How to work with the Extra Material

TOOLS FOR SKILLS
INTEGRATED LEARNING OF ENGLISH AND FORESTRY
TEACHER TRAINING
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The Extra Material of each Lesson includes the Case Studies and the Glossary Practice sections.

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CASE STUDIES

Case Studies are considered educational story-telling in a classroom environment.

The origin of educational story-telling can be traced to early childhood education for language development. Tribal storytelling served the purpose for securing essential resources, such as food, shelter and water, and passing on customs, traditions and history from generation to generation.

The scope of Case Studies is to bridge the gap between theory and practice. Consequently, FWOTT Case Studies are based on "real-life" events that occurred in various forest harvesting situations. Aspects of the actual events may have been adapted for educational purposes or to better fit the subject of the particular lesson the Case Study refers to. Some Case Studies give contrived examples simply to make the point, or to place higher emphasis on the process of acquiring knowledge rather than the answer itself.

The general methodology of using Cases in a class environment is covered in the Chapter "How to work with the case studies" of the Teacher Manual. Here we will refer to specific Case Studies of the Forest Worker Online Training Tool, including between lessons similarities and differences in their scope, layout, change with time, degree of difficulty, teaching methodology, strengths and weaknesses, etc.

All Case Studies in the FWOTT follow a common layout: An Aims part, followed by the actual Case, followed by a Questions part, and ending with the Additional Resources part, including various references. In many instances, the Case Studies may include supplementary/optional material, such as maps and charts, technical drawings, video clips from YouTube or original footage (Lesson 1.4.1) and corresponding topics for in-class discussion, etc.

The Main part of each Lesson is based on the respective pages of the textbook "Working in Harvesting Teams", and thus is not expected to change over time unless a major revision of the book is published. However, a great deal of the educational material in the Case Studies, such as the video clips and the Additional Resources, are hyperlinks to websites. Like all web resources, this material runs the risk of being removed by the site owner or overwritten by new material, and thus not being available in the future.

Due to copyright issues, this material could not be downloaded and stored locally on the FWOTT servers for future use. A common way of dealing with this problem is to include the day the information was retrieved in the reference section. For example,

> "Layton, Lyndsey (October 24, 2015). https://www.washingtonpost.com/local/education/study-says-standardized-testing-is-overwhelming-nations-public-schools/2015/10/24/8a22092c-79ae-11e5-a958-d889faf561dc_story.html *The Washington Post*. [Retrieved July 26, 2015.]"

FWOTT Case Studies provide primarily the raw material for in-class discussion of the main points of the corresponding Lesson. The conversation is regarded as a tool for brainstorming and exchanging ideas, clarifying the underlying concepts, and consolidating the key concepts in trainee memory. In addition, discussion provides an opportunity for practicing and thus for improving speaking and listening skills in a cordial, pressure-free, learning promoting and fun environment.

The Main Part of each Lesson contains closed-type questions, with a limited number (one or two, and rarely more) of correct answers per question. Closed type questions offer the advantage of objective assessment and thus accelerated grading process. Conversely, closed-type questions have been criticized as providing limited choices, and thus restricting the thought process. On the other hand, answers to open-type questions, whether in written tests or in discussion sessions, may be obscure and leave the trainer grading the exams wondering about the correctness of the answer. Thus, grading open-type questions can be challenging, as it carries a lot of subjective judgment by the evaluator. To avoid this situation, the teacher decides before the exam how many and which sentences, phrases, or keywords the answer should have to be considered correct, and how many points will be subtracted by each omission.

Each Case Study is followed by a number of open-ended questions to promote critical and creative thinking. In almost all Case Studies, there is no single correct answer (with the exception of Question 4 in the Case Study of Lesson 1.2.1, which requires some Physics knowledge, and it is recommended to be taught by a Physics expert). Any argument proposed as an answer is acceptable if supported by a reasonable explanation of why or how the trainee(s) arrived to that conclusion. In this way, the FWOTT does not confine trainees to learn by elimination, but asks trainees to generate new plausible explanations and/or ideas for the problem at hand, and thus broadens trainee thinking to come up with fresh ideas (https://www.youtube.com/watch?v=NwoohzjscHY&feature=youtu.be).

Some Case Studies (Lessons 1.1.1 – 1.5.2) were designed with the dual purpose of building reading, speaking and vocabulary skills, and reinforcing the core meaning of the respective Chapters of the WiHT textbook. If the trainer detects trainee deficiencies in reading, these Case Studies can be used as supplementary material for choral or successive reading in class, as was explained in the Reading section above. These Case Studies were developed with the requirements of a) providing a smooth and interesting educational reading, b) telling a complete and useful story, and c) providing an alternative example of the term use. As a result, these Case Studies are considerably longer than the rest (Avg. words: 1500 compared to 350, respectively), and are expected to present slightly more difficulties than the rest of the Case Studies (see Case Study Readability Analysis below). Other Case Studies have declared in the Aim section their intention to teach the technical terminology, but have not taken any active steps towards that objective.

Case Studies are best suited for flipped class teaching and Interdisciplinary teaching.

