediate level attending the first grade of the technical secondary school of civil engineering, the branch of building construction. They timetabled for 3x45minutes of ESP English per month. The classes of ESP complement the General English classes. As the students of the first grade they have basic knowledge of their specialized subjects.

*Needs*

They need to obtain an introduction to basic ESP. They require understanding written technical texts and spoken language to be able to cope with everyday situations in the job of a building engineer. They also require practice in speaking and writing – reports or notes. They need the technical foundation for their further ESP studies both at the secondary school and the university.

*Problems*

- they are a mixed ability group, some students’ standard of English is quite low (they have a basic knowledge of ‘common-core’ grammar and vocabulary
- they have tendency to read word by word
they are not experienced in their subject disciplines

- it is difficult to make them speak

**Lesson Plan II and III**

The group of 14 students aged 17 at the pre-intermediate level attending the second grade of the technical secondary school of civil engineering, the branch of building construction. They timetabled for 3x45 minutes of ESP English per month. The classes of ESP complement the General English classes. As the students of the first second grade their knowledge of the specialized subjects has considerably increased.

**Needs**

They need to extend their knowledge of basic ESP. They require understanding written technical texts and spoken language to be able to cope with everyday situations in the job of a building engineer. They also require practice in speaking and writing – reports or notes. They also need to be able to present their opinions. They need the technical foundation for their further ESP studies both at the secondary school and the university.

**Problems**

- they are a mixed ability group
- it is difficult to make them speak
- the motivation is sometimes lowered by the increased requirements in their specialized subjects
- some of them regard English as less ‘serious’ than the main specialized subjects
Lesson Plan I

Topic: Measurement, size and dimension

Level: Pre-intermediate

Class: group of 14 technically minded students aged 16

Length of lesson: 45 minutes

Context: Description of objects (U3 Evans Virginia and Dooley Jenny, Enterprise2)

Materials: White Lindsay, Engineering U23, p26 and student’s worksheet (Appendix No.1); Redman Stuart, English Vocabulary in Use U95 (p192), 3 tape measures, a blackboard, a piece of chalk, bilingual (e.g., English-Czech, Czech-English Dictionary of Building and Civil Engineering) and monolingual dictionaries (e.g. Oxford Wordpower Dictionary)

Language: the present simple

Skills: reading, writing, speaking

Functions: What’s the length/ width/ of the room? Or How long/wide is the room?

Main Aims

a) to introduce the following vocabulary: area, capacity, distance, height, liquid (n), length, speed, weight, width, tape measure

b) to introduce a set of vocabulary connected with giving dimensions of objects in relationship with other words and draw their attention to the word formation of the new words

c) to practise the pronunciation of the abbreviations of the units

d) to give the students opportunity to practise the new vocabulary in both writing and speaking activities.
Subsidiary Aims

a) to build students’ confidence in dealing with dimensions and taking measurements

Objective

At the end of the lesson students will understand and talk about dimensions of various objects and will be able to label the picture with dimensions.

Timetable Fit

The students are studying Enterprise 2 course book and in the unit 3 they deal with adjectives and describe shapes and properties of objects, which I find a useful occasion for teaching ESP vocabulary of dimensions.

Rationale

As students of technical secondary school of civil engineering they are supposed to deal with dimensions and should be able to talk about them as well as to understand when someone is talking about them.

Assumptions

Students like changes and as they are technically minded they should be motivated by the topic which is familiar to them and of great importance in civil engineering. The words seem to be easy but students often confuse them. Their confidence will be boosted when they are able to use them appropriately.

The abbreviations of units are well-known and so they are not supposed to cause problems, however, it is the pronunciation that the students should concentrate on,
especially the word stress of the new words.

Problems and Solutions

Problem - students may not fully understand the explanations of words
Solution - provide students with Czech translations
Problem - students may have problems with the dialogue
Solution - activity “listen and draw” the object is reasonable substitution

Procedure

Stage 1: Warmer Time: 5 minutes Interaction: T-Ss
Aim: to practise the pronunciation of the abbreviations of units, to get students thinking about the topic and vocabulary they already know in the area of measurements
Procedure: Ask the students to match the abbreviations with the full forms. The students read the full forms chorally to practise pronunciation; focus on the word stress.

