USING PROJECT-BASED-LEARNING IN TEACHING TRANSLATION SKILLS TO ENGINEERING STUDENTS

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ABSTRACT. The aim of the course of specialised translation taught to the engineering students at the University of Chemical Technology and Metallurgy (UCTM) is to equip them with the necessary skills so that they can work as professionals autonomously. A good way to familiarise students with the peculiarities of written scientifical and technical discourse is through project-based learning (PBL). A major advantage of this method of learning is the so called "learning by doing" which accounts for gaining real practical experience, as well as learning how to work autonomously and in a team. Using the PBL method in teaching translation competence to engineering students helps them reflect on the translation process itself, as well as gives them the opportunity to work autonomously and in a team in order to develop communication, organisation, and team–decision skills.

Key words: project-based learning, specialised translation, self-assessment.

ИЗПОЛЗВАНЕ НА ПРОЕКТНО-БАЗИРАНО-ОБУЧЕНИЕ ЗА ИЗГРАЖДАНЕТО НА ПРЕВОДАЧЕСