Integrating Terminological Methods into Special Language Teaching: A Case Study in Finland

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Integrating Terminological Methods into Special Language Teaching: A Case Study in Finland

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Tutkimuksen tavoitteena oli selvittää, miten korkeakoulutasoista ammattienglannin (English for Special Purposes, ESP) opetusta voidaan kehittää integroimalla terminologisia menetelmiä osaksi opetusta ja oppimistehtäviä. Tutkimus toteutettiin toimintatutkimuksena neljällä liiketalouden ja matkailun alan ammattienglannin opintojaksolla Lahden ammattikorkeakoulussa. Niitä varten laadittiin terminologisia menetelmiä englanniksi käsittelevä luentoaineisto ja oppimistehtävä. Opiskelijat laativat englanniksi kurssien aiheisiin liittyviä käsitejärjestelmiä kuvaavia graafisia esityksiä (satelliittimalleja) ja käsitteiden määritelmiä. Tulokset osoittivat, että opiskelijat osasivat soveltaa menetelmiä ja yhdistivät näin alan tietouden omaksumisen alan sanaston omaksumiseen. Toisaalta tutkimuksessa ilmeni kehittämiskohteita, mikä näkyi myös opiskelijoiden vastauksissa kyselyyn, jolla selvitettiin heidän näkemyksiään luentoaineistosta, oppimistehtävästä ja sovelletuista terminologisista menetelmistä. Opettajan tukea tarvittiin menetelmiin perehdyttäessä ja niitä sovellettaessa. Kun terminologisia menetelmiä sovelletaan ammattikielen opetuksen kontekstissa, opettajan tehtävä on sanaston ja sisältöjen välittämisen sijaan ohjata terminologisten menetelmien käyttöä. Opiskelijalle vastaavasti annetaan tilaa ottaa oman erikoisalansa asiantuntijan rooli.

Keywords: English for Special Purposes, ESP, experiential learning, LSP teaching, terminology

1 Background

Successful professional communication requires competence in the communicative practices and genres of a given field as well as knowledge of the field. Learners need to gain field-specific vocabulary and some knowledge of the basic concepts and concept systems of the field (see Basturkmen 2006: 137). To provide learners with such competence, teaching LSP (*language for special purposes*) – in this case ESP (*English for special purposes*) – faces challenges. For example, meeting these aims raises a dilemma of how much special-field knowledge ESP language teachers should have (see Gollin-Kies et. al 2015: 195–197; Lesiak-Bielawska 2015: 3–5, 10–11).

In this paper, we propose a solution and discuss an action research case study that integrated terminological methods into teaching ESP. The specific methods – systematic concept analysis and its conceptual tools as described by Nuopponen (2010a, b, 2011) – were selected based on the notion that they have been developed for analysing concepts and related knowledge structures in any field and any language. We adapted these methods for university-level ESP courses where the students used the methods to investigate professional topics

and created oral presentations about the topics in English. For example, in the context of teaching Swedish for professional purposes to business students, Pilke (2008: 14) has pointed out that students can analyse and present concept relations and learn disciplinary knowledge by using terminological methods. The terminological tools used on the courses were the so-called satellite model, a tool to visualise concept systems (see e.g. Nuopponen 2011; 2016), as well as principles for writing terminological concept definitions (see e.g. Sanastotyön käsikirja 1989; Suonuuti 2001; International Organization for Standardization [ISO] 2009).

The material for the study was collected on four ESP courses – *English for Work* (3 courses) and *Global Communication in Business* (1 course) – in the Faculty of Business and Hospitality Management at Lahti University of Applied Sciences[1]. Two of the *English for Work* courses are for students specializing in information technology: *English for Work (IT)* is for students studying in Finnish, whereas *English for Work (BIT)* is for students studying in English. The third, *English for Work (TOURISM),* is for tourism and hospitality management students studying in Finnish. *English for Work* is a compulsory ESP course and provides students with the basics of their specialisation in English. *Global Communication in Business* is a second-year course and compulsory in most degree programs in business. It focuses on written and oral communication in global business in English (e.g. meetings and negotiations).

