UNIVERSITY OF TARTU

DEPARTMENT OF ENGLISH STUDIES

DESIGNING A SET OF ENGLISH FOR SPECIFIC PURPOSES STUDY MATERIALS FOR WELDING STUDENTS AT VILJANDI VOCATIONAL TRAINING CENTRE

MA thesis

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ABSTRACT

The aim of this master thesis is to design a set of study materials for welding students at Viljandi Vocational Training Centre (VIKK). The author's interest in the topic arose from the practical point of view; namely, from the experience of lacking suitable study materials for ESP courses generally and more precisely, for welding students at VIKK. The main research question that arose when compiling such a study was what vocabulary should be taught for welding students at VIKK?

The first chapter of this paper gives an overview of ESP and materials design; in addition, examines ESP and corpus studies and analyses the national curriculum and school curriculum of welding. The second chapter describes the Brigham Young University Wikipedia corpus and how a welding sub-corpus was built by using its online application. The results of the analysis were used for creating a welding word list for students at VIKK. The created vocabulary list includes terms in English and Estonian. Additionally, based on this vocabulary list six exemplary exercises were compiled.

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LIST OF ABBREVIATONS

EAP – English for Academic Purposes

EATE – the Estonian Association of Teachers of English

EGP – English for General Purposes

ELT – English Language Teaching

ESP – English for Specific Purposes

KWIC – keyword in context

VIKK – Viljandi Vocational Training Centre

INTRODUCTION

The main purpose of this master thesis has grown out of the author's 4-year-experience as a teacher of English at Viljandi Vocational Training Centre (VIKK) in Estonia and in the difficulties of finding suitable materials for English for specific purposes (ESP) courses, especially for welding students. The number of published course books for different ESP courses is increasing rapidly, i.e. Express Publishing series *Career Paths* and different handbooks. Nevertheless, these materials meet the needs of our students and course outcomes only partly, thus an English teacher is always required to adapt the materials and in addition create one's own. Therefore, the aim of this paper is pragmatic – firstly to identify the theoretical principles of ESP course by both examining the background of the subject area and additionally focus on the corpus studies and materials design. Thereafter, based on these characteristics create a vocabulary list of welding terminology and compile a set of exemplary study materials for welding students at VIKK. The focus of the materials is mainly on the technical vocabulary of welding. However, also, other language skills and knowledge will be paid attention to, because neither productive nor receptive skills exist separately, but are interwoven in the use of language.

The syllabus of specific English for welders at VIKK comprises of 37 contact lessons and 18 independent work lessons. The lessons are distributed on three years and integrated into different modules of curriculum. The focus of study outcome in the school's English syllabus is on the reading and comprehending manuals and it is required that students are acquainted with technical vocabulary. This description is very short and does not provide much information for a teacher. However, the main objective of the designed course materials is on terminology, as the study outcome states. The main research questions that arise when compiling such materials are how to design a set of ESP materials for welding students at VIKK and what the content should be. More precisely, what vocabulary should be taught to welding students and how?

As the study outcome is stated shortly in the syllabus and provides very little information about what students should have gained after completing the ESP course, it is necessary to look further and closer on the aspects, which the school syllabus is based on. Therefore, other documents, which support welding education in Estonia have been taken into account and our school welding teacher, who can be called a specialist advisor, is also consulted. The necessary documentations are as follows: national curriculum of welders, VET certificate level 4 and Vocational Educational Institutions Act.

Creating effective foreign language teaching materials is a complex process. The objective of the process is to develop students' foreign language skills through effective teaching practices that would support language learners to cope successfully while communicating in English both at professional and private levels. Therefore, the main concern simply is to improve learners' language competence. For that purpose, a corpus-based study was used in this master thesis and a welding sub-corpus based on the BYU Wikipedia corpus was built. The Wikipedia corpus, available at https://www.english-corpora.org/wiki/, contains 1.9 billion words in more than 4.4 million Wikipedia articles in English and is a freely accessible online interface that can be used by anyone. This corpus tool offers to build one's own corpus on any topic covered in Wikipedia. Moreover, also use it for searching words, phrases, word class, synonyms, concordances and collocates. Although, the results are easily reachable, to gain reliable results, they have to be filtered and analysed. The welding sub-corpus created for this thesis was analysed by comparing the terms with the welding textbooks in English and Estonian, and a specialist adviser was consulted. These results were used for compiling a list of welding terminology. The final step of the thesis included creating a set of exemplary exercises for welding students at VIKK.

The terminology list of welding is beneficial for the ESP course at VIKK due to its practical outcome. The word bank can be used for developing further and designing tasks and exercises for welding students at VIKK.

1. LITERATURE REVIEW ON ENGLISH FOR SPECIFIC PURPOSES

The aim of this chapter is to examine the background and provide an overview of the field of English for specific purposes (ESP). The term ESP is defined; the general history of ESP is touched on briefly; the role of the teacher in ESP is identified; and the materials' design and corpus studies are analysed.

1.1 What is ESP?

In this section, the definition of ESP is examined and discussed. Paltridge and Starfield (2014: 2) define ESP as following: "ESP refers to the teaching and learning of English as a second or foreign language where the goal of the learners is to use English in a particular domain." While ESP definition according to Dudley-Evans and St John (1998: 4) is "ESP is designed to meet specific needs of the learner, […it] makes use of the underlying methodology and activities of the discipline it serves". In other words, the English language is learnt by someone who does not acquire it as his/her own mother tongue. The objective of the learning is to use English in a specific context, for example the general aim of ESP courses in VIKK is to improve the technical vocabulary of learners, so that they could successfully manage both the oral and written communication connected to their field of studies. Another aspect which is emphasised by Dudley-Evans and St John, is the methodology – ESP teaching is aimed to use the methodology and activities, which strengthen the effective language learning of the specific English.

The focus of ESP always lies on learners – more precisely, on their language needs to succeed in specific purpose situations in English, which are primarily connected to learners' areas of expertise and workplace settings. Several authors emphasise the practical outcome of

ESP – to help language learners to succeed in their target language academically, professionally or occupationally (Feak 2013: 36). Dudley-Evans and St John (1998: 1) emphasise the practical outcomes of ESP. "/…/ the main concerns of ESP have always been, and remain, with needs analysis, text analysis, and preparing learners to communicate effectively in the tasks prescribed by their study or work situation".

Ann M. Johns (2013), the author of the history chapter of ESP in *The Handbook of English for Specific Purposes*, points out that ESP has been a 'practitioners' movement', which on the one hand contributes to the difficulty of making clear cut distinction between research and teaching practices. Conversely, it can be said that research and practical issues go hand in hand in ESP and vary from country to country.

The increasing popularity of ESP as a research area among English teachers in Estonia can be noted at the Department of English at the University of Tartu. During the previous years there have been several master theses defended at the department, which have been focused on the designing of study materials for vocational colleges. For example Kerstin Kesler (2018) studied authentic learning, Margit Uus (2018) focused on e-course design for cyber defence students, Berit Tafenau (2017) on materials for joiners and from earlier Elle Mäe (2014) designed an ESP course for national handicraft students. Also needs analysis has been a research topic, which graduates have been focusing on, for example a thorough task-based needs analysis by Liis Raudvere (2018).

This interest may be based on the vocational schools' curricula. However according to Ann M. Johns (2013) predicting the future developments of ESP, she mentions vocational schools as the areas that have drawn less research. The reasons for that might lie on the more practical outcomes of trade schools, it is expected to educate skilled workers for the labour market and that they are professional workers. Yet, we live in an open and globalised world, which means that people travel on different purposes, both for pleasure and work, and the main language used for travelling is clearly English.

Due to the general growth of ESP, it has established itself as a field in the world. Keith Harding (2007: 3) points out that "/…/ ESP is again emerging as a key strand in the ELT context." As pointed out earlier, ESP is more practical and work related field of study, because international communication utilises English and it provides opportunities for careers. Harding (2007: 6) continues that ESP is "/…/ the language for getting things done."

Harding (2007: 6) also points out the factors, which in his opinion have influenced the growth and importance of ESP. Firstly, the growth of vocational learning in the life-long learning and the increasing need for vocational skills in the labour market. Secondly, the status of English as *lingua franca* is spreading more and more throughout the world. If Russian was the communication language in the former Soviet Union, it has been substituted by English. Not only in the former Soviet Union countries English has become *lingua franca* but even bigger and growing population in Asia is influencing the number of English users. For the third point Harding connects ESP learning to learning of general English, which starts at earlier ages and therefore students need a purpose for learning at their later educational levels.

An interesting fact is pointed out by Coxhead and Demecheleer (2018) about educated workers – according to a survey 200,000 people in 189 countries saw English-speaking countries as attractive destinations for their careers. However, it is not only English-speaking countries people move to, as mentioned above, also Asia is not only having a growing population but more people travel there for work.

To proceed with, the history of ESP goes back already 60 years reaching its beginning into 1960s. According to much-cited Hutchinson and Waters (1987: 6–8) the emergence of ESP is connected to three main factors – firstly, the general development of science, economics and technology in the world in the mid-1900s and the need for the English language as *lingua* *franca*. Secondly, the famous catchphrase in the ESP context: "Tell me what you need English for and I will tell you the English that you need" (Hutchinson and Waters; 1987: 8) derives from that time and was meant to capture the main idea behind ESP courses – to provide learners with specialised language knowledge of English they would need for managing their expertise of area internationally. Moreover, the third aspect was emphasising the focus of the learners' needs, which would contribute to their motivation and based on the inner motivation make language learning more efficient.

In this way, already from the beginning of ESPs development these three aspects have been central – the general development of the world, practical needs of a foreign language learning and the need to find learners' centred approaches towards learning. These factors, however with some variations, were set as a basis of ESP and so far they have remained cornerstones of ESP.

1.2 What is ESP teaching?

Compared to general English teaching according to Basturkmen (2010:3) it can be said that "ESP courses are narrower in focus than general ELT courses because they centre on analysis of learners' needs." By having everyday practice both in ESP and ELT courses it could be added that general English is the foundation of the English language teaching and when teaching ESP courses one cannot avoid including the general use of language. However, the main emphasis surely is on the technical and semi-technical vocabulary of the subject area. Therefore, it can be said that ESP and EGP roles and their aspects are interwoven and they cannot be strictly separated in the context of ESP teaching at VIKK.

Many scholars, i.e. Hutchinson and Waters (1987), Harding (2007), Basturkmen (2010), point out the essential role of the ESP teacher, which is rather complex and includes many tasks. Thus in this section the different roles of ESP teachers and their aspects will be discussed.

Instead of using the term 'teacher' Dudley-Evans and St John (1998: 13 – 17) prefer using the term 'practitioner' as the focus on the teaching is not wide enough to characterise the process of an ESP teacher's work. They point out five key aspects:

1. teacher or language consultant,
2. course designer and material provider,
3. researcher (understanding the notion of the ESP specialism and material),
4. collaborator (working with speciality teachers),
5. evaluator (evaluating the material and the course design, as well as setting assessment).

Based on these criteria it can be said that the role of an ESP teacher, or practitioner, is rather complex. The teacher needs to be an expert of the taught language as well as the mother tongue and know the technical vocabulary in both languages. He/she also needs to find suitable teaching materials, which may not be an easy task, as the needs of language learners and courses are very specific. In addition, the ESP teacher needs to understand how the materials should be created so, that they aim to improve learners' language competence in the best possible way. At the same time, he/she needs to be critical as well as analytical towards the materials and one's own work and study process. "The ESP teacher / course developer needs to find out what the language-based objectives of the students are in the target occupation /…/ and ensure that the content of the ESP course works towards them" (Basturkmen 2010: 8).

Harding (2007: 10 – 11) emphasises that there are common features on how a teacher should approach to the course material and students. He points out that teacher should have a very student-related approach and real life situations, for example authentic materials and possibly a context from students' subject area should be exploited.

Not less, the teacher of ESP courses needs the knowledge of how to work cooperatively with different speciality teachers. In other words, with different personalities and often lead the teamwork to gain the most valuable results for language learners.

Paul Nation (2018) points out in the interview to TEFL Training Institute that planning is the number one role that a foreign language teacher has. Teachers should know the extent of students' current vocabulary and offer sufficient amount of opportunities to practice it. However, this is not the only key role of teachers. In my opinion (it is the opinion of the author) the even more important aspect Nation emphasises, is that a teacher must also know and comprehend the vocabulary learners need to learn and offer a lot and varied opportunities to practice it. In that same interview he says that a learner by guessing the unfamiliar word from a context needs to experience the word at least 12 times.

Additionally, Basturkmen (2010) points out that many ESP teachers work alone. For a long time in Estonia there were not any courses or seminars intended specifically for ESP teachers. However, this has changed during the last two years – the Estonian Association of Teachers if English (EATE) is organising information days for the teachers of English at vocational schools. This also shows the increasing interest towards ESP teaching in Estonia. However, in everyday practice the teacher usually works alone.

1.3 Curriculum analysis

In this subchapter the documentation that forms the basis of study needs for welding students at VIKK will be discussed. Keith Harding (2007: 17) emphasises needs analysis as one of the key components that ESP as a subject area has provided ELT more generally. Needs analysis has grown into an own field and methodology and for instance Dudley-Evans and St

John (1998) describe detailed principles what should be covered while completing a needs analysis. Yet, it is not relevant for this master project as there already exists an English syllabus, however short and laconic. In the case of VIKK we have hypothetical scenarios – based on the documents and collaboration with speciality teacher we try to guess what are the hypothetical needs of English for welding students after completing the English course.

Welding students of VIKK are pre-experience learners, which means that they have not worked in their field yet. However, they have their first practical training period on the second half of their first year. Generally, practical training is tightly connected to vocational education. In addition, different international projects form a part of students' study life and through these projects students are offered possibilities to train their foreign language and working skills abroad or at home while hosting exchange students at VIKK.

As mentioned in the introduction of thesis the school curriculum states ESP course study outcome very briefly – reading and comprehending manuals and being acquainted with technical vocabulary. Yet, by observing the school curriculum as a whole, it can be added more information about study outcomes to be implemented in the ESP course. It is stated there about foreign language competence that after graduating the welding curriculum at VIKK, graduate has acquired special terminology of foreign language and is an independent foreign language user. According to the global scale of Common European Framework of References for Languages (CEFR) it means that students have reached the proficiency of English on B2 level: "Can understand /…/ technical discussions in his/her field of specialisation."

Apart from the foreign language competence, the outcomes stated in the school curriculum are based on the national curriculum. Hereby the skills which can be developed in language class are:

1. student values the chosen speciality, is aware of its developments and trends on labour market;

2. follows personal protection rules and environmental safety requirements when planning, preparing and conducting the work and cleaning the workplace;
3. organises his/her work processes and is able to fulfil work assignments duly in the ordinary situations;
4. uses necessary ICT tools for work;
5. participates in teamwork by developing social competence and life skills.

The aim of the national curriculum is that student acquires the competences of a welder, which able him/her to work as a skilled worker on the open labour market in the mechanical and metalwork enterprises. It is also stated that the conditions for further studies and lifelong learning are provided.

Learners at Viljandi Vocational Centre are pre-experienced learners who gain secondary vocational educational and level 4 VET qualification according to Estonian Qualification Framework. According to Estonian Qualification Authority the gained qualification level 4 is equal to skilled workers.

The graduates also gain specialisation in manual metal arc welding (MMA), semi-automatic welding (MIG/MAG welding), TIG-welding and plasma cutting. According to the national curriculum of welding the study outcome states that the graduate is an independent language user and has gained terminology of welding in a foreign language. (Riigi Teataja). Interesting enough is that it does not state, which foreign language, thus a vocational college has an option to choose the language.

Harding (2007: 53) emphasises that vocabulary is an essential part of ESP course. It can be mulled over which vocabulary is the most essential to learn in English as for the Estonian students it is crucial to know the terms first in Estonian and then proceed with the terminology in a foreign language. Yet, not only the technical terms are important, as well semi-technical vocabulary and EGP is an area language learners need to master. Therefore, an ongoing needs analysis and adopting its results is a crucial part of any ESP teacher's work.

1.4 ESP and corpus studies

The aim of this section is to examine ESP and corpus studies with the emphases on how corpus analysis could be used in the context of creating ESP study materials for welding students at VIKK.