Stage 2: Introduce vocabulary Time: 10 minutes Interaction: T-Ss in pairs
Aim: to introduce the new ESP vocabulary through simple explanations
Procedure: The students will do the matching discovery activity. Give the students the jumbled explanations of the words and let the students in pairs match the definitions with the vocabulary. The students have dictionaries at their disposal. Check the students’ answers and practise pronunciation. Focus on word stress. Mark the stress on the board.
Materials: Student’s Worksheet, a piece of chalk, a blackboard
Stage 3: **Reading**  
**Time:** 10 minutes  
**Interaction:** T-Ss  
**Aim:** to introduce the set of new vocabulary in context  
**Procedure:** The students read the article “Did you know?” and fill the gaps in the text with the appropriate word from the box. Draw the students’ attention to the decimal point and explain how to express the size of the area. Ask: “What is the most interesting or surprising information for you? Why?” The students read the article loudly.  
**Materials:** Engineering, exercise 4

Stage 4: **Practice - writing**  
**Time:** 10 minutes  
**Interaction:** individual S  
**Aim:** to raise the students’ awareness of the meaning and the form of the new words, practising of taking notes about measurements  
**Procedure:**  
- Ss label the pictures with appropriate words (ex.4, pictures 1 and 2)  
- Ss match the adjectives and antonyms to the new words (ex.2)  
- Ss complete the sentences (ex.3)  
- Ss listen and write the measurements as numbers and abbr. (ex.6)  
  Check the students’ answers.  
**Materials:** Student’s Worksheet (ex. 2,3,4-pictures 1,2), Engineering, exercise 6

Stage 5: **Practice – speaking**  
**Time:** 10 minutes  
**Interaction:** S-S  
**Aim:** to practise and personalise the new vocabulary in speaking  
**Procedure:** The students invent mini-dialogues (e.g. fixing a house) over the picture of a house (ex.4, picture 3). They ask and answer questions about the dimensions of the house. At the end of the lesson the students choose two from the questions in the exercise 7 and answer them in pairs. Monitor for pronunciation and language functions.
Materials: Students´ Worksheet (ex.4, picture 3), Engineering, ex.7, tape measures

Stage 6: Homework
Aim: To give the students the chance to consolidate the new ESP vocabulary
Procedure: Describe 5 objects from your home using the new vocabulary in writing.

Reflection: Students were motivated by this topic since they had never been taught about measurements in detail. Most of them were interested in reading activity and follow-up discussion. They managed the challenging work with definitions without any serious problems. They dealt with sub-technical words and so they had to be careful about the meaning of the new vocabulary. It was the dictation of measurements that seemed to be a bit complicated. Only four students completed 70% of the exercise. They need more listening practice. The speaking activity was well done. All the students were involved and used the new vocabulary appropriately. At first the stress in the words “capacity, kilometre, kilogram, centimetre” caused a problem but at the end of the lesson students pronounced the vocabulary correctly. Students seemed to have learnt the vocabulary; they understood it and could use it actively, which I tested in the exercise 3 of the worksheet. Seven students completed 90% , five students completed 80% and two students completed 70% of the exercise. The lesson was positively accepted.

3.2. Lesson Plan II

Topic: Computers and Technical drawings
Level: Pre-intermediate
Class: group of 14 technically minded students aged 17
Length of lesson: 45 minutes
Context: Surf the Net (U15 Evans Virginia and Dooley Jenny, Enterprise2)

Materials: White Lindsay, Engineering U 7, p8 and student’s worksheet (Appendix No.2); blackboard, a white piece of chalk, bilingual and monolingual dictionaries

Language: passive voice, comparatives and superlatives

Skills: reading, writing, speaking,

Functions: Asking for /Giving opinions : I think….; In my opinion…

What do you think of /about….? What’s your opinion of…? 

Agreeing and disagreeing: I agree. You are quite right. Definitely.

You are right but…

Oh, I don’t think so. Well, it depends.