In the following, we will first discuss some theoretical background involved with LSP and ESP teaching and the chosen terminological methods. We will then introduce the study and the course design as well as discuss the results and experiences drawn from the study and summarise some ideas for developing the course design further.

2 Teaching English for Special Purposes

ESP language teaching comes in various forms, but certain characteristics distinguish it from teaching general language. Strevens (1988) has provided an often-quoted (e.g. Basturkmen 2010: 13) list of characteristics that define ESP language teaching. The list, later modified by Dudley-Evans and St John (1998; Dudley-Evans 1998), distinguishes between absolute and variable characteristics of ESP teaching. According to the absolute characteristics, ESP teaching is **learner-centred** and "designed to meet specific needs of the learner"; it is **discipline/field-centred** and "makes use of the underlying methodology and activities of the disciplines it serves"; and it is **special-language centred** and focuses on "the language appropriate to the special language of a discipline in terms of grammar, lexis, register, study skills,

[1] Since January 2020, LAB University of Applied Sciences.

discourse and genre" (Dudley-Evans & St John 1998: 4–5; Dudley-Evans 1998: 6; Strevens 1988).

The variable characteristics relate to the specific field, methodology, and learners. The target group is normally adults, for example, university students. Regarding language skills, ESP courses typically require good prior knowledge of English. For example, Tarnopolsky (2015: 157) maintains that effective ESP language learning requires students to have at least intermediate level English skills. Finally, a major objective that LSP courses generally have is to teach concepts and terms of the field. Here, the methodology varies widely from using traditional **term lists** to **constructivist** and **experiential** approaches.

3 Terminological Methods

Although ESP teaching aims to provide knowledge of field-specific vocabulary and the basic concepts and concept systems of the field, it is, however, impossible to teach all field-specific terminology. Terminological methods could offer students a way to take an active role in acquiring field-specific knowledge and, in the process, learn related concepts and terms. In using the methods, students learn concepts and terms of the topics they examine in their assignments. Moreover, they can use the methods later when they need to analyse and find concepts and terms related to their future jobs. Instead of the teacher providing terms and concepts, the study we discuss here put the participating students in charge of looking for and defining concepts and terms. For this purpose, the field of terminology has established methods and principles described in various textbooks and standards (e.g. Sanastotyön käsikirja 1989; ISO 2009).

Terminological methods have an interdisciplinary background, where indeed LSP teaching was one of the sources in the form of Wirtschaftslinguistik ("business linguistics") at European business schools (Picht & Draskau 1985: 26). Language teachers concluded that "no LSP can be taught or learned without professional knowledge – knowledge about the concepts and the terms" (Picht 2011: 7). According to Picht (ibid.), their insights into LSP had influenced the thinking of Eugen Wüster, who compiled the methods and principles for terminology work (Wüster 1979). These methods were devised to map concepts from a professional field and to organise them in concept systems and condense the related knowledge to accurate definitions according to a set of rules. In this process, terms designating concepts are extracted and their relations to the concepts are clarified and specified (see e.g. ISO 2009). Finally, while terminological methods and principles were compiled primarily for terminology work, because of their general applicability for analysing concepts and terms, they have also been used and modified for various other purposes, e.g. ontology work (Madsen & Thomsen 2008) and research (Nuopponen 2005b).

Systematic concept analysis is based on terminological methods and, accordingly, focuses on finding out concepts of the examined field and determining relations between concepts. Its tools are an extensive classification of concept relation types and the mind-map-like satellite model for visualising concept relations and the related concept systems (Nuopponen 2011; 2016; 2018). Creating satellite models can be beneficial for students. For example, Davies' (2011: 280) summary of cognitive science research reveals that creating visual representations of knowledge structures can improve learning. Focusing on concept maps, Kankkunen (1999: iv, 64) found out that they can help learn concepts and their meanings.

To summarize, the rationale for selecting terminological methods was that they offer a novel way to learn professional concepts and knowledge. Furthermore, when once learned, these methods can be useful later when encountering new fields and concepts.