Flipped classroom

Before coming to the classroom, trainees are asked to prepare for the Case Study with the following steps a) skim through the Aims section b) actively read the text and/or watch any audiovisual material, c) resolve any vocabulary questions with the use of the FWG, d) write down any questions they may have for discussion in the classroom, and e) go over the Questions and brainstorm with themselves to provide possible arguments in response to each Question. In a chess-like way, each trainee is trying to guess or calculate the opposing arguments 2-3 steps deep, and find ways to respond to them.

In the classroom, groups of 2 trainees each take turns weekly to give a 5-10 minute presentation of the Case Study, followed by another 5 minute long Q&A session. Trainers coordinate the discussion and may intervene by setting Question answering priority, asking short clarification questions, and steering the discussion towards the desired end.

Trainee participation in the discussion is a key factor for the success of the Case Studies in transferring the respective skills. Acceptable contributions to the discussion include offering relevant ideas, comments, questions, problem solving, presentation of research results, establishing and maintaining an online page on social media (linked to the Tools for Skills website) to promote the causes of the Tools for Skills project, developing survey page(s) on unsettled issues of the Case Studies, collecting, analyzing and reporting survey data, etc. To emphasize the importance of participation in the Case Studies, trainers may assign a percentage of the total grade to the discussion in the grading rubric.

If, despite trainer efforts, students continue to be reluctant in answering questions, and class participation does not reach expected levels, trainers may use the following ways to jump start class discussions(http://www.edutopia.org/blog/dialogue-defibrillators-jump-start-classroom-discussions-todd-finley). If lack of motivation is determined as the overall cause of poor participation, a number of remedies are presented in Appendix 5.

Interdisciplinary teaching

The first five Chapters of Part 1 of the book “Working in Harvesting Teams” were designed to provide additional skills to basic vocational forest technical skills; these include Safety and Emergency Communication matters (Chapter 1), the Work Environment (Chapter 2), acting as the Company's face before customers (Chapter 3), Social Competence, Responsibility and Team Spirit skills (Chapter 4), Communication, including verbal and non-verbal communication in the forest (Chapter 5).

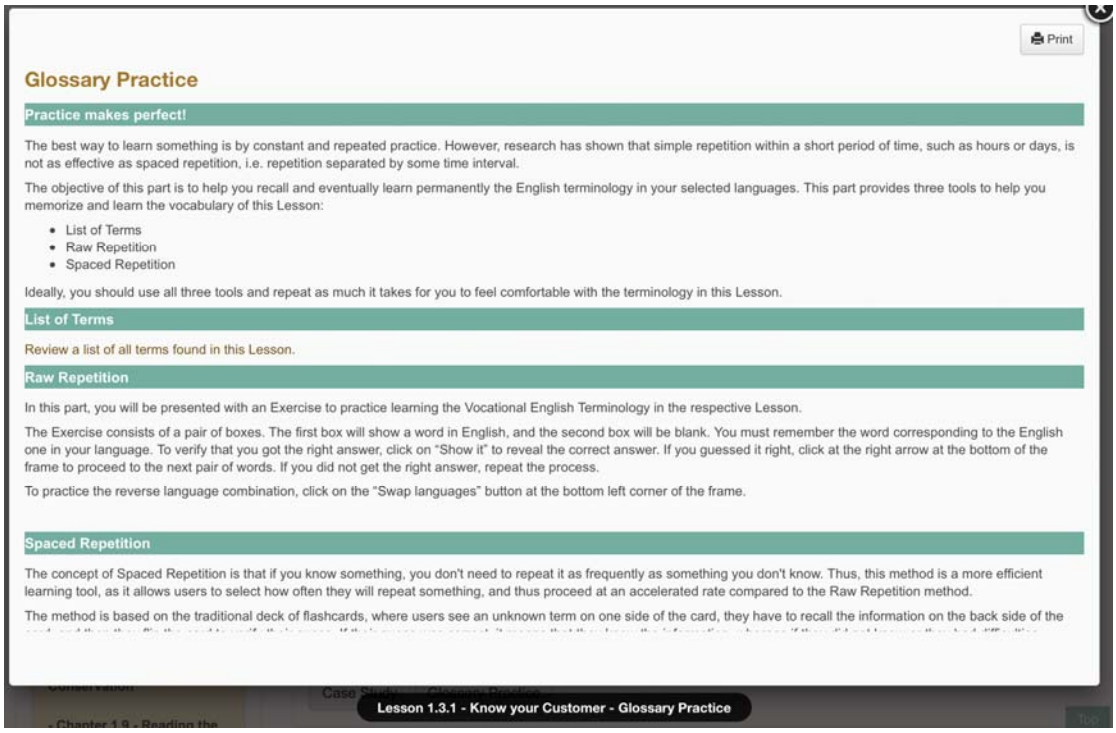
The Case Studies offer themselves for Interdisciplinary teaching, and invited speakers. A very good example of a Case Study for interdisciplinary teaching is the case study of Lesson 1.2.1. A teacher with solid background in Newton's Laws, Forces

and Kinematics could teach this Case Study; however, an invited speaker with a solid Physics background would be ideal to answer the questions therein.
Similarly, any Case Study could be taught by a well prepared teacher, although an invited speaker could provide more insight and in depth knowledge on the respective subject.