Sinclair (2004a: 11) explains a corpus as "/…/ a collection of pieces of language text in electronic form, selected according to external criteria to represent, as far as possible, a language or language variety as a source of data for linguistic research." Thus, a corpus is a collection of texts and texts form the input or data, which is used for further studies of linguistic issues. Tsui (2004) differs four areas of corpus analysis: lexical studies, syntactic analysis, genre analysis and discourse analysis. She continues by emphasising the benefits a foreign language teacher might gain from using corpus studies – the results could be used to determine the content for a language course. She finds it most beneficial for learners at elementary and intermediate levels as teacher could focus on more frequent language issues, which in her opinion could make acquiring a foreign language more efficient. In the context of ESP the most valuable aspect of corpus studies is the terminology gained on the lexical studies.

ESP teacher can benefit from corpus studies in several ways. One option is to design one's own corpus as the tools for that purpose are becoming more available and applicable not only for researchers but also for practitioners. The development of technology and especially already ready-made software tools available online, make it easy and convenient to use them, i.e. BYU Wikipedia Corpus. The main limitation for a teacher is the limit of time due to the restricted period for designing a course for example in a trade school. Therefore, another option is to use corpora, which are already publically available, however, a problem here is that the number of technical corpora is very limited and it is rather complicated to find information about ready-made corpora or specialised vocabulary lists based on the corpora. There are several corpora available publically, i.e. British Academic Spoken English Corpus as well as Written Corpus, however these do not meet the needs of an ESP teacher due to the high degree of technical vocabulary needed for ESP courses. In addition, for example in the case of VIKK, the output of corpus analysis needs to be connected to the curriculum of welding, therefore designing one own corpus and implementing the results of the analysis contributes to the content of study materials. Tsui (2004: 40) emphasises that "the findings of corpus analysis can be used as a basis for selecting and sequencing linguistic content". In other words, the results of corpus analysis gives valuable information for compiling materials for ESP courses.

Another important issue of corpus analysis that Tsui (2004) points out is the importance of increasing teacher's language awareness – something that has an immense value for an ESP teacher, who usually is not an expert of the field he/she teaches. By exploiting a ready-made corpus for designing a specialised sub-corpus provides valuable and easily gained knowledge on vocabulary, which later could be analysed and used for creating vocabulary lists and study materials. Yet, a limitation might be that the results do not meet the precise needs of the target group as the input data is not aimed for that specific audience. Therefore, the vocabulary gained through a ready-made corpus tool, might be uneven and need more work than expected.

Several authors point out corpora as fundamental to ESP research and its growing importance in ESP studies (Feak 2014, Flowerdew 2011), however the research has mainly been focusing on academic purposes and not so much on the specialised corpora (Coxhead 2018, Flowerdew 2011). The reasons behind this issue might lie on the highly specific reasons for designing such a corpora – a specialised corpus is used only for a narrow range of users and it is very time consuming to compile a corpus from scratch. On the other hand, the benefit of such a corpus might help to identify the specific vocabulary and set focus for the material design and learning goals for an institution. Furthermore, it also contributes to the design of ESP syllabi by pointing out the specific knowledge. (Bennett 2010: 12).

Nesi (2014: 417) points out that ‘one of the commonest applications of corpus studies to ESP has been the production of wordlists for materials.’ Based on the vocabulary lists useful study materials including necessary terminology can be designed. An ESP teacher is usually not an expert of the field, in the author’s case welding, thus, that kind of list helps to create subsequent study materials. The accuracy and the quality of the list can be guaranteed by checking the terminology with experts and written sources of subject area.

The information we gain from using corpora is valuable for creating meaningful study materials. Corpus analysis provides data on frequency, register and how language is used. (Bennett 2010: 5). “In a nutshell, corpus linguistics allows us to see how language is used today and how that language is used in different contexts, enabling us to teach language more effectively” (Bennett 2010: 7). Any language is a ‘living organism’ and for a foreign language teacher it is most essential to follow the changes of the taught language and know how the language is used. Thus, in addition to printed sources, the Internet might offer the most valuable help if a critical approach is applied towards the gained information.

A specialised corpus contains texts of a certain type and aims to be representative of the language of this type. It can be large or small, is often created to answer very specific questions, and is often used in ESP settings (Bennett 2010: 13). Hence, by creating an ESP corpus, the size is not primary, but it is more important to choose correct content suitable for the target group.

Creating a corpus there are three aspects to use as a basis: texts are chosen according to characteristics not randomly, use of authentic texts and it is stored electronically (Bennett 2010: 14). Authenticity can be a question itself, however in the context of creating a corpus, author uses definition by Bennett (2010: 15) “authentic texts are defined as those that are used for a genuine communicative purpose" and the texts are not created just for a purpose of creating a corpus.

In conclusion it can be said, that well-chosen input data for a corpus, is very beneficial in ESP course design, but the data must be chosen carefully with the target group bore in mind. By using a ready-made corpus tool, these options might be lacking.

1.5 Materials design

A natural part of ESP teacher's work is to design and revise study materials. Certainly, it is also a part of general English teacher's work, however, the workload of designing specific materials is probably heavier for an ESP teacher. The reasons behind that might be the specific subject area, the length of the courses, the level of English proficiency of students, the study outcomes and so on. Therefore, this section examines the principles behind designing materials for ESP courses.

Harding (2007: 10 – 11) offers some general advice to take into account on creating an ESP course:

> Use contexts, texts, and situations from students' subject area. Whether they are real or simulated, they will naturally involve the language the students need.
>
> Exploit authentic material that the students use in their specialism or vocation /…/.
>
> Make the tasks authentic as well as the texts. Get the students doing things with the material that they actually need to do in their work.
>
> Above all, try to take the classroom into the real world that the students inhabit, and bring their real world into the classroom.

Authenticity plays a key role in the design of ESP study materials. The term authentic has different approaches – one definition was brought up at the end of the previous section. In addition to that, a definition provided by Basturkmen (2010: 62) is used: "/…/ the texts were written for purposes other than language teaching and learning." Thus, it is essential to notice that the texts, which could be used for designing ESP materials, should be connected to the language learners' specialism and be as authentic as possible.

In the context of designing study materials for welding students at VIKK the most difficult issue has been to find authentic materials, which also cover the objectives of welding curriculum and take into account the needs of students. Additionally, it must be kept in mind that the materials need to be based on the specialised vocabulary. Nation (2001: 19) points out that: "Where possible, specialised vocabulary should be treated like high-frequency vocabulary. That is, it should be taught and studied in a variety of complementary ways." Hence, there need to be several opportunities in language learning situation, which offer language learners to use one and the same vocabulary over and over again in terms to fully acquire it.

2. THE DESIGN OF WELDING MATERIALS

The purposes of this master thesis is threefold. Firstly, to build a sub-corpus of welding; secondly, based on the results create a welding word list and thirdly, compile a set of exemplary study materials, which can be used for teaching ESP for welding students at VIKK. The compilation of welding materials was chosen as the research topic due to the authors' experience of the lack of suitable textbooks and study materials for welding students at VIKK in the last year.

To create materials for improving and strengthening the students' language competences as well as general competences the target audience has to be kept in mind during the whole process of designing the materials. The two major steps for compiling the materials are as follows: there needs to be clear criteria for building a corpus and a vocabulary list of welding; based on this and on the needs of students, suitable study materials have to be created to enable students to acquire a specialised English vocabulary for welding. Determining the criteria for the vocabulary list is necessary and provides a tool to filter and analyse the terminology suitable for the welding students at VIKK.

The created study materials can be defined as corpus-influenced materials – Bennett (2010: 24) explains corpus-based materials as "/…/ materials whose presentations and/or activities are influenced by corpus findings". In this master project, first the data was gathered from the Wikipedia corpus and then filtered and analysed. Furthermore, after consulting the welding teacher of VIKK, further changes in the terminology list were adopted. The final step of the thesis included creating a set of welding materials, which were used for teaching ESP of welding for students at VIKK. The compiled materials are just an example of how corpus-influenced materials could be created. The vocabulary list provides beneficial data, which can be complemented with additional terms of welding, for example by including more welding techniques. Additionally, the vocabulary list can be exploited for further compilation of welding materials for students at VIKK.