4 Outline of the Study

The course assignment design was based on several approaches, and combined views from pedagogy and terminology research. From the viewpoint of pedagogy, it related to the experiential learning cycle presented by Kolb and Kolb (2017: 10–11) and was further characterised by the phases of experiential-type assignment projects described by Knutson (2003: 56–59). Working on the assignment also included experiential-type activities listed by Tarnopolsky (2015: 159–161; see also 2012: 28–61): brainstorming, discussing, and giving presentations about professional topics, searching for extra-linguistic information, and doing project work. Finally, regarding terminology research, doing the assignment work involved systematic concept analysis described by Nuopponen (2010b: 7–13) and writing concept definitions (e.g. Picht & Draskau 1985; Suonuuti 2001).

The assignment project included different phases. Knutson (2003: 56–59) lists the following four for experiential-type English as a Second Language (ESL) assignment projects: "exposure, participation, internalization, and dissemination." In our course assignment design, **the exposure phase** included giving a one-hour to an hour-and-half lecture and instructions to the students as well as a discussion about the taught terminological methods and tools to help the students reflect on their use. The **participation phase** involved working on the topic – i.e. examining the topic and analysing concepts – and creating satellite models. The **internalisation phase** aimed at reflecting on the work in workshop sessions during but also at the end of each course. Finally, the **dissemination phase** connected the work to real-world communicative practices: writing concept definitions and giving a professional presentation about the analysed topic in English (e.g. *destination marketing, Netflix*).

A general pedagogical foundation was provided by the **learning cycle** that Kolb and Kolb (2017: 10–11) describe as an iterative process connecting action, reflection, experience, and abstraction. In the process, learners experience something (concrete experience), reflect on the experience (reflective observation), draw and form conclusions based on the reflections (abstract conceptualisation), and use the gained knowledge in creating new experiences (active experimentation). Accordingly, in our study, the students first practiced how to use terminological methods to examine professional topics. This was started after the lecture, and the students kept experimenting with the methods throughout the assignment project. They also discussed and reflected on using the methods throughout the project but especially in workshop sessions. In addition to this, at the end of each course, the students answered an online questionnaire that helped them reflect on the overall experience. The questionnaire had a dual role because it also collected material for the study. Based on what they had learned during the assignment project, the students visualised concept systems and wrote concept definitions and, finally, gave oral presentations in English about their topics.

4.1 Lecture and Materials

The approximately 60-minute lecture consisted of 14 to 16 slides depending on the course and introduced key concepts of terminological methods, such as *concept, term, object/referent*, and *definition* (see e.g. Suonuuti 2001; Picht & Draskau 1985). The lecture also presented six common concept relation types: *generic relation, activity relation, partitive relation, enhancement/accessorial relation, temporal relation, transmission relation*, and *origination relation* (see e.g. Nuopponen 2018). The students were expected to identify at least some of these when they investigated their topics.

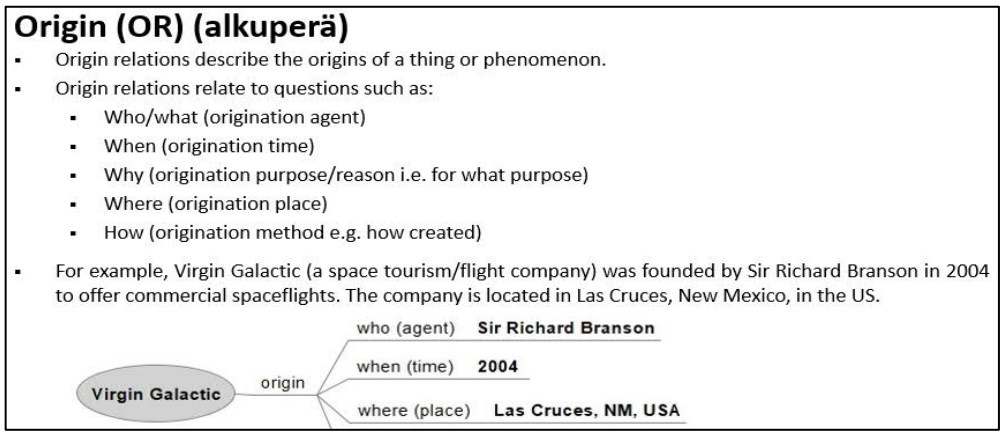


Image 1. Screenshot of the lecture materials: origination relation

The lecture slides and the assignment instructions also included examples of concept definitions in English. Image 1 shows an example of the lecture slides; the slide introduces *origination relation,* which was called *origin relation* to make it easier to remember. The slides were compiled by keeping in mind that this was the first time the students encountered any theory of terminology. For instance, the various relations in Image 1 are expressed by referring to the related phenomena with interrogative pronouns (*who, when, why, where, how*), and the actual phenomena are in parentheses. (See Nuopponen 2005a: 134–135; 2011: 9; 2018: 462–463.)