GLOSSARY PRACTICE

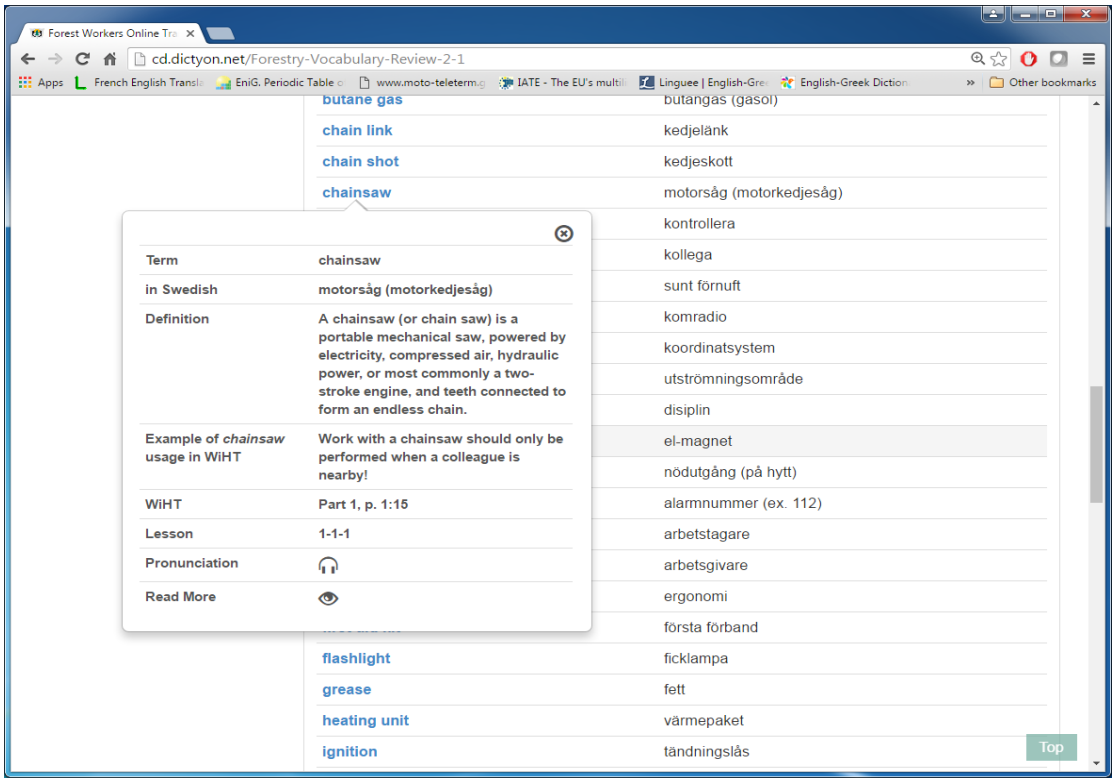
In the Extra Material section, and to the right of the Case Study button, there is the Glossary Practice button. Click on this button to open a new webpage; you may print that page by clicking on the Print button on the upper right hand corner of the screen.

The webpage contains the following paragraphs, Practice makes perfect!, List of Terms, Raw Repetition, and Spaced Repetition. Each of those paragraphs describes briefly a learning tool for mastering vocabulary skills.



Understanding the terms

It is recommended that trainees try to fully understand each term before starting the repetitive process of entering the terminology information into their memory.
This task of understanding the terminology is accomplished by using the Forest Workers Glossary (fmog.dictyon.net), which is a multilingual, multimedia glossary fully-indexed and cross-linked by lesson and Case Study; i.e. terms found in the text of the FWOTT (Lesson or Case Study) are automatically linked to the FWG.



The links to the Forest Workers Glossary are active, i.e. clicking on any English term opens the Term Profile pane to review the available information about the selected term, including the translation into the selected language (in the screenshot below, Swedish), the definition, an example of how the term is used in the textbook "Working in Harvesting Teams", and the Part, Page and Lesson reference, the Pronunciation in English, and possibly more information (if any).

To further assist trainee understanding of the vocabulary, some Case Studies provide extended text, and thus extra examples of term use, whereas the FWG provides pictures and other references (where possible).

Practice makes perfect!

This is a general and well proven strategy for building any skill. It has been often said, however, that mastering any skill at a professional level requires about 10,000 hours of practice. This is equivalent to about 1250 days or roughly 4 years of practicing 8 hours a day with no breaks, weekends, holidays or vacation.

Although the importance of practicing for building vocabulary skills is unquestionable, the Tools for Skills Consortium believes there are other more efficient ways of reaching an acceptable level of vocabulary mastery much faster, and with much more fun. The following paragraphs provide some of these ways and tools thereof.

List of Terms

As discussed in the Chapter "How to construct your own exercises and tests" of the Teacher Manual (http://cd.dictyon.net/media/source/Teacher%20Training/How%20to%20construct%20your%20own%20exercises%20and%20tests/How%20to%20construct%20your%20own%20exercises%20and%20tests.pdf), this list can be used to develop two-way, i.e. English to mother-tongue and mother-tongue to English, exercises. Please note, however, that the mother-tongue to English vocabulary practice presents a much higher degree of difficulty than English to mother-tongue, nevertheless it is required for top-quality communication skills in true bilingual work environments.