2.1 Method

Sinclair (2004) points out that before starting to design any corpus, the first step is to decide the criteria of the texts, which form the basis for a corpus. There were two main categories for creating the welding sub-corpus for study purposes at VIKK. Firstly, accordance with the objectives of the national and school curriculum as well as with Estonian Qualification Framework. Secondly, the terminology used in the Wikipedia texts had to be connected to the sub-areas of welding curriculum and the ESP syllabus of VIKK. In other words, the texts needed to cover the following topics: manual metal arc welding, semi-automatic welding, TIG-welding and plasma cutting.

In the second stage of this master project, a terminology list of welding was created. For that purposes, the terms were checked by using different sources – the terminology list provided by the Estonian Welding Society, welding textbooks in Estonian and handbooks in English, and specialist adviser (welding teacher at VIKK) was consulted.

In the final stage of this study, a set of exemplary corpus-influenced exercises were created.

2.2 Brigham Young University (BYU) Wikipedia Corpus

In this subchapter BYU Wikipedia Corpus will be examined and the use of it explained. The corpus is available at https://www.english-corpora.org/wiki/ and several tutorials how to use the corpus are available on YouTube. The creator of the Wikipedia Corpus as well as the author of the tutorials is Mark Davies. The information for this section derives from these tutorials.

BUY Wikipedia Corpus was created by Mark Davies and released in January 2015. It includes approximately 2 billion words from 4.4 million Wikipedia articles. The most important benefit that arises from the corpus is the ability to compose one's own virtual corpus, edit and use it without any copyright restrictions. In addition to building one's own corpus on a selected topic, i.e. welding, the corpus is also searchable.

The first step for creating a sub-corpus is to search the articles connected to the selected topic – this search can be made in two different ways, either one chooses the word(s) in the title or the words in the articles. The next step is to assure the quality of the articles by checking them manually and filtering suitable data for one's sub-corpus.

The built corpus can be used for searching articles and/or single terms or words from the corpus. Within the formed corpus one can search the most frequent nouns, verbs, adjectives, adverbs and multiword combinations (noun + noun and adjective + noun). It is also possible to raise and lower the specificity of the words and then search more specific words. The category of specificity is based on the comparison of one's created specific corpus and the Wikipedia corpus. However, this feature did not work during the compilation of this project. The author was able to click on the signs '+' and '–' of 'specific', however, the number of texts remained the same, while frequency box could be increased or decreased. See Figure 1.

WELDING [52,867 WORDS, 38 TEXTS] NOUN VERB ADJ ADV N+N ADJ+N [ALL CORPORA] SAVE LIST

HELP	WORD (CLICK FOR CONTEXT)	FREQ	# TEXTS	SPECIFIC FREQ 15 3 TEXTS	ALL WIKIPEDIA	EXPECTED
1	WELDING	1170	38	6,097.2	6,715	0.2
2	WELD	499	28	5,057.0	3,453	0.1
3	WELDER	74	21	3,025.1	856	0.0
4	WORKPIECE	100	20	2,469.5	1,417	0.0
5	ELECTRODE	329	16	2,239.0	5,142	0.1
6	SPATTER	15	5	1,901.8	276	0.0
7	FUME	22	11	1,309.3	588	0.0
8	ACETYLENE	27	3	988.3	956	0.0
9	FILLER	81	19	765.5	3,703	0.1
10	SLAG	37	13	709.1	1,826	0.1

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9	FILLER	81	19	765.5	3,703	0.1
10	SLAG	37	13	709.1	1,826	0.1

Figure 1. The category of specificity.

Two other features that are searchable are keyword in context (KWIC) and collocates. The results of KWIC show the words occurring before and after the searched word and the results of collocates show the words which are used together with the searched word. These features can be used both on the entire Wikipedia corpus and on one's own virtual corpus.

All the search results from the different search options are also clickable and it is possible to see the specific word in context and go to the original Wikipedia page. It also has to be pointed out, that the created corpus can be edited – articles can be removed and added, the corpus can be hided and categorised among the corpora one has created.

To emphasise the main features of BYU Wikipedia corpus it can be pointed out that it is a ready-made and a convenient tool to use for example for teachers and language learners who are interested in acquiring specific vocabulary and lack the knowledge or time to create one's own corpus on a specific topic. Based on the created corpus, a teacher might proceed with creating a vocabulary list and writing exercises on the specific topic.

There are also limits of BYU Wikipedia corpus, which have to be drawn attention to. The main concern for the author of this thesis has been that Wikipedia is an online encyclopaedia platform, where articles can be written and edited by anyone and not only by the experts of specialism. This leads us to the issue of reliability of Wikipedia. In order to increase the reliability of data gathered from BYU Wikipedia corpus, three precautions were taken in this project:

1) to reduce the errors of content of the articles, text- and handbooks on welding both in English and in Estonian were used;

2) the vocabulary list with translation in three languages (Estonian, English, Russian) published by the Estonian Society of Welding was used;

3) the welding teacher of VIKK was an adviser on the subject matter.

2.3 Creating of welding word list

This subchapter provides an overview of how the terminology list of welding was created.

Firstly, the author created one virtual sub-corpus of welding by including 70 articles on welding from Wikipedia. The sub-corpus was built by using BYU Wikipedia corpus, which is freely available online and was introduced in the previous section of this paper. The articles for the welding corpus were search by using the keyword 'welding'. Then 27 articles, which clearly would not have contributed, to the list of tokens, i.e. names of institutes, welding techniques not taught at VIKK, historical issues of welding, etc. were excluded. There after the process proceeded with manual filtering – all the articles were scanned and irrelevant data removed, for example excluding welding processes and techniques not taught at our school level, i.e. friction welding. Thereafter all the articles were skimmed so that they would be up to date and respond to the school curriculum of VIKK. Thus, the number of entries became 38. Secondly, the keyword used for the search was ‘weld’, which resulted in five more articles to be added into the sub-corpus. Hence, the final size of the sub-corpus was 43 articles and 64 484 tokens. See figure 2.

Figure 2. Overview of the corpora.

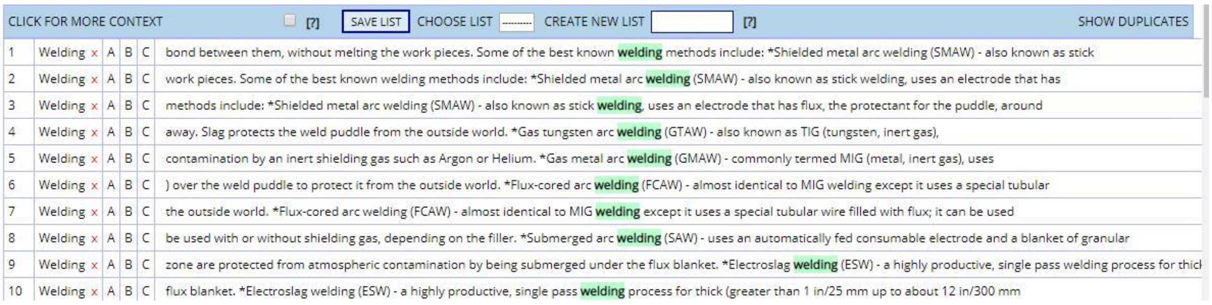
The next phase of study included extensive work with the sub-corpus. The author looked at the most frequent nouns, verbs, adjectives, adverbs, noun + noun and adjective + noun combinations. These search results are based on the frequency of the word occurrence and offered automatically by the corpus application. Through all the stages of compiling the welding word list resources like *Handbook of welding*, the terminology list provided by the Estonian Welding Society, *Inglise-eesti tehnikasõnaraamat* and *Eesti-inglise tehnikasõnaraamat* were used. Also online Cambridge and Oxford dictionary were used for help.

The biggest number of tokens were noun entries – 217 words in total. All the entries and the example lines were read and checked. In the case of unclear words the whole article was skimmed and the words marked. After the preliminary word list was completed by the author, the words were debated with the welding teacher and then decided if the word was included in the word list or not. In figure 3 can be seen the results of the 20 most common nouns, which all were included in the welding list. The first noun not included in the list, appeared on the 31st place, ‘electron’. Hence, the 30 most common nouns matched the criteria and were included.