4.2 Course Assignment

The assignment project had two main parts. Part 1 – similar to the participation phase of experiential-type assignment projects (see Knutson 2003: 57) – was integrated with the six steps of systematic concept analysis as described by Nuopponen (2010b: 6). *Step 1* of systematic analysis focuses on defining the purpose the analysis; *Step 2* concerns gaining knowledge about the related concepts; *Step 3* is about searching for material; *Step 4* concerns compiling a preliminary concept system; *Step 5* focuses on processing the related material; finally, *Step 6* aims at combining everything (ibid. 7–13).

Accordingly, in Part 1, the students brainstormed on professional topics and simulated the role of professionals (*Step 1*). The steps 2 to 6 required them to keep discussing their topics among themselves and with the teacher, to examine the topics further and to search for information and material, and finally, to combine everything. Part 2 corresponded with the dissemination phase of experiential-type assignment projects (see Knutson 2003: 58) and included three more steps: creating satellite models with mind map software, writing concept definitions, and giving a professional presentation. Creating the satellite models and writing the definitions were intended to help the students get a better grasp of their topics (e.g. *destination marketing, Netflix*). The result of the assignment project, then, was a professional oral presentation about the examined topic in English given to an imagined audience, for example, an IT company's international clients.

5 Research Data and Results

The material examined in the study included the students' coursework and answers to the questionnaire that was administered to find out their views on the teaching materials and terminological methods. The questionnaire's statements were on a five-point scale: 5 (strongly agree), 4 (agree), 3 (neither agree/disagree), 2 (disagree), 1 (strongly disagree). Out of the 118 students on the four courses, 95 answered the questionnaire. Regarding the course-

work, the students submitted altogether 43 satellite models and 40 documents, including anything from two to over 20 concept definitions (Table 1). Some students did not submit concept definitions during the study. Moreover, the *English for Work (BIT)* students worked individually, whereas the *English for Work (IT)* and *(TOURISM)* students worked in small teams or pairs. The *GLOBAL* students worked either in pairs or individually.

Table 1. Research data summarised

Course	Enrolled Students	Satellite Models	Concept Definition Files	Questionnaire Respondents
English for Work (IT)	39	11	11	31 (FIN)
English for Work (BIT)	10	7	7	5 (ENG)
English for Work (Tourism)	40	9	8	35 (FIN)
Global Communication in Business	29	16	14	24 (18 FIN/ 6 ENG)
Total	118	43	40	95 (81%)

When analysed, the satellite models and concept definition documents were assigned four evaluative levels: *Level 3: thorough to extensive use of terminological methods*; *Level 2: some to thorough use of terminological methods*; *Level 1: some use of terminological methods*; *Level 0: very little use of terminological methods or cannot be classified*. The satellite models were expected to identify concept relations and use symbols to designate superordinate and subordinate concepts, steps of a process, and other symbols. The concept definitions were expected to define concepts in relation to superordinate concepts, to include defining characteristics, and to be concise but grammatically good; furthermore, the documents were expected to include 7 or 10 definitions depending on the course. Finally, we need to note that this categorisation was only for the analysis' sake, not for grading the submitted coursework.

5.1 Evaluating Satellite Models

Analysing the coursework revealed that, in total, about half (53%) of the 43 satellite models showed some to thorough (Level 2: 16%) or thorough to extensive (Level 3: 37%) use of terminological methods, meaning that they identified different concept relation types and, for example, used symbols to designate superordinate and subordinate concepts. The rest (47%) showed very little (Level 0: 21%) to some (Level 1: 26%) use of the methods. Many of these did not identify concept relation types, or they identified only some, or they did not use symbols to show superordinate and subordinate concepts, or the nodes did not include actual concepts.