No, I’m afraid I can’t agree with you.

Main Aims

a) to introduce the following vocabulary: 'accurate, 'architect, con'sistent, 'drawing, 'hand-drawn, 'image, to re'cycle, sy'mmetrical, 'viewer

b) to encourage students to get the meaning of the new vocabulary through the context

c) to practise the pronunciation and word stress of the new vocabulary

d) to practise the new vocabulary at the sentence level

Subsidiary Aims

a) to build students confidence when discussing opinions

b) to encourage students to use prefixes

c) to explain the understanding and production of noun compounds
Objective

At the end of the lesson students will be able to use the new vocabulary in both speaking and writing. They will be able to talk and write about properties of computer assisted designs.

Timetable Fit

Students have just finished U 15, Enterprise 2 coursebook, which was focused on the role of the Internet and computers in our life. Therefore I find it useful to introduce the vocabulary that refers to the use of computers in technical drawing and designing.

Rationale

Students are supposed to use computers and especially CAD system.

Assumptions

Students will be interested in the topic as some of them already use computers for designing and creating technical drawings. They will be motivated to learn the new vocabulary as a lot of information about similar software is in English. They will also appreciate the explanation of how noun compounds are formed since these expressions often occur in technical texts.

Problems and Solutions

Problem: Stage 6- Students may have problems with the list of advantages or disadvantages of hand-drawn designs.

Solution: Brainstorm the ideas first.
Procedure

**Stage 1: Warmer**  
*Time: 5 minutes*  
*Interaction: T – Ss*

**Aim:** to elicit the topic

**Procedure:** Ask the students what the title means. If necessary, explain the word “worth”. Brainstorm situations in which a picture is more useful. (Possible answers: advertisements, description of a process or an object, comparison of various values). Brainstorm types of images for each situation (photographs, diagrams, designs, graphs).

**Materials:** a piece of chalk, a blackboard

**Stage 2: Reading**  
*Time: 10 minutes*  
*Interaction: T - S*

**Aim:** to introduce new vocabulary

**Procedure:** ex.3 – Discuss the difference between 2D and 3D pictures. What dimensions can be identified with 2D and 3D pictures?

ex.4 – Draw the students’ attention to the pictures and let them predict the topic. Students read the article “A picture is worth a thousand words” and complete the comprehension task - ex.5. Check the answers. Teach a compound “a computer assisted design”, explain its formation (= a design created with the assistance of a computer).

**Materials:** Engineering ex.3, 4, 5

**Stage 3: Meaning**  
*Time: 10 minutes*  
*Interaction: S - S*

**Aim:** to encourage students to get the meaning of the new vocabulary from the context

**Procedure:** Students will complete ex.9. Check the answers. “Is there a compound?”

**Materials:** Engineering ex.9
Stage 4: Pronunciation  Time: 5 minutes  Interaction: T – Ss
Aim: to practise the pronunciation of the new vocabulary
Procedure: Put the words from ex.9 on the board and read them, mark the stress. Let
the students repeat the pronunciation of the words.
Materials: Engineering ex.9, a piece of chalk, a blackboard

Stage 5: Practice- writing  Time: 7 minutes  Interaction: individual S
Aim: to build the students’ confidence when using the new words
Procedure: ex.6 - match the benefits of CAD with their explanation
Worksheet – rearrange the letters; odd one out, fill a gap - prefixes. Check the answers.
Materials: Engineering ex.6, student’s worksheet

Stage 6: Practice – speaking  Time: 7 minutes  Interaction: S – S
Aim: to encourage students to use the new vocabulary at the sentence level and
build their confidence to present their opinions
Procedure: ex.8 – Students will make a list of benefits of using a computer in
technical drawing; they will compare hand-drawn and computer assisted designs, agree/
disagree with the partner, and give reasons. Monitor the use of vocabulary and language
functions. Give a feedback.
Materials: Engineering ex.8

Stage 7: Homework
Aim: To consolidate the new vocabulary.
Procedure: Write sentences (different from those in the text) using the new
vocabulary. Think about the meaning of the following compounds: hand-held drill, computer language, computer science.