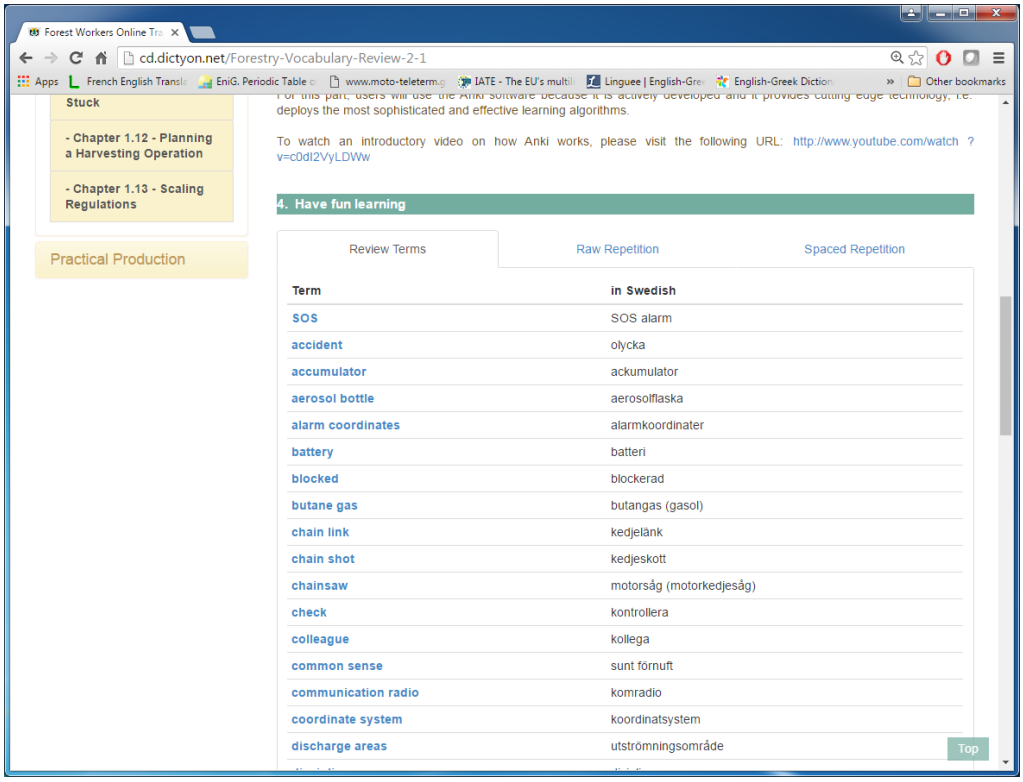
For more information on how to use the List of Terms, see section Review Terms, below.

Have fun learning!

This subsection consists of three tabs: Review Terms, Raw Repetition and Spaced Repetition. Each tab contains a tool for building and/or improving vocabulary skills. The three tools are arranged from left to right in order of increasing efficiency, with the Review Terms being the least and Spaced Repetition being the most efficient method, although results may vary.

Review Terms

The Review Terms tab provides a complete list of all terms found in each lesson (a portion of the entire list is shown below).



The main functionality of the list is that it provides a brief review of the terms learned in the particular lesson and/or chapter, and helps trainees make their own flashcards.

Flashcards

Flashcards are an engaging, active learning tool, in which user creativity and resourcefulness are deployed to overcome memory limitations and to invent innovative, personalized ways to retain information in memory.

Flash cards are considered a learning tool to aid memorization. The tool has been around for over 180 years and has proved useful in memorizing information in diverse disciplines, such as language learning, medicine, geography, law, biology, math, etc.

Flashcards work by active recall: when prompted by the question, learners try to remember the answer. To verify the answer, flip over the card, read the registered answer, and compare it with the given answer. Multiple flashcards on a given subject are organized in decks.

As a study/learning tool, flashcards are: a) effective, b) universal, c) inexpensive, d) independent of Internet access, e) light, can be carried anywhere, f) immune from power failures, g) work both ways (back and forth), h) highly customizable, i) low-tech, low-skill to make, and j) fun.

Flashcards work either in a rote repetition or a spaced repetition mode. In rote repetition, the question and answer procedure described above is repeated for each card in sequence. This approach, however, can be wearisome and boring, particularly if there are many known cards in the deck.

To make a flash card, write the question on one side of a 3x5" index card, and the answer on the back side. Learners can add on the answer side of the card anything that will help them remember the answer, such as a figure, a code word, a symbol, etc. Learners do not have to be experienced artists to make visually appealing flashcards; a rudimentary sketch of the item to be remembered, a rough outline of a biochemical pathway, or a flowchart can provide sufficient memory hints.

A word of caution though: *too much detail can be distracting*. It is advisable that a complex figure or process be broken down to multiple flashcards, to keep a clear picture or a sharp focus on the desired information.