Image 2 shows a part of a Level 3 satellite model that was created on the *English for Work (IT)* course. It analyses the microblogging service Twitter. The students on this course were

instructed to examine an IT product or service. Already the partial image of the example includes various types of concept relations as was required: an origin, a process, a type, and an activity relation. It also includes symbols designating the different steps of a process as well as a symbol designating subordinate concepts. In some cases, as in Image 2, the nodes included factual or other information rather than concepts. This, however, is not necessarily a downside but rather shows that the students had gained knowledge about their topic during the process.

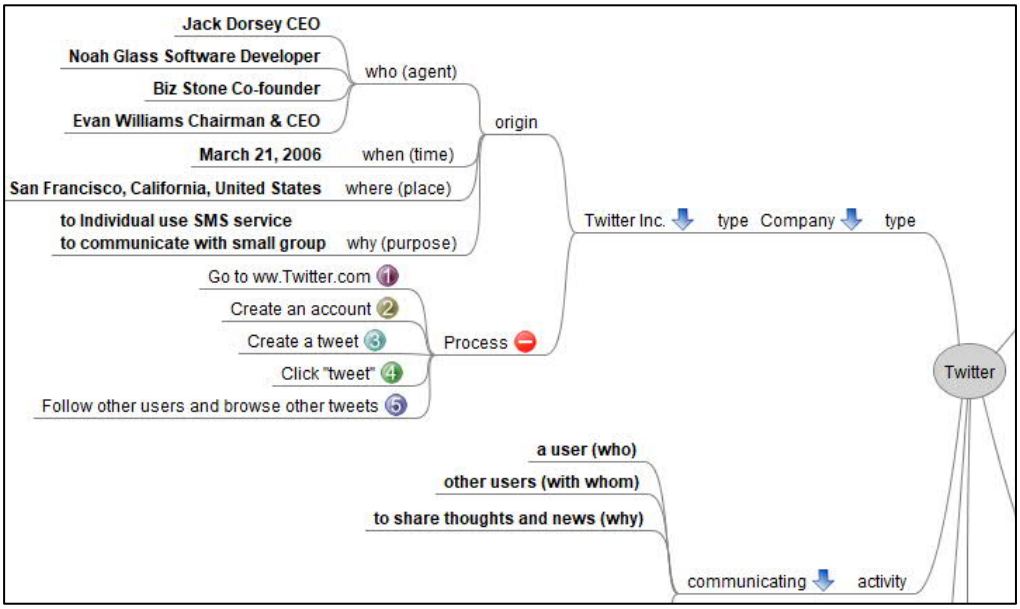


Image 2. Screenshot of a Level 3 satellite model

Image 3 shows a part of a Level 0 satellite model submitted on the *English for Work (TOUR-ISM)* course. The students on this course had to analyse generic concepts (e.g. *adventure tourism, destination marketing*) suggested by a tourism and hospitality management lecturer. The satellite model shown here includes concept nodes but also nodes including other type of information. However, the satellite model does not identify concept relations or use symbols to designate superordinate and subordinate concepts as was required. This makes it a mind map or a preliminary satellite model rather than a complete satellite model.

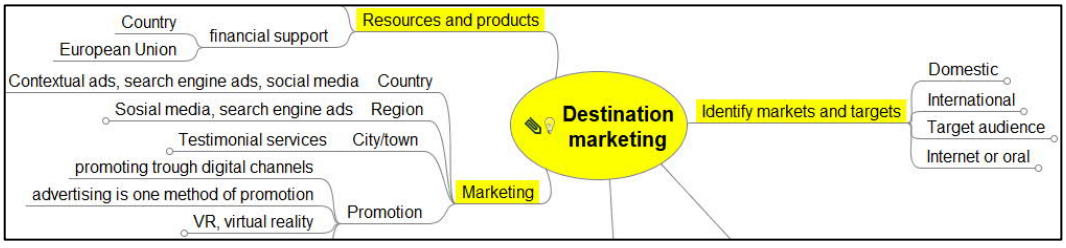


Image 3. Screenshot of a Level 0 satellite model

5.2 Evaluating Concept Definitions

Of the 40 concept definition documents, in total, almost two thirds (62.5%) showed some to thorough (Level 2: 32.5%) or thorough to extensive (Level 3: 30%) use of terminological methods. That is, these documents included the expected number of concepts (at least 7 or 10) of which most were defined in relation to superordinate concepts, had defining characteristics, and were concise but showed the writers' English skills.