HELP	WORD (CLICK FOR CONTEXT)	FREQ	# TEXTS	SPECIFIC FREQ 15 4 TEXTS	ALL WIKIPEDIA	EXPECTED
1	WELDING	1280	43	5,468.7	6,715	0.2
2	WELD	551	33	4,578.0	3,453	0.1
3	WELDER	93	23	3,116.9	856	0.0
4	WORKPIECE	109	21	2,206.9	1,417	0.0
5	SPATTER	19	6	1,975.0	276	0.0
6	ELECTRODE	340	18	1,897.0	5,142	0.2
7	FUME	22	11	1,073.4	588	0.0
8	ACETYLENE	28	4	840.3	956	0.0
9	ARGON	43	7	722.7	1,707	0.1
10	POROSITY	31	9	689.4	1,290	0.0
11	SLAG	43	15	675.6	1,826	0.1
12	FILLER	82	20	635.3	3,703	0.1
13	TUNGSTEN	74	13	629.6	3,372	0.1
14	ARC	563	30	478.6	33,750	1.2
15	JOINT	79	17	465.1	4,873	0.2
16	FLUX	97	16	307.8	9,042	0.3
17	TORCH	116	12	270.4	12,309	0.4
18	NOZZLE	27	5	232.0	3,339	0.1
19	BEAD	18	6	208.2	2,480	0.1
20	POLARITY	19	8	204.1	2,671	0.1

Figure 3. The 20 most common nouns.

The most frequently occurred noun was ‘welding’ and the second and third noun from the same word family as can be seen in figure 3. Figure 4 shows sample lines of the noun welding, the figure shows just ten lines. In total, there were 1401 sample lines about welding. As named earlier, all the tokens can be opened and the sample lines read. Furthermore, also articles can be read for more context. These sample lines were later partly used for creating corpus-influenced study materials.


CLICK FOR MORE CONTEXT [?] SAVE LIST CHOOSE LIST ---------- CREATE NEW LIST [?] SHOW DUPLICATES

1	Welding	x	A	B	C	bond between them, without melting the work pieces. Some of the best known welding methods include: *Shielded metal arc welding (SMAW) - also known as stick
2	Welding	x	A	B	C	work pieces. Some of the best known welding methods include: *Shielded metal arc welding (SMAW) - also known as stick welding, uses an electrode that has
3	Welding	x	A	B	C	methods include: *Shielded metal arc welding (SMAW) - also known as stick welding, uses an electrode that has flux, the protectant for the puddle, around
4	Welding	x	A	B	C	away. Slag protects the weld puddle from the outside world. *Gas tungsten arc welding (GTAW) - also known as TIG (tungsten, inert gas),
5	Welding	x	A	B	C	contamination by an inert shielding gas such as Argon or Helium. *Gas metal arc welding (GMAW) - commonly termed MIG (metal, inert gas), uses
6	Welding	x	A	B	C	) over the weld puddle to protect it from the outside world. *Flux-cored arc welding (FCAW) - almost identical to MIG welding except it uses a special tubular
7	Welding	x	A	B	C	the outside world. *Flux-cored arc welding (FCAW) - almost identical to MIG welding except it uses a special tubular wire filled with flux; it can be used
8	Welding	x	A	B	C	be used with or without shielding gas, depending on the filler. *Submerged arc welding (SAW) - uses an automatically fed consumable electrode and a blanket of granular
9	Welding	x	A	B	C	zone are protected from atmospheric contamination by being submerged under the flux blanket. *Electroslag welding (ESW) - a highly productive, single pass welding process for thicl
10	Welding	x	A	B	C	flux blanket. *Electroslag welding (ESW) - a highly productive, single pass welding process for thick (greater than 1 in/25 mm up to about 12 in/300 mm

Figure 4. Sample lines of welding.

In the next phase, the multiword units (noun plus noun) were examined. Firstly, the author looked at the frequency and a list of 123 word combinations was provided by the corpus tool. All the words and their concordances were checked. Thereafter, the preliminary units responding to the criteria were chosen into the list. At the same time, the author also added words, which were not indicated by the corpus tool, however used in the articles and responding to the criteria i.e. high quality weld. If the multiword unit was longer than two words, the whole unit was included, i.e. welding power supply.

Clearly not all the word combinations were included in the welding list. The main reason for excluding the words from the list, were that they were not responding to the criteria. However, not always it was oblivious which words to include and which not. Some examples of the words, which were excluded, are:

‘metal rupture strain’ – by clicking for more context, the multiword unit was not included in the article. However, by examining every singular word the author included ‘metal’ in the list as it was already provided in the noun list; ‘flux coating’ – the term could not be found in the handbooks, dictionaries, the vocabulary list of the Estonian Welding Society; ‘filler wire’ – the same reason, term not used.

Proceeding with the verbs. The automatically created verb list included initially 96 tokens. However, some examples were not verbs. For example, the second word on the list was 'electrode', which only used as a noun. The first verb not included in the list was 'invent', which ranked as number 6. The examples provided by the corpus tool showed more general use of the word and not specifically connected to welding. See figure 5.

CLICK FOR MORE CONTEXT [?] SAVE LIST CHOOSE LIST -------- CREATE NEW LIST [?] SHOW DUPLICATES

1	Welding x	A	B	C	' of the 5th century BC that Glaucus of Chios was the man who single-handedly invented iron welding. Welding was used in the construction of the Iron pillar of Delhi
2	Welding x	A	B	C	using a three-phase electric arc for welding. In 1919, alternating current welding was invented by C. J. Holslag but did not become popular for another decade. Resistanc
3	Welding x	A	B	C	1885, who produced further advances over the next 15 years. Thermite welding was invented in 1893, and around that time another process, oxyfuel welding, became v
4	Welding x	A	B	C	War II. During the middle of the century, many new welding methods were invented. 1930 saw the release of stud welding, which soon became popular in shipbuilding
5	Welding x	A	B	C	welding, which soon became popular in shipbuilding and construction. Submerged arc welding was invented the same year and continues to be popular today. In 1932
6	Welding x	A	B	C	in greatly increased welding speeds, and that same year, plasma arc welding was invented. Electroslag welding was introduced in 1958, and it was followed by its cousin
7	Welding x	A	B	C	pulse welding (MPW) is industrially used since 1967. Friction stir welding was invented in 1991 by Wayne Thomas at The Welding Institute (TWI, UK) and
8	Blacksmith x	A	B	C	largely on their woodturning counterparts, had been used by some blacksmiths Samuel Colt neither invented nor perfected interchangeable parts, but his insistence (ar
9	Shielded metal arc welding x	A	B	C	1887 showing a rudimentary electrode holder. In 1888, the consumable metal electrode was invented by Nikolay Slavyanov. Later in 1890, C. L. Coffin received for his ar
10	Arc welding x	A	B	C	usage of three-phase electric arc for welding. In 1919, alternating current welding was invented by C.J. Holslag but did not become popular for another decade. Competi
11	Arc welding x	A	B	C	War II. During the middle of the century, many new welding methods were invented. Submerged arc welding was invented in 1930 and continues to be popular today.
12	Arc welding x	A	B	C	of the century, many new welding methods were invented. Submerged arc welding was invented in 1930 and continues to be popular today. In 1932 a Russian, Konstan
13	Arc welding x	A	B	C	in greatly increased welding speeds. In that same year, plasma arc welding was invented. Electroslag welding was released in 1958 and was followed by its cousin, electr

Figure 5. Sample sentences of 'invent'.

The verbs not included in the list were: forge, charge, limit, depend, employ, associate, require, use, burn, accomplish, flow, cause, mix, supply, design, apply, compare, combine, produce, generate, increase, remove, involve, affect, introduce, call, press, reduce, prevent, etc. Due to their general use, so many verbs were not considered to be included in the welding list. Yet, these words could be used for creating another vocabulary list, which could be developed further and contain supportive words for welding students and used for more general purposes than terminology list.

Adjectives provided by the corpus tool, were not included separately in the list. However, they were integrated as compound nouns, for example molten metal, shielding gas, non-ferrous metal, inert gas, etc. None of the adverbs offered by the corpus, made it to the list due to their general meaning, just to name first five examples: *exempli gratia*, commonly, normally, typically, rapidly. Again, these words might be considered adding to a supportive word list.