**Reflection:** The topic was interesting and so the students were motivated to learn the vocabulary. Though the students are at pre-intermediate level they appreciated the first explanation of understanding the noun compounds since they have already encountered them in the technical texts. The activity “rearrange the letters to form a word” was amusing for the students and they found it useful for the consolidation of the new vocabulary. Four students completed 90% of the exercise, eight students completed 75% and two students completed 60% of the exercise. There was a lively conversation at the end of the lesson about the use of computers in designing and all the students, even those who usually have problems to involve into discussion, contributed to the interesting discussion.

### 3.3. Lesson Plan III

**Topic:** Describing Location and Giving Instructions  
**Level:** Pre-intermediate  
**Class:** group of 14 technically minded students aged 17  
**Length of lesson:** 45 minutes  
**Context:** Describing Location (U12 Evans Virginia and Dooley Jenny, *Enterprise2*)

**Materials:** White Lindsay, *Engineering* U 22, p25 and student’s worksheet (Appendix No.3); a blackboard, a piece of chalk, bilingual and monolingual dictionaries, 15 pcs of A4 paper, 14 pcs of A5 paper  
**Language:** Imperative
Skills: reading, speaking, writing

Functions: Giving instructions, description of the location:

Fold…. Draw…. Lift….Where is the big square? It is at the top.

Main Aims

a) to introduce the following vocabulary: 'bottom, 'centre, 'corner, di’agonal (adj.), 'fold (v), (n), 'horizontal (adj.), 'point, 'side, 'top, 'vertical (adj.)

b) to encourage students to get the meaning from a picture – to provide visual way of presenting and learning new vocabulary

c) to practise the pronunciation of the new vocabulary

d) to give students opportunity to use the vocabulary in connection with practical work - to provide kinaesthetic way of learning

Subsidiary Aims

a) to encourage students to work with the dictionary

b) to review the use of imperative

Objective

At the end of the lesson students will be able to describe the location of objects in the picture.

Timetable Fit

Students have just finished U12 Enterprise (the description of the location of towns).

Rationale

Students of the technical secondary school of civil engineering are expected to be able
to describe the location of various features on their technical drawings. They are also supposed to understand and give clear instructions relating to the description of a procedure.

**Assumptions**

Students will be interested in the vocabulary connected with the description of technical drawings and the description of a manual. They should be motivated by the competition during which they will use the new vocabulary. They would appreciate the practical task at the end of the lesson.

**Problems and Solutions**

Problem: Stage 6 – The activity may take a long time.

Solution: Arrange competition, give time limit and clear criteria for the winner.

**Procedure**

*Stage 1: Warmer Time: 5 minutes Interaction: T – S*

Aim: to review the vocabulary of shapes

Procedure: Draw students’ attention to the picture with various shapes. Let them describe the shapes and how many of them are in the picture. Ask what information they need to instruct someone to draw the objects in the picture? (size, location)

Materials: Student’s worksheet, ex.1

*Stage 2: Introduce vocabulary Time: 5 minutes Interaction: S – S*

Aim: to introduce new ESP vocabulary

Procedure: ex. 2 - Students will guess the meaning of the new vocabulary and label
the picture. They will check the meaning in dictionaries. Draw the picture on the board. Get the students to label the picture on the board.

Materials: Engineering ex.2, dictionaries, a blackboard, a piece of chalk

Stage 3: Pronunciation Time: 5 minutes Interaction: T – S

Aim: to practise pronunciation of the new vocabulary

Procedure: Read the words on the board and mark the stress. Students will repeat the pronunciation individually and chorally.

Materials: Engineering ex.2, a piece of chalk, a blackboard

Stage 4: Practice - speaking Time: 5 minutes Interaction: S– S

Aim: to give students practice in using of the new vocabulary when describing the location of objects in the picture

Procedure: Students will ask questions about the position of the shapes in the picture. They will use prepositional phrases given in the worksheet. Pre-teach middle. Monitor for pronunciation and language functions. Give a feedback.