Image 4 shows a part of a Level 3 concept definition document created on the *English for Work (TOURISM)* course. The topic was *adventure tourism*, and the full document included 15 definitions, mostly defining generic concepts. Most definitions were based on a superordinate concept. This is also evident in the examples in Image 4: *Surfing… a surface water sport; Sandboarding...a board sport.* Moreover, the definitions included defining characteristics mostly presented in relative clauses as the instructions suggested. Many definitions also included additional characteristics and information about the defined concept.

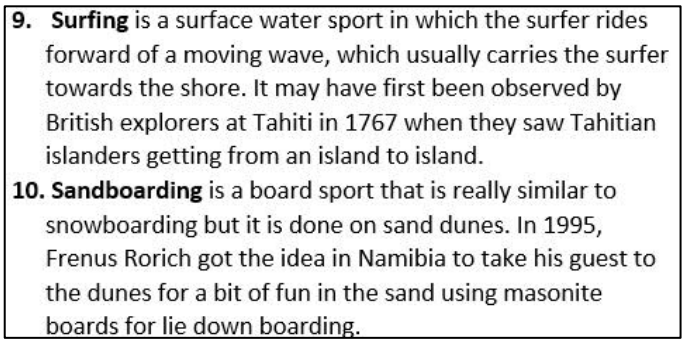
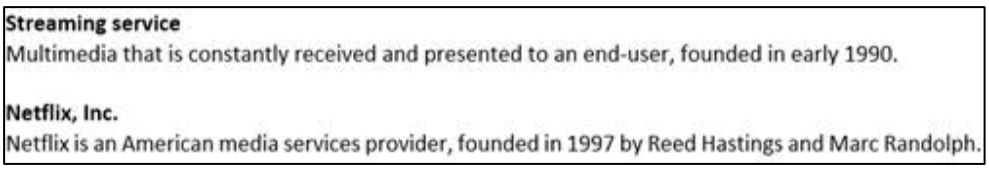

9. **Surfing** is a surface water sport in which the surfer rides forward of a moving wave, which usually carries the surfer towards the shore. It may have first been observed by British explorers at Tahiti in 1767 when they saw Tahitian islanders getting from an island to island.
10. **Sandboarding** is a board sport that is really similar to snowboarding but it is done on sand dunes. In 1995, Frenus Rorich got the idea in Namibia to take his guest to the dunes for a bit of fun in the sand using masonite boards for lie down boarding.

Image 4. Screenshot of a Level 3 concept definition document

In total, close to two fifths (37.5%) of the concept definition documents showed very little (Level 0: 15%) to some use of terminological methods (Level 1: 22.5%), having more shortcomings than Level 3 or Level 2 documents. They did not include the expected number of concepts (7 or 10 depending on the course), some or many of the concepts were not defined in relation to superordinate concepts, the definitions had grammatical mistakes, etcetera.


Streaming service
Multimedia that is constantly received and presented to an end-user, founded in early 1990.

Netflix, Inc.
Netflix is an American media services provider, founded in 1997 by Reed Hastings and Marc Randolph.

Image 5. Screenshot of a Level 0 concept definition document

Image 5 shows a Level 0 type concept definition document. The students had examined Netflix, and the document included only the two definitions shown in the image. The first definition defines a generic concept *(Streaming service)*, whereas the second defines an individual concept (*Netflix*). Terminological concept definitions commonly focus on generic concepts, not individual concepts. Yet, to gain professional knowledge in English, also defining individual concepts can be useful for ESP students. The definitions are concise, and each concept is defined based on a superordinate concept and includes defining characteristics. The requirement, however, was to write at least 7 definitions.

Finally, the satellite models and concept definition documents were not always equal. For instance, the Netflix satellite model was Level 1, including various concepts, but the corresponding document only had the above two definitions. Regarding the Level 3 satellite model in Image 2, the corresponding concept definition document was Level 2 and included 10 definitions (e.g. *tweets, social networking, microblogging*) but had some shortcomings.