In the final stage of creating the word list, the welding teacher as a specialist advisor was consulted again. He made suggestions about the terms in Estonian, for example instead of *tahkestuma* to use *tarduma*, *söötma (traati)* to replace by *ette andma, otsliide vs servliide*, *mitteraudmetall vs värviline metal*, etc. He also advised to add some terms, which are used in the speciality classes of welding in Estonian, for example *luksepatööd, nihik, kivi- ja lamellketas, joonlaud*, *viil*, etc.

While completing the welding word list, the author also created another list for abbreviations. It includes eleven terms connected to the welding areas taught at VIKK. The list contains the terms and their abbreviations as well as Estonian translations.

In total there are 228 words in English Estonian welding word list and 217 words in Estonian English list; in addition, the list of welding abbreviations in English comprises 11 terms translated into Estonian.

2.4 Compilation of an exemplary set of welding materials

This section outlines a set of exemplary exercises that can be used in an ESP course for welding students in VIKK. The vocabulary list and exercises are first and foremost meant for the welding students at VIKK. However, they might be used for other similar courses, but it must be kept in mind to adopt the terminology list and the exercises to the needs of particular students.

The exemplary set of materials include three exercises on the personal protective equipment used in welding and three exercises on welding vocabulary more generally. The aim of the exercises is to practise specific nouns, verbs and collocations connected to the subject area. The exercises, which are aimed to practise nouns, are directly based on the welding word list compiled in this master project. The exercise on the verbs uses general verbs, which are not a part of the welding list. Yet, all the sentences in the verb exercise are connected to the topic of welding.

The types of exercises are gap-filling exercise and producing free text by describing pictures. For the latter, some scaffolding could be used by providing students with suitable word bank.

The objective of the exercises is firstly to practise the specific vocabulary of welding, especially on the topic of personal protective equipment. In addition, to improve students' speaking and communication skills. The speaking exercises can be set as a pair work first, and then discussed in the whole group.

2.5 Discussion

The study showed that a vocabulary list of welding can be created by combining data from a Wikipedia sub-corpus with data gained from welding handbooks, textbooks, terminology list and consulting a specialist adviser. However, the main limitation that arose while conducting such a study was the restriction of time and the difficulty to decide which words should be included in the final list. The ideal goal of this master project was to create more exercises, but the time for checking the terms, took too long and was too extensive. Yet, work with the vocabulary list will be continued, the terms will be divided into the categories of welding techniques – manual metal arc welding, semi-automated welding, TIG-welding and plasma cutting – and surely, there will be additional terms to add into the list. Creating the welding vocabulary list is a first step that will be basis for further developments of welding materials at VIKK.

Even though there were different steps and a combined method chosen for completing this welding list, there were moments of hesitation and intuition about should the word be included in the list or not. This is clearly a weakness of this work, which might have resulted in some way randomly chosen words. To increase the reliability of the welding list, the next step by dividing the words into categories, will help to improve the quality.

Another limitation of the method lies in the data included in the Wikipedia corpus. The articles in Wikipedia are aimed to a vast target audience, not specifically for welders or welding students in Estonia. This is also an issue, which might have contributed in an uneven quality of the word list. However, in terms of authenticity, the Wikipedia texts can be defined as the texts that are "used for genuine communicative purpose" (Bennett 2010: 5) as the created articles in Wikipedia are based on collaboration and communication between different people and their aim is to cover and explain a specific topic (Wikipedia 2019).

To sum up, it can be emphasised that a combined method for creating a speciality word list for welding students at VIKK can be used. The Wikipedia corpus tool offers valuable information, yet, it has to be approached critically with a focus on the target group.

CONCLUSION

The purpose of this master thesis was threefold. Firstly, to give an overview of ESP as a genre, then examine the corpus studies and materials' design connected to ESP. Secondly, to build a sub-corpus of welding by using a corpus tool provided by BYU Wikipedia corpus and analyse the results gained from the search options offered by this corpus tool. Finally, based on these results create a welding word list and compile a set of exemplary study materials for welding students at VIKK. The interest in the topic was derived from the author's experience of lack of suitable study materials aimed for ESP courses at VIKK, especially for welding courses.

The researched showed that the results of the Wikipedia corpus could be used for compiling a welding word list for students at VIKK. However, to gain a suitable and reliable word list for the target group much more effort than first planned was required. To increase the reliability and the suitability of the welding vocabulary, additional steps were necessary to take. These included consulting different textbooks and handbooks of welding in Estonian and in English, terminology list provided by the Welding Society of Estonia as well as the welding teacher of VIKK.

The main shortcoming of this kind of combined approach is connected to time, it is very time-consuming to check all the terms in two languages and in addition, consult a specialist. Therefore, this welding list could be used as a basis for further improvements as well as for creating suitable study materials for welding students. Thus, to gain more value out of this master project, it is advisable to continue developing the terminology list and create more exercises, which could be trialled and improved through the phase of testing. Finally, the results achieved from that phase could help to continue improving the overall quality of teaching English for welding students at VIKK.

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APPENDIX 1. Vocabulary list of welding. English Estonian

acetylene atsetüleen
acetylene hose atsetüleenivoolik
alloy sulam
alloy steel legeerteras
aluminium alumiinium
angle nurk
angle grinder
nurklihvija **arc** kaar
arc distance elektrikaare
pikkus **arc eye** fotokeratiit
arc length kaare pikkus
arc stability kaare
stabiilsus **arc voltage** kaare
pinge **arc welding**
kaarkeevitus **argon** argoon
base material põhimetall, -
materjal **base metal** põhimetall, -
materjal **bead** läbim
beam kiir
bench work
lukksepatööd **butt joint**
põkkliide **butt weld**
põkkõmblus **cancer** vähk
carbon süsinik
carbon dioxide süsihappegaas
carbon steel süsinikteras, mittelegeerteras
cast iron malm
coating kate
cold crack külmpragu
constant voltage power supply
jäik vooluallika tunnusjoon
contact sensor kontaktandur
contact tip voolukontakt, -
düüs, traadidüüs
contact tip voolukontakt
cool jahtuma
copper vask
corner joint nurkliide
crack (n) pragu, vigastus
crack (v) pragunema
current vool
cutting lõikus
defect viga
deposition rate
pealesulatustegur **depth** sügavus
diameter läbimõõt
dioxide dioksiid
edge joint serv- ehk otsliide
electric shock elektrilöök
electrode elektrood
electrode holder elektroodihoidik
electrode wire traatelektrood **eye**
injury silmavigastus
eye protection silmakaitsevahend
face plate kaitseklaas, valgusfilter
feed söötma, ette andma
feed wire traati ette andma
feed rate traadi etteandekiirus
ferrous metal raudmetall
file viil
filler sulam
filler material lisametall, -materjal
filler metal keevitustraat
filler rod keevitusvarras **fire**
extinguisher tulekustuti
flame leek
flux räbusti, šlakk
flux additive šlakilisand
frequency sagedus
fume ving
fusion sulamine **fusion line**
sulamisjoon **fusion welding**
sulakeevitus **gas** gaas

gas mixture gaasisegu
gas nozzle gaasisuudmik
gas welding gaaskeevitus
goggles kaitseprillid
groove servavahemik, servapilu
groove geometry servavahemiku kuju
hammer haamer
heat (n) kuumus
heat (v) kuumutama
heating kuumutus
heat input soojussisestus
helium heelium
helmet kaitsekiiver
high quality weld kvaliteetne
keevisõmblus
hose voolik
hot crack kuumpragu
hot work tuletöö
hydrogen vesinik
inert gas inertgaas
input sisestus
join liitma

joint liide
lamellar cutting disc
lamellketas **lap joint** katteliide
layer keeviskiht
leak (n) leke
leak (v) lekkima
leather apron nahkpõll
leather gauntlet gloves nahast keevituskindad
leather gloves nahkkindad **long-sleeve jacket** pikkade varrukatega jakk