Effective flashcards are highly personalized: users will use signs, symbols and clues to help them remember the answer based on their own experiences, which may be cannot be shared with or meaningful to others. Therefore, although decks of flashcards can be borrowed from classmates or found ready on the Internet, it is highly recommended that learners make their own flashcards.

Making flashcards is ***an excellent project-based learning activity***. Making flashcards should be demonstrated as a one-time only activity in class, but trainees can and must continue making and studying their flashcards for every learning task at home.

This does not mean that making the cards alone is sufficient study; on the contrary, *making the cards without understanding and studying them is a waste of time*. Trainees who made effective flashcards and studied them during individual lessons of the Chapter will remember more and longer, and thus will need less repetition, and will most likely do better in the Exam.

The secret of success is to make the studying of decks of flashcards an **active learning process**. Making the cards in the fast and easy way just by writing the two concepts on the two sides of the card is passive-learning and offers short memory retention. In contrast, making the cards first by understanding the relationship between the concepts, and then actively searching for innovative/creative memory-aiding clues to help fix the association permanently in memory offers permanent memory fixation, and thus it is the only way to go.

Trainers may establish and maintain a flash card profile to determine the most effective cards, and thus discover patterns of effective teaching.

The Review Terms list as shown works one-way only (English to mother tongue), and does not work in the reverse way (mother tongue to English); in other words, clicking on the terms of the other language (e.g. Swedish) will not open the Term Profile pane. If there is interest in a two-way glossary, click on the mouse and drag it to

select all pairs of terms in the list, press Ctrl+C to copy the pairs of terms, open an Excel sheet, press Ctrl+V to paste them in there, and save the Excel sheet on your hard drive. For a dictionary in the reverse direction (mother tongue to English), change the order of columns in the Excel sheet, so that the other language (e.g. Swedish) precedes the English. Then trainees can follow any of the methods described below to review and practice in the reverse direction. When studying with flashcards, however, trainees can work through their decks of cards in any way the want (English to mother-tongue, or vice versa).

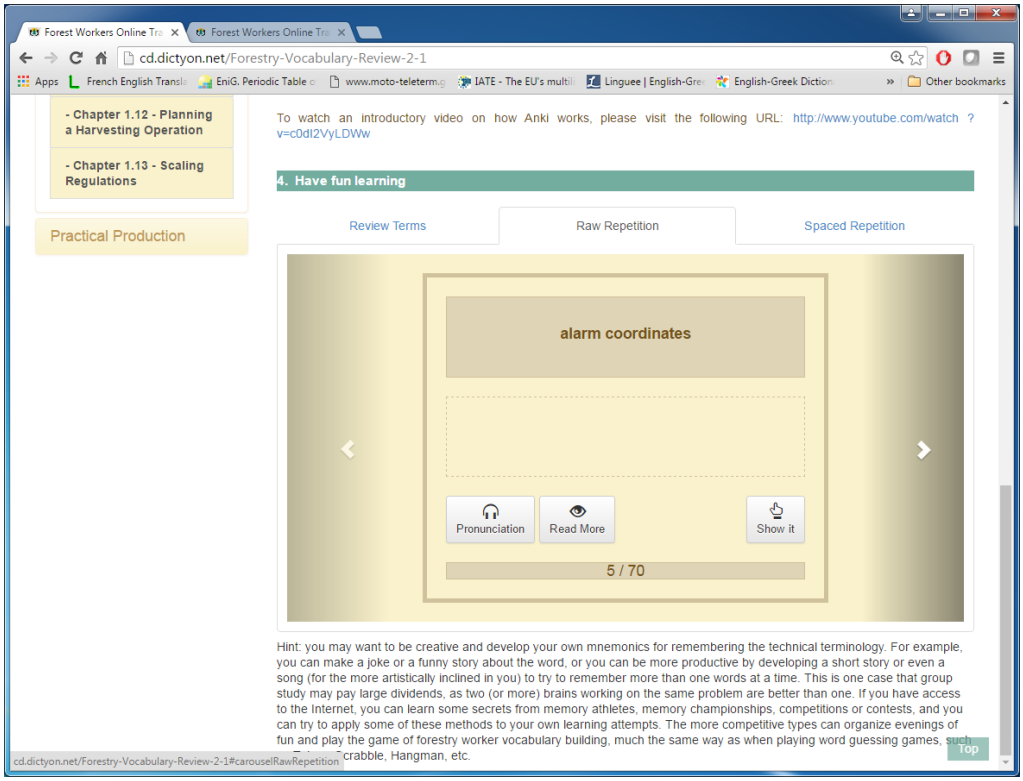
The use of flashcards became so popular among learners that many computer-based Spaced Repetition Software (SRS) have been developed to replace them (https://en.wikipedia.org/wiki/List_of_flashcard_software) (see Spaced Repetition, below).

For deeper learning, flash cards can also be used to a) write a term on the front side and its definition on the back side of the card or, for simultaneous multiple language learning, b) write a term on the front side and the corresponding terms in 2-3 languages on the back side, etc.