5.3 Students' Views

At the end of each course, the students answered a questionnaire to express their views on the topic and the teaching materials and on using the terminological methods. The questionnaire included nine statements and a space for open-ended comments. The statements that were close to each other (e.g. 1–3) are grouped here (Table 2). Also, scale points closest to each other are grouped.

Table 2. Students' views on teaching materials and terminological methods (N=95)

Statements	**strongly agree/ agree**	**neither agree/ disagree**	**disagree/ strongly disagree**
1–3) Methods and teaching materials were easy to understand	46%	25%	29%
4) Need for further help from the teacher	53%	19%	28%
5–6) Methods helped to examine the topic and supported learning	45%	28%	27%
7–8) Methods helped in learning professional concepts and understanding ones' specialisation in English	55%	26%	19%
9) Will likely use the methods to keep learning professional concepts	38%	24%	38%

On average, nearly half (46%) of all 95 respondents considered the topic and the teaching materials (statements 1–3) easy to understand, whereas close to a third (29%) disagreed. While this is somewhat promising, it also indicates that there is some need to develop the teaching materials further. A few open-ended comments also supported this. Moreover, a little over half (53%) of the respondents agreed on having needed further help from the

teacher with the assignment (statement 4). This indicates that the teacher needs to be more involved in the process. In addition, regarding Group 2 views, nearly half (45%) of the respondents saw that using the methods had helped them examine their topic and had supported their learning (statement 5 and 6). In comparison, a little over a fourth (27%) disagreed. A little over a half (55%) of the respondents considered that the methods had helped in learning professional concepts in English and in understanding their specialisation (e.g. IT) (statement 7 and 8), whereas only a fifth (19%) disagreed. This is interesting from the viewpoint of teaching ESP. Finally, on average, about two fifths (38%) of the respondents agreed on the idea of using the methods to keep learning professional concepts (statement 9), but about two fifths (38%) also disagreed. This indicates that ESP students may need further motivating in understanding the benefits of terminological methods.

6 Conclusion

The action research case study we have discussed here gave encouraging results for integrating terminological methods into ESP teaching. However, the quality of some students' coursework was not as high as was expected, which could indicate a need for more instruction, encouragement, or other input from the teacher. In addition, while many students considered systematic concept analysis and the satellite model as useful tools, further motivation could have ensured that everyone would have understood their benefits. Based on the results, the assignment project could be developed as Figure 1 presents below.