manganese mangaan
magnesium magneesium
material materjal
melt sulatama
melting sulatus
melting point sulamispunkt
melting temperature
sulamistemperatuur **metal** metall
metal electrode metallelektrood
metal rod metallvarras **metal sheet** metallplaat
metal transfer traadi etteadmine
metal transfer method traadi etteandemehhanism
mixture segu
molten metal sulametall **non-ferrous metal** värviline metall
nozzle düüs
oxide oksiid
oxygen hapnik
oxygen hose hapnikuvoolik
parameter parameeter **personal protective equipment**
isikukaitse vahendid
plate plaat
polarity polaarsus
pool keevitusvann
porosity poorsus
power souce vooluallikas
power supply vooluallikas
pressure surve
procedure protseduur
process protsess
protective clothing
kaitseriietus **radiation** kiirgus
ruler joonlaud
run läbim
safety boots turvasaapad

sheet metal lehtmetall
shield (n) kate
shield (v) kaitsma; eraldama
shielding gas kaitsegaas
slag räbu
solidify tahkestama
spatter pritsmed
speed kiirus
spot lighting kohtvalgustus **spot ventilation** kohtäratõmme **spray transfer** pihustussiire **stainless steel** roostevaba teras **stationary workplace** statsionaarne töökoht

stick welding käsikaarkeevitus ehk elektroodkeevitus
steel teras
steel plate terasplaat
steel toe boots turvasaapad
stone cutting disc kiviketas
strike (v) süütama
strike an arc keevituskaare süütamine
surface pind
synthetic clothing sünteetiline riietus
temperature temperatuur **thickness** paksus
T-joint T-liide ehk vastakliide
tool töövahend
torch põleti, keevituskäpp
torch handle keevituspõleti käepide
transformer keevitustrafo **tungsten** volfram
tungsten arc welding – TIG-keevitus
tungsten electrode volframelektrood
ultraviolet rays ultravioletkiired
voltage pinge
weld (n) keevisõmblus
weld (v) keevitama
weld area keevispind
weld groove servavahemikõmblus
weld joint keevisliide
weld metal keevismetall **weld penetration** läbikeevitus **weld pool** keevisvann
weld process keevitusprotsess
weld quality keevituskvaliteet
weld surface keevisõmbluse pealispind
weld zone keevitustsoon **welder** keevitaja
welding keevitus

welding arc keevituskaar
welding area keevitusala;
keevisala **weld bead** keevisläbim
weld run keevisläbim **welding**
current keevitusvool
welding curtain keevituala kaitsekardin
welding electrode keevituselektrood
welding wire keevitustraat
welding equipment keevitusseadmestik
welding gun keevituspüstol
welding helmet keevitusmask
welding jig rakis
welding joint keevisliide
welding machine keevitusseade
welding method keevitusmeetod
welding power supply
keevituse vooluallikas
welding procedure keevitusprotseduur
welding speed keevituskiirus **welding**
stress keevitusjääkpinge **welding table**
keevituslaud
welding technique keevitustehnika
welding technology keevitustehnoloogia
welding torch keevituspõleti
welding transformer keevitustrafo
wire keevitustraat
wire brush traathari
wire electrode keevitustraat
wire feed (unit) traadi
etteandmismehhanism
wire feed speed traadi etteandmiskiirus
workpiece detail, toorik
workpiece surface detailipind

APPENDIX 2. Vocabulary list of welding. Estonian English

ajutine töökoht temporary workplace **alumiinium** aluminium
argoon argon
atsetüleen acetylene
atsetüleenivoolik acetylene hose **detail** workpiece
detailipind workpiece surface
dioksiid dioxide
düüs nozzle
elektrikaare pikkus arc distance
elektrilöök electric shock
elektrood electrode
elektroodihoidik electrode holder
elektroodkeevitus stick welding
eraldama shield
ette andma feed
fotokeratiit arc eye
gaas gas
gaasisegu gas mixture
gaasisuudmik gas nozzle
gaaskeevitus gas welding
haamer hammer
hapnik oxygen
hapnikuvoolik oxygen hose
heelium helium
inertgaas inert gas
isikukaitsevahendid personal protective equipment
jahtuma cool
jäik vooluallika tunnusjoon constant voltage power supply
joonlaud ruler
kaar arc
kaare pikkus arc length **kaare pinge** arc voltage **kaare stabiilsus** arc stability
kaarkeevitus arc welding
kaitsegaas shielding gas
kaitsekiiver helmet **kaitseklaas** face plate **kaitseprillid** goggles
kaitseriietus protective clothing
kaitsma shield, protect
käsikaarkeevitus stick welding
kaitse shield

kate coating
katteliide lap joint
keevisala welding area
keeviskiht layer
keevisläbim weld bead
keevisläbim weld run
keevismetall weld metal
keevisõmblus weld
keevisõmbluse pealispind weld surface
keevispind weld area
keevisvann weld pool
keevitaja welder
keevitama weld
keevitus welding
keevitusala kaitsekardin welding curtain
keevitusala welding area
keevituse vooluallikas welding power supply
keevituselektrood welding electrode
keevitusjääkpinge welding stress
keevituskaar welding arc
keevituskaare süütamine strike an arc
keevituskäpp torch
keevituskiirus welding speed
keevituskvaliteet weld quality
keevituslaud welding table
keevitusmask welding helmet
keevitusmeetod welding method
keevituspõleti käepide torch handle
keevituspõleti torch
keevituspõleti welding torch
keevitusprotseduur welding procedure
keevitusprotsess weld process
keevituspüstol welding gun
keevitusseade welding machine
keevitusseadmestik welding equipment
keevitustehnika welding technique
keevitustehnoloogia welding technology
keevitustraat welding wire, wire electrode, filler metal
keevitustrafo transformer
keevitustrafo welding transformer
keevitustsoon weld zone
keevitusvann pool
keevitusvarras filler rod
keevitusvool welding current
kiirgus radiation
kiirus speed
kiviketas stone cutting disc
kohtäratõmme spot ventilation
kohtvalgustus spot lighting

kontaktandur contact sensor
konteiner container
külmpragu cold crack
kuumpragu hot crack
kuumus heat
kuumutama heat
kuumutus heating
kvaliteetne keevisõmblus high quality weld
lamellketas lamellar cutting disc
leek flame
legeerteras alloy steel
lehtmetall sheet metal
leke leak
lekkima leak
leukeemia, valgeveresus leukemia
liide joint
liitma join
lisamaterjal filler material
lisametall filler material
lukksepatööd bench work
lõikus cutting
läbikeevitus weld penetration
läbim bead, run
läbimõõt diameter
magneesium magnesium
malm cast iron
mangaan manganese
materjal material
metall metal
metallelektrood metal electrode
metallplaat metal sheet
metallvarras metal rod
mittelegeerteras carbon steel
nahkkeevituskindad leather gauntlet gloves
nahkkindad leather gloves
nahkpõll leather apron
nihik callipers
nurk angle
nurklihvija angle grinder
nurkliide corner joint
oksiid oxide
otsliide edge joint
paksus thickness
parameeter parameter
pealesulatustegur deposition rate
pihustussiire spray transfer
pikkade varrukatega jakk long-sleeve jacket
pind surface
pinge voltage
plaat plate
polaarsus polarity
poorsus porosity
põhimaterjal base metal
põhimetall base material
põkkliide butt joint
põkkõmblus butt weld
pragu crack
pragunema crack
pritsmed spatter
protseduur procedure
protsess process
räbu slag
räbusti flux
rakis welding jig
raudmetall ferrous metal
roostevaba teras stainless steel
sagedus frequency
segu mixture
servapilu groove
servavahemik groove
servavahemikõmblus weld groove
servavahemiku kuju groove geometry
servliide edge joint
silmakaitsevahend eye protection
silmavigastus eye injury
sisestus input
šlakilisand flux additive
soojussisestus heat input
söötma feed
statsionaarne töökoht stationary workplace
sügavus depth
sulakeevitus fusion welding
sulam alloy, filler
sulama melt
sulametall molten metal
sulamine fusion
sulamisjoon fusion line
sulamispunkt melting point
sulamistemperatuur melting temperature
sulatama melt
sulatus melting
sünteetiline riietus synthetic clothing
surve pressure
süsihappegaas carbon dioxide
süsinik carbon
süsinikteras carbon steel

süütama strike
tahkestama solidify
temperatuur temperature
teras steel
terasplaat steel plate
T-liide T-joint
toorik workpiece
töövahend tool
traadi etteadmine metal transfer
traadi etteandekiirus feed rate
traadi etteandmiskiirus wire feed speed **traadi etteandmismehhanism** wire feed (unit)
traadidüüs contact tip
traatelektrood electrode wire **traathari** wire brush
traati ette andma feed wire
tulekustuti fire extinguisher
tuletöö hot work
turvasaapad safety boots
turvasaapad steel toe boots
ultraviolettkiir ultraviolet ray
vähk cancer
värviline metall non-ferrous metal
valgusfilter face plate
vask copper
vastakliide T-joint
vesinik hydrogen
viga defect
vigastus crack
viil file
ving fume
volfram tungsten
volframelektrood tungsten electrode
vool current
voolik hose
vooluallikas power souce
vooluallikas power supply
vooludüüs contact tip
voolukontakt contact tip