For more instructions on how to make effective flash cards, see http://www.wikihow.com/wikiHowTo?search=flashcards, https://fluent-forever.com/create-better-flashcards/#.Vzrkxfl95pg, http://skillcookbook.com/flashcards/, http://www.persistenceunlimited.com/2006/07/the-no-fail-flashcard-study-technique-fast-learning-minimal-time/, etc.)

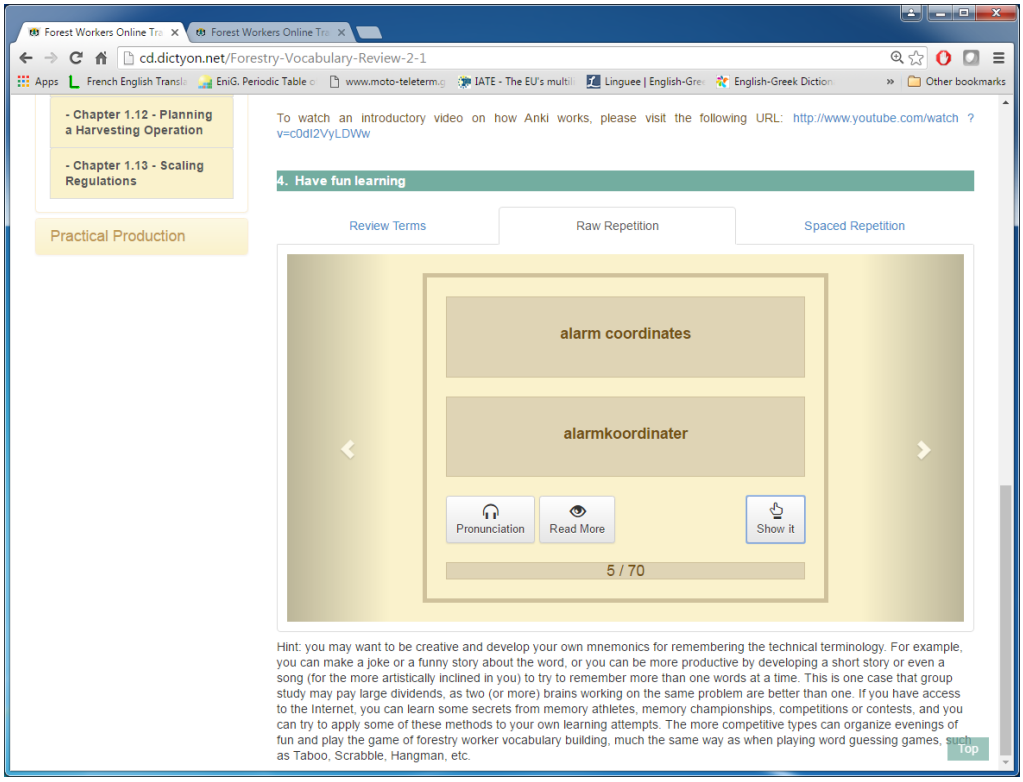
Raw Repetition Application

The FWOTT has developed its own free Rote Repetition application to be used for each Lesson. Click on the Raw Repetition tab to open a pane with the rote repetition application for the terms of the Chapter.