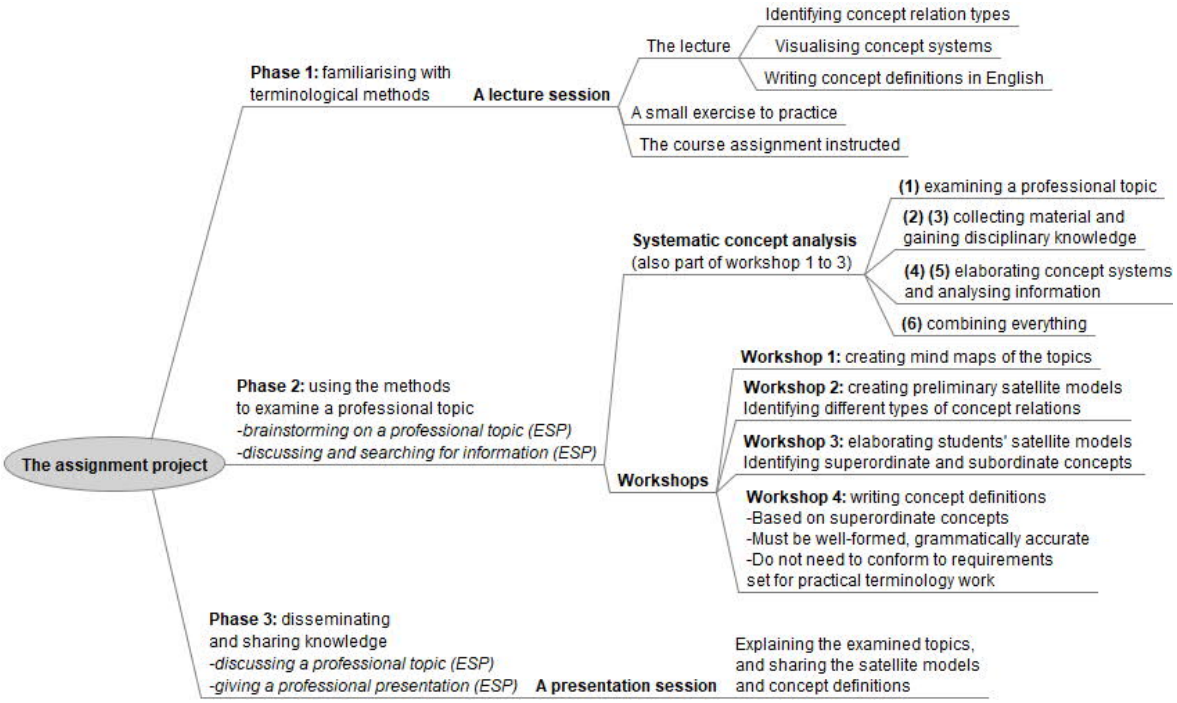


Figure 1. Course assignment project

To develop it further, the assignment project could be divided into the following three phases: *1. Familiarising Phase:* familiarising with terminological methods; *2. Examining Phase:* using the methods to examine and learn about professional topics in English; *3. Dissemination Phase:* disseminating and sharing knowledge.

In phase 1, the teacher would give a lecture to familiarise students with different concept relation types and explain how to visualise concept systems and write concept definitions in English. After the lecture, students would be asked to do a small exercise to practice. The teacher would then explain the assignment project that includes a systematic concept analysis, and requires students to examine a professional topic and related concepts, visualise a concept system, and write concept definitions, as well as share the results in English.

In phase 2, students would work on the assignment and examine their specific topics by attending workshop sessions. First, students could have a brainstorming session to create mind maps of their topics. In the subsequent workshops, their mind maps could be developed further into more complete satellite models with nodes identifying concept relations and symbols designating superordinate, subordinate, and coordinate concepts. The teacher should be available throughout the project. In order to deepen learning in the field knowledge, the teacher should make sure that the final versions include not only one or two, but more different kinds of concept relations (e.g. generic relations, origination relations, partitive relations, and others). Several workshop sessions allow the teacher to focus more on individual students, which helps students create their satellite models and understand the overall idea better. Moreover, focusing on familiar concepts could help students produce better work. For example, tourism and hospitality management students could start by examining concepts such as *travelling* and *accommodation* rather than *destination marketing* and other less familiar concepts.

In addition, to help students write good concept definitions in English, at least one workshop session should focus on concept definition writing. It must be pointed out that the concept definitions written on an ESP course do not need to fully observe examples given for practical terminology work (see e.g. Suonuuti 2001: 19–30, annex; ISO 2019). Compiling a perfect definition is not the main goal in this context. Instead, succeeding to describe concepts adequately would show that students have learned the examined concepts, understood their internal relations, and connected the linguistic designations with the conceptual knowledge. Finally, to share the professional knowledge gained in phase 2, students give presentations about their topics and share their satellite models and concept definitions in phase 3. In this way, they get a broad idea of the specific field in English.

As to the selection of the concepts to be analysed, a further observation was made. Whereas terminology work usually focuses on analysing general concepts (e.g. *social media*) instead of individual concepts (e.g. *Facebook*), analysing individual concepts can be useful in the context of LSP language teaching. Examining general concepts helps students learn terminology and gain general knowledge of the field. However, individual concepts, too, belong to the professional knowledge of a specific field. For example, IT students examining specific software gain knowledge about the related applications, similar software, and the company that produced the examined software.

Overall, based on the action research case study we have discussed here, terminological methods can be a good addition to the experiential-type ESP teaching methodology. Therefore, we recommend that ESP language teachers would try integrating these methods into their teaching. Learners can use the methods to actively acquire professional concepts, related vocabulary, and professional knowledge, and teachers – rather than trying to acquire in-depth knowledge of various professional topics – can focus on teaching the methods.

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