Materials: Student’s Worksheet, ex.2

Stage 5: Reading Time: 8 minutes Interaction: indiv. S

Aim: to encourage students to understand the vocabulary in context

Procedure: Pre-teach edge- (Keep away from the edge of the cliff – you might fall) . Draw students’ attention to the title and the diagrams. Ask what origami is (the Japanese art of folding paper to make attractive objects). Get the students to predict what the text is about. Ex. 3 – Students will read the text and match the diagrams. Check the students’ answers. Ask what is essential for origami (to know where to fold the paper). Draw
attention to the word class of the lexical item “fold” – verb, noun.

Materials: Engineering, ex.3

Stage 6: Practice-speaking Time: 8 minutes Interaction: S-S
Aim: to give opportunity to practise the new vocabulary on a sentence level
Procedure: Students in pairs make a paper plane from ex.3. One student will fold the paper and the other will give instructions. After 5 steps they swap the roles. Monitor for the pronunciation and language. Give a feedback.
Materials: Engineering, ex.3

Stage 7: Practice – writing Time: 9 minutes Interaction: S - S
Aim: to give students the opportunity to practise the description of location
Procedure: A student will describe the location of 5 objects in the plan of his/her own room in writing and draw the plan. The partner will receive just the description and will draw the plan on the A5 piece of paper according to the description. Students compare their plans. Check the plans. Give feedback.
Materials: 14pcs of A5 paper

Stage 8: Homework
Aim: to give students opportunity to consolidate the new vocabulary
Procedure: Students will receive the Origami diagrams and will complete the instructions.
Reflection: The lesson was mostly focused on the speaking skill. The pronunciation of the longer vocabulary “diagonal, horizontal” needed more practice. The lexical set was not difficult to learn but some students had problems with understanding the vocabulary while producing the paper object. Nevertheless, the production of the paper object was really useful since it forced them to talk and they had to understand the meaning of the vocabulary if they wanted to complete the object. All the students were involved. They used the language in communicative way during most of the lesson. They practised the vocabulary and a relaxing atmosphere was created. As to the writing activity there were ten students whose pictures agreed which means that the students were able to both to describe the location of an object in the picture and to understand the description. Three students made mistakes in the description of the location and one student misunderstood the description.
CONCLUSION

The bachelor thesis was written to demonstrate the way of teaching ESP vocabulary at the technical secondary school of civil engineering.

Compared with the ELT vocabulary teaching methods there are not significant differences in teaching ESP vocabulary. However, there are two specific aspects, namely word formation and word relationships, which are necessary to be focused on when teaching ESP vocabulary. Further, it is sub-technical vocabulary that is important to concentrate on in ESP vocabulary teaching because of its different meanings in ‘general’ English and in technical context. The lesson plans in the practical part present examples of how to present and practice ESP vocabulary with the above mentioned aspects being involved.

Finally, with respect to the development of the science and the increasing demand of building engineers who can make use of their specialized knowledge both at home and abroad, ESP lessons should be incorporated into the English teaching at the technical secondary school of civil engineering so that the students will obtain the base for their professional life or further university studies.
RÉSUMÉ

The bachelor thesis “ESP Vocabulary Teaching at the Technical Secondary School of Civil Engineering” deals with techniques and special aspects of ESP vocabulary teaching. The term ESP vocabulary is specified and the presentation, practice and consolidation techniques in teaching ESP vocabulary are discussed after giving a brief insight into techniques applied to ELT vocabulary teaching. The issue of dictionaries used with ESP vocabulary is also discussed. In practical part the three examples of lesson plans designed for the teachers of the pre-intermediate students attending the technical secondary school of civil engineering are presented. The lesson plans take into account the special aspects of ESP vocabulary teaching and demonstrate how to teach it in English lessons in an effective and funny way.