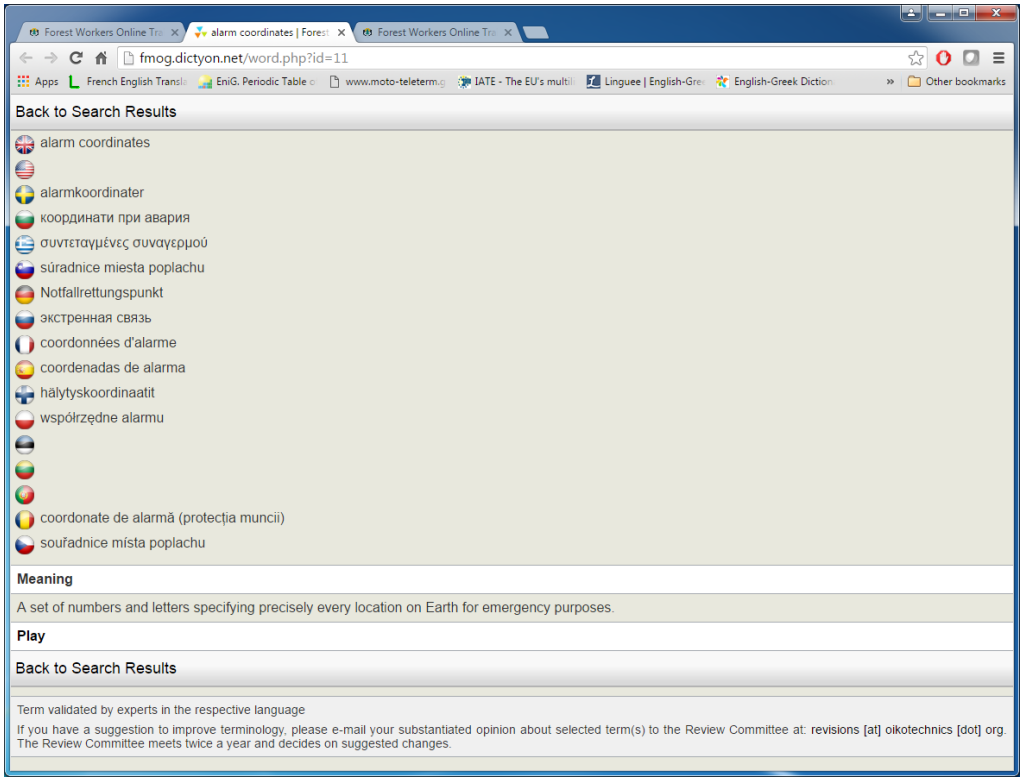


The application contains a hatched box at the top displaying an English term from the Chapter, a middle empty box surrounded by a dotted frame, and a lower part with the “Pronunciation”, “Read More” and “Show it” buttons.
At the bottom of the application, there is the navigation counter “5/70” meaning that the displayed term (“alarm coordinates”) is the fifth term out of a total of 70 terms within this Chapter.

Trainees are requested to look at the English term displayed at the top box, and try to remember the translation of the term in their language. When they think they remembered it, they can click on the “Show it” button to display the correct term and verify their guess.



Trainees note whether they guessed the correct answer or not. If they could not remember the translation in their language, trainees may click on the “Pronunciation” button to listen to the English pronunciation, or they may click on the “Read More” button to open a new tab with the Forest Workers Glossary on that term.



If guessed correctly, the trainee clicks on the “>” symbol on the right hand side of the Raw Repetition pane to move to the next term on the list. The new term is displayed, the navigation counter changes to 6/70, and the trainee repeats the above steps.

The process should be repeated as many times as necessary to obtain a solid knowledge of the entire set of terms. Quantifiable learning targets can be set, such as getting 95% (or 99%) of the answers right at any session, and repeating accordingly.

Spaced Repetition

After completion of the rote repetition exercise, click on the Spaced Repetition tab. The tab provides some information on how to download and install *Anki*, the most popular, cross-platform, open-source, free spaced repetition software in the market. More detailed information on the use of this software can be found in http://cd.dictyon.net/media/source/Teacher%20Training/How%20to%20construct%20your%20own%20exercises%20and%20tests/How%20to%20construct%20your%20own%20exercises%20and%20tests.pdf.

Spaced repetition is the principle that learners do not need to repeat so frequently material they already know. Therefore, known material is repeated at increasing time intervals compared to unknown material which has to be repeated at shorter time intervals.

Spaced repetition works primarily with flashcards and it is commonly applied in situations where learners have to acquire a large number of information items and retain them permanently (=indefinitely) in memory. Therefore, it is well suited for vocabulary acquisition and/or improvement in second language learning.

The Leitner method makes the studying of flashcards more efficient: the learner sets up a series of 4-5 boxes sorted by frequency of repetition. For example, box 1 is to receive the most difficult cards to remember, and thus requiring more frequent repetition; box 2 receives the immediately easier cards, and thus requiring less frequent repetition, and so on, to box 5

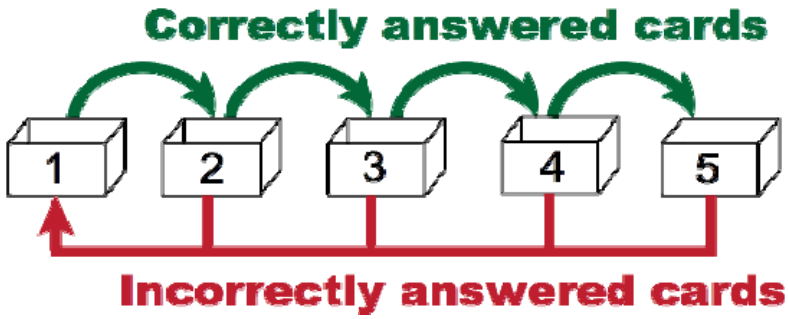


Illustration 1: Source: Zirguezi - Own work, CC0, https://commons.wikimedia.org/w/index.php?curid=20328125

which receives the words which did not present any difficulty for the learner, and thus do not have to be repeated any time soon. The learner starts with the full deck of cards, and after verifying each answer, places the corresponding card in the appropriate box based on difficulty to remember. In the next round in the same study session, the learner removes the cards from box 5 (the ones he remembered perfectly), and repeats the process with the cards in box 1. A correct answer for a card "promotes" that card to the next higher box, whereas an incorrect answer "demotes" that card to the previous lower box. The process ends when the cards from all boxes have been placed in box 5, and thus removed from the deck (https://en.wikipedia.org/wiki/Leitner_system). In another implementation of the method, the learner combines the cards of boxes 1-4, shuffles them, and starts all over again. Successive iterations might be scheduled in days 2, 3, 5, 7, etc. or as frequently as the learner finds it necessary.