APPENDIX 3. List of welding abbreviations

FCAW flux-cored arc welding kaarkeevitus täidistraadiga **GMAW**

gas metal arc welding kaitsegaasis metallelektroodkeevitus

GTAW gas tungsten arc welding TIG-keevitus ehk sulamatu elektroodiga intergaasi keskkonnas kaarkeevitus;

MAG metal active gas kaarkeevitus aktiivgaasis

MIG metal inert gas kaarkeevitus intergaasis

MIG/MAG welding kaitsegaaskaarkeevitus, poolautomaatkeevitus

MMA manual metal arc welding käsikaarkeevitus

PPE personal protective equipment isikukaitsevahendid

SAW submerged arc welding kaarkeevitus räbustis, räbustikeevitus

SMAW shielded metal arc welding käsikaarkeevitus

TIG-welding tungsten arc welding TIG-keevitus ehk sulamatu elektroodiga intergaasi keskkonnas kaarkeevitus; tähistatud ka lühendiga GTAW

APPENDIX 4. A set of exemplary study materials

Exercise 1. Fill in each blank with the best item from the list. There are two items you do not need.
(Ex is based on Bennett 2010: 34 and Safety issues of Welding on Wikipedia)

	translucent welding curtains	carbon dioxide
weld	welders	welding
arc eye	personal protective equipment	oxygen
goggles	leather gloves	apron
welding helmet	oxides	long-sleeve jackets
face plate		manganese

1. Using new technology and proper protection greatly reduces risks of injury and death associated with ______________________.

2. To prevent injury, _____________________ wear _______________ _______________ __________________ in the form of heavy _______________ ______________ and protective ___________________ ___________________ to avoid exposure to extreme heat and flames.

3. Additionally, the brightness of the weld area leads to a condition called _____________ ______________ or flash burns in which ultraviolet light causes inflammation of the cornea and can burn the retinas of the eyes.

4. __________________ and _______________ ______________ with dark UV-filtering face plates are worn to prevent eyes.

5. Since the 2000s, some helmets have included a ______________ ______________, which instantly darkens upon exposure to the intense UV light.

6. To protect bystanders, the welding area is often surrounded with _______________ ___________________ _______________________.

7. Processes like flux-cored arc welding and shielded metal arc welding produce smoke containing particles of various types of ___________________ .

8. Fumes and gases, such as ________________ ________________, ozone, and fumes containing heavy metals, can be dangerous to welders lacking proper ventilation and training.

9. Exposure to ______________________ welding fumes, for example, even at low levels, may lead to neurological problems or to damage to the lungs, liver, kidneys, or central nervous system.

10. Some common precautions include limiting the amount of ____________________ in the air, and keeping combustible materials away from the workplace.

Exercise 2. + noun. Choose a suitable word to complete each sentence. Look at the bold noun entry for help.

shock	work	reaction	hat	beam
cover	glasses	rays	job	wear
helmet	injuries	clothing 2x	damage	product
gloves	plate	plastic	cover	thing

a. A welder needs to protect himself/herself and wear **protective __________________**.

b. Since many common welding procedures involve an open electric arc or flame, the risk of burns and fire is significant; this is why it is classified as a **hot __________________**.

c. To protect his/her hands and skin a welder needs to wear dry and undamaged **leather __________________**.

d. A welder must protect his/her eyes and skin due to the high risk of **ultraviolet __________________**.

e. To protect his/her eyes, a welder needs to wear **safety __________________**.

f. Safety glasses protect a welder against **eye __________________**.

g. A welder needs to wear a **welding __________________**.

h. Some helmet models feature an automatically self-darkening **face __________________**.

i. The hazards of welding include the risk of **electric __________________**.

j. A welder must never wear any **synthetic __________________**.

Exercise 3. Complete the sentences with suitable verbs. Use correct form of the verb.

cut	come	use	choose	cover
span	match	generate	join	

a. Welding is a process of _______________ metals using heat.
b. The heat ____________________ either from an electric arc or a gas flame.
c. During shielded metal arc welding an arc _______________________ the gap between the electrode and the gap.
d. SMAW _____________________ temperatures around 5000°C.
e. An angle grinder might be ____________________ to ______________ metal.
f. There are plenty of electrode rods to ___________________ from.
g. Electrode is __________________ by flux.
h. Core wire of the rod must __________________ the metals to be joined.

Exercise 5. Choose the correct word in italics, which forms a common collocation with the word in bold.

a. **Acetylene** *plate / hose / wire* is coloured in red.
b. **Alloy** *steels / metals / plates* are made by combining carbon steel with alloying elements.
c. **Arc** *leg / face / eye* is caused by ultraviolet radiation.
d. MIG operation requires less *manual / mechanical / electrical* **skill**.
e. Welding **cast** *silver / iron / steel* is difficult because of low carbon composition.
f. MIG welding uses always *direct / directly / indirect* **current**.

Exercise 5. What do you wear? Have a look at the picture of the uniformed student. Point out the personal protection clothing items and justify their use by using for example phrases *in order to, because, it's used for –ing; too, enough.*

____

____

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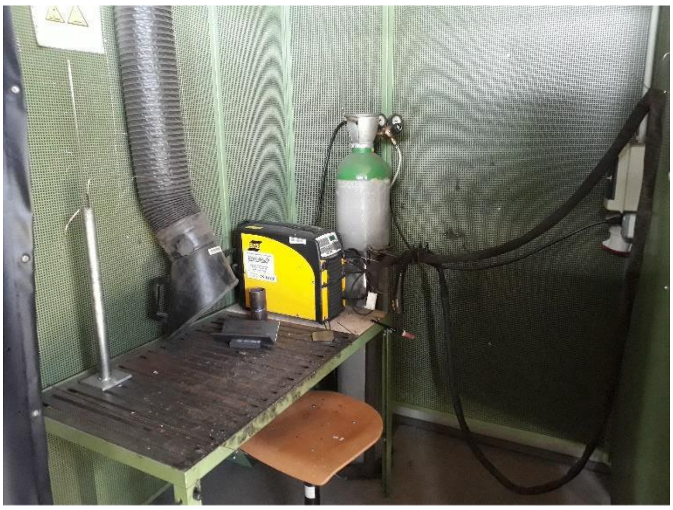
Exercise 6. Describe your workplace. Describe and compare your welding workstation to the classroom we are studying now. Compare the size, lighting, equipment, machinery, atmosphere of the rooms. What similarities and differences are there?



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KEY

Exercise 1

1.welding
2. welders; personal protective equipment; leather gloves; long-sleeve jackets
3. arc eye
4. goggles; welding helmet
5. face plate
6. translucent welding curtains
7. oxides
8. carbon dioxide
9. manganese
10. oxygen

Exercise 2

a. clothing
b. work
c. gloves
d. rays
e. glasses
f. injuries
g. helmet
h. plate
i. shock
j. clothing

Exercise 3

a. joining
b. comes
c. spans
d. generates
e. used; cut
f. choose
g. covered
h. match

Exercise 4

a. hose
b. steels
c. eye
d. manual
e. iron
f. direct

RESÜMEE

TARTU ÜLIKOOL
ANGLISTIKA OSAKOND

Designing a Set of English for Specific Purposes Study Materials for Welding Students at Viljandi Vocational Training Centre

Erialase inglise keele õppematerjali koostamine Viljandi Kutseõppekeskuse keevituse eriala õpilastele

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2019

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