RESUMÉ

Bakalářská práce “Výuka odborné slovní zásoby na střední průmyslové škole stavební” se zabývá metodami a zvláštními aspekty výuky odborné slovní zásoby v anglickém jazyce. Práce specifikuje termín “odborná slovní zásoba” a po stručném přehledu metod používaných při výuce všeobecné slovní zásoby rozebírá metody prezentace, procvičování a upevnění používané při výuce odborné slovní zásoby. V práci je pojednáno také o slovnících používaných v souvislosti s odbornou slovní zásobou. Praktická část obsahuje tři příklady příprav na vyučovací jednotku, které jsou určeny učitelům anglického jazyka mírně pokročilých studentů střední průmyslové školy stavební. Přípravy zohledňují zvláštnosti výuky odborné slovní zásoby a demonstrují, jak učit odbornou slovní zásobu v hodinách anglického jazyka efektivně a zábavnou formou.
WORKS CITED


http://www.origami.cz/Bin/poharek.gif


Text Corpus. Wikipedia, the free encyclopedia. 8 March 2006


LIST OF APPENDICES

Appendix No.1: Student’s Worksheet - Lesson Plan I, Engineering U23

Appendix No.2: Student’s Worksheet - Lesson Plan II, Engineering U 7

Appendix No.3: Student’s Worksheet - Lesson Plan III, Engineering U 22
Student’s Worksheet – Lesson Plan I

1) Match the explanation with the word. Use the dictionary.

area – / ˈeərɪə / how heavy something is when you measure it
liquid (n) – /ˈlɪkwɪd / the measurement of how long s.th. is from one end to the other
distance – /ˈdɪstəns / the rate at which something moves or travels
length – /ˈlɛŋθ / the amount of space that a flat surface or shape covers
weight – /ˈweɪt / the measurement of how wide something is from one side to the other
height – /ˈhɛt / a substance that is not a solid or a gas, for example water or milk
width – /ˈwɪdθ / how tall someone or something is
capacity – /ˌkæpəˈsɪtɪ / the amount of space between two places or things
speed – /spiːd / the amount of space a container, room has to hold things or people

(After: Longman Dictionary of Contemporary English)

2) Match the nouns with adjectives and their opposites


<table>
<thead>
<tr>
<th>NOUN</th>
<th>ADJECTIVE</th>
<th>OPPOSITE of the adjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Width</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Height</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Speed</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Weight</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

3) Choose the correct form of the word in brackets

a) How ............... is the corridor? (wide)
b) What’s the ............... window? (wide)
c) The ............... of the door is 197cm. (high)
d) Can you just measure the ............... of the wall? (high)
e) How ............... is the corridor? (long)
f) I think we need to measure ............... of the corridor first. (long)

Choose the correct word and complete the sentences

liquid, capacity, distance, area

Calculate the ............... of the walls and ceiling before you buy the paint.
The fuel tank has a ............... of 40 litres.
She screamed as the boiling ............... burnt her skin.
Measure the ............... between the window and the door.
4) Label the pictures
area – distance – width – height – length – capacity

Picture 1: A brick
(write the words in shapes and sizes of the letters to bring out the meaning)

(After: Václav Hájek, Pozemní staviteľství)

Picture 2: A bathroom

Picture 3: A house
23 How do you say ...?

Before you start
1 What do these abbreviations stand for? Match the abbreviations in the box with the full forms (1–9) below.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>cm</td>
<td>centimetre</td>
</tr>
<tr>
<td>kg</td>
<td>kilogram</td>
</tr>
<tr>
<td>l</td>
<td>litre</td>
</tr>
<tr>
<td>ml</td>
<td>millilitre</td>
</tr>
<tr>
<td>g</td>
<td>gram</td>
</tr>
<tr>
<td>m</td>
<td>metre</td>
</tr>
<tr>
<td>ml</td>
<td>millilitre</td>
</tr>
<tr>
<td>s</td>
<td>second</td>
</tr>
<tr>
<td>cm³</td>
<td>cubic centimetre</td>
</tr>
<tr>
<td>kg²</td>
<td>square kilogram</td>
</tr>
</tbody>
</table>

2 Are the words the same in your language? Why is it useful to have standard international systems?

3 How do you pronounce the words in your language? Look at the pronunciation of the words in English and say them.

Vocabulary
4 What are the measurements in Exercise 1 used for? Complete the sentences (1–8) below by putting one word in each space. Use the words in the box.