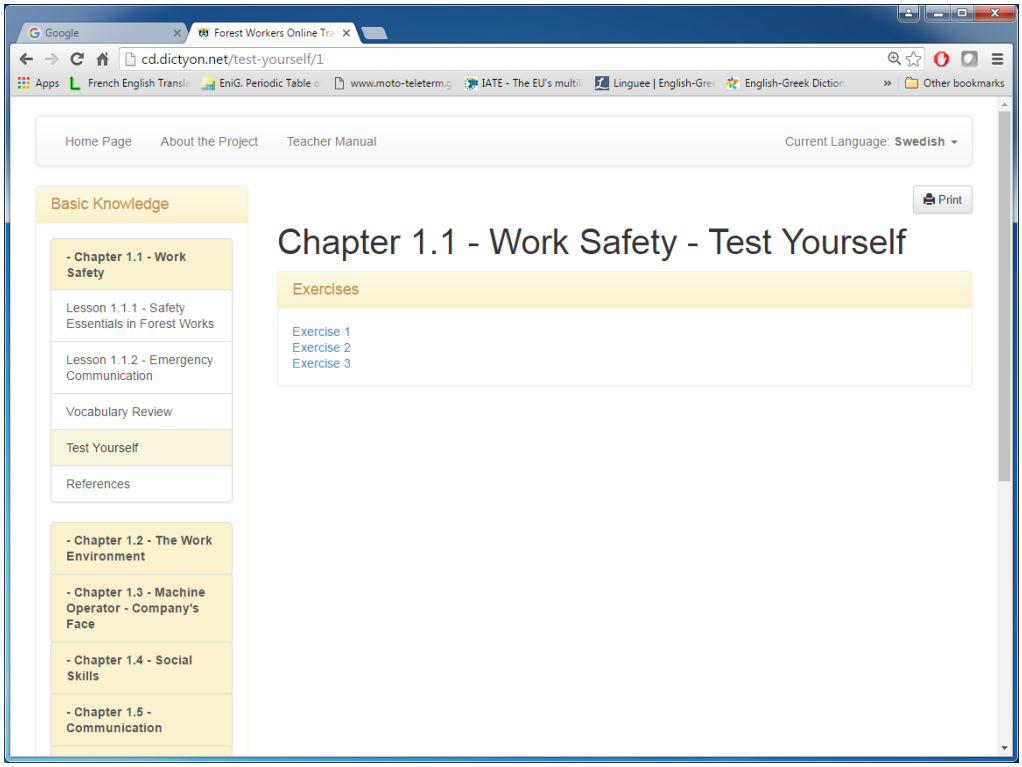
More fun learning!

Samples of online study decks of flashcards can be found on Quizlet (https://quizlet.com/join/sVn5BbXYv). Vocational forestry training students of different nationalities may study these samples and expand the online quizzes by adding more vocabulary terms in their own language. Alternatively, students may develop their own Anki decks of cards and upload them to FWOTT (ask your trainer for help on how to upload) to facilitate study and mobile-learning by fellow students.

The last paragraph on the Have fun learning! section urges trainees to organize their own brainstorming sessions and mnemonics parties. These learning tools include among others play-based learning (e.g. crossword puzzles, word games such as Taboo, Scrabble, Hangman, etc.), brainstorming, group learning, memory champions, contests, etc. and have been discussed in the "How to use the FWOTT in a teaching situation". The essence of games is to make learners apply active learning methods to master the information and enter them into permanent memory. We consider them useful learning tools that will open new horizons in obtaining knowledge, and we expect that they will be supplemented by developments on Neuroscience and Artificial Neural Networks.

TEST YOURSELF

The Test Yourself section in each Chapter is a review session and it includes selected questions from the Lessons of the Chapter with an added time component. Trainees should answer Chapter-related, closed-type questions within a certain time limit.



The Test Yourself sections includes 3 Exercises one each of: True/False, Match type and Fill-in the blanks. The time allocated per question ranges between 1-1.5 minute, and the number of questions per Exercise range from 10-20. This should not be too difficult, assuming trainees have studied intensively the exercises in each Lesson. For trainees that failed to do so during the regular semester, access to the exercises remains open for a last minute brush up.

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GradeCraft
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Classcraft – Make learning an adventure
Classcraft Testimonials on Vimeo
Epic Fail or Win? Gamifying Learning in My Classroom | Edutopia
Amazing forestry equipment, forestry machines, mighty machines in the forest - YouTube
Eastland Forestry NZ - From Seedlings to Export Logs - YouTube
Flesh — Document Readability Calculator
MobileRead Wiki - More eBook software
MobileRead Wiki - Book authoring software
MobileRead Wiki - E-book software
MobileRead Wiki - E-book conversion
Transformations
Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities - Springer
MobileRead Wiki - Free eBooks/de
Livestream | Broadcast & Watch HD Live Streaming Video Events
OpenCards - A free flashcard learning extension for Impress | Apache OpenOffice Extensions
Marty Lobdell - Study Less Study Smart - YouTube
Create ePub eBooks for iPads and e-Readers - Feature Tour | HelpNDoc
HelpScribble - Complete Help Authoring Tool - WinHelp hlp, HTML Help chm, Printed Manual and Web Help
LibriVox
Measure Text Readability - Readability and Keyword Density Analysis and Tools - Improve your writing and your website marketing with Readability-Score.com
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Readability Indices

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LEARNING/MEMORY TRICKS
https://www.youtube.com/watch?v=Ulk9BCRA83Y
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