<table>
<thead>
<tr>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
<th>Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>area</td>
<td>capacity</td>
<td>distance</td>
<td>length</td>
<td>liquid (quantity)</td>
<td>speed</td>
<td>weight</td>
<td>height</td>
<td></td>
</tr>
</tbody>
</table>

5 Rewrite the measurements in Exercise 4 as numbers and abbreviations. Use the numbers and abbreviations in the box.

- 516m
- 110kph
- 3000cc (or cm³)
- 200km
- 1.5l
- 593km²
- 2000kg

6 Rewrite the measurements (1–8) below as numbers and abbreviations.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 km</td>
<td>kilometre</td>
<td></td>
</tr>
<tr>
<td>2 m</td>
<td>metre</td>
<td></td>
</tr>
<tr>
<td>3 l</td>
<td>litre</td>
<td></td>
</tr>
<tr>
<td>4 m³</td>
<td>cubic metre</td>
<td></td>
</tr>
<tr>
<td>5 kg</td>
<td>kilogram</td>
<td></td>
</tr>
<tr>
<td>6 km²</td>
<td>square km</td>
<td></td>
</tr>
<tr>
<td>7 g</td>
<td>gram</td>
<td></td>
</tr>
<tr>
<td>8 cm³</td>
<td>cubic cm</td>
<td></td>
</tr>
</tbody>
</table>

Writing and Speaking
7 Write true answers to these questions. Use words, not numbers.

1 What are your classroom?
2 How tall are you?
3 What is the speed limit on the roads in your town?
4 How fast can you run?
5 What is the area of your desk?
6 How much does your school bag weigh?
7 How much did you weigh when you were born?
8 How far is it from your town to the capital city?

8 Choose six answers from Exercise 7 and read them to your partner. Can he/she identify the question?

Get real
Find out about the history of measurement. For example, what are the connections between human bodies and measurement? Which countries developed the earliest standard systems? Why did they need them?
Student’s Worksheet – Lesson Plan II

1) Rearrange the letters to form a word used in the text
a) Unlike the computer assisted designs the ..................ANHD-WNDR images are slow and expensive to make.
b) If computer is used for technical drawing, the drawings can be ..................CREYLECED and used again.
c) Moreover, you can make ..................MYSTRIMECAL images of components when you draw a half of the component and make the mirror image.
d) Most of ..................ECTITCHRAUS use the CAD system when drawing designs.
e) When they use the CAD system, they can make ..................URACTEAC (correct and true) and ..................CONTENTSIS (the parts are matching) drawings.
f) The CAD system is also attractive for the ..................EWIVER (someone who is looking at sth.).

2) Odd one out – decide which of the words does not belong to the group and why
a) viewer, feature, designer
b) accurate, hand-drawn, consistent
c) save, recycle, image

3) Prefixes
Study the meaning of prefixes and complete the words
a- not (or without)
in- lack of something
re- again; back to the former state

Add the correct prefix and complete the words:
A pattern: the two sides of which are different in shape - ............symmetrical pattern
Drawings without all necessary features - ............complete drawings
To build the house again after it was damaged - to ............construct the house
Two images are not the same - ............consistent images

(Adapted from Kennedy and Bolitho, English for Specific Purposes)
A picture is worth a thousand words

Before you start
1 What does the title of this unit mean? Is there a similar expression in your language?
2 Think of situations in engineering where a picture is more useful than words. Discuss your ideas with the rest of the class.

Reading
3 Read the sentences below. What is the difference between 2D and 3D?
   • An image on paper, for example a diagram or photograph, is two dimensional (2D).
   • A model or statue is three dimensional (3D).
4 First, look at the pictures. What do you think this text will be about? Then read the text and check.

A In the past, technical drawings for industry and architecture were drawn by hand, i.e. people worked at drawing boards with drawing equipment. These hand-drawn diagrams provided clear technical information but were slow and expensive to make. Nowadays, working drawings are done on computers, which is much quicker.

B Computers can also:
1 save, change, and recycle the drawings
2 make 3D images
3 make drawings bigger or smaller
4 keep an electronic library of standard parts
5 make symmetrical images of components
6 make accurate and consistent drawings

C A good way to explain the advantages is to think about architectural drawing. Features such as windows and doors can be moved until the architect likes the building. Images of the rooms are created in 3D so the viewer can ‘walk’ through the rooms. Designers can also experiment with different arrangements of furniture and colours.

5 Read the text and choose the correct answers to questions 1-4 below.
1 What is the text about?
   a Computer assisted design
   b Working with computers
2 What is paragraph A about?
   a The history and future of CAD systems
   b The connection between technical drawing and CAD
3 What is paragraph B a list of?
   a The problems of using computers in design
   b The advantages of using computers in design
4 What does Paragraph C describe?
   a How CAD is used in designing machines
   b How CAD is used in designing homes

6 Read paragraph B again. Match each point (1-6) in the text with a benefit from the list (a-d) below.
   a You can draw 50%, then make a mirror image.
   b You don’t waste time drawing things again and again.
   c You make fewer mistakes.
   d You see the finished shape in 3D.

7 Explain, in your own language, why the word ‘walk’ is in inverted commas in paragraph C.

Speaking
8 Work with a partner. Decide which is the biggest benefit of using a computer for technical drawing. Can you add other benefits to the list? Compare your ideas with the rest of the class.

Vocabulary
9 Complete the definitions (1-8) below with the highlighted words in the text.
   1 ________ means having two halves the same shape and size.
   2 ________ means made by a person.
   3 ________ means to use something again.
   4 A ________ is a person looking at something.
   5 ________ means correct in every detail, with no mistakes.
   6 ________ are pictures or drawings.
   7 An ________ is a person who designs buildings.
   8 ________ means always the same.

Get real
Find out about other images made by computers. For example, how are computer images used on television and in films?
1) What shapes can you find in the picture?

2) Pair work

S1: Ask your partner about the location of a small / big shape in the picture.

S2: Say where it is.

Use these expressions:
At the top \hspace{1cm} on the left \hspace{1cm} in the middle
At the bottom \hspace{1cm} on the right \hspace{1cm} in the corner

(Adapted from: Dora Slabá, Professional English)

(1) (2) (3)

(4) (5) (6)

(Source: www.origami.cz)

Complete the instructions:

Fold (n), horizontal, point, fold (v), top, corners, diagonal

1) Make a diagonal ........

2) ........ the top two ............... to the diagonal line to make another diagonal line and open it out.

3) Lift the right point, make a .............. fold and bring the point to the middle of the opposite edge.

4) Do the same with the left ........

5) Lift the .......... points and make a .............. fold.
Before you start
1 What does this Chinese proverb about learning mean? Do you agree with it? How do you like to learn?
I hear and I forget.
I see and I remember.
I do and I understand.

Vocabulary
2 Match the words in the box with labels (a–j) on the diagrams below.

bottom ■ centre ■ corner ■ diagonal ■ fold ■ horizontal ■ point ■ side ■ top ■ vertical

Reading
3 Read the origami instructions (1–9) and match them with the diagrams (a–i).
4 First, follow the instructions and make a paper plane. Then throw it in the air at an angle of 45 degrees. Did it fly?

Writing
5 Work out how to make a simple paper object. Use your own idea or choose one of these:
a cube ■ an envelope ■ a boat

Make the object, write draft instructions, and draw rough diagrams for each step.
Ask your partner to read your draft and follow the diagrams.
If they can’t make the object, improve your instructions and diagrams.
Ask another person to try to make the object.

Origami: A paper plane
1 Take a piece of A4 paper (210x297mm).
2 Make a vertical fold down the centre and open it out.
3 Fold the top two corners to the centre line to form two diagonal lines.
4 Fold again so the diagonal lines meet on the centre line.
5 Fold a horizontal line across the middle and bring the point to the middle of the bottom edge.
6 Fold two diagonal lines so the two short edges at the top meet on the centre fold.
7 Lift the point and make a horizontal fold. The nose of the plane meets the point at the top.
8 Fold along the centre fold.
9 Make two folds as shown to make the wings.

Get real
Find examples of different types of instructions, for example furniture assembly instructions with diagrams, or cooking recipes. Which style do you find easiest to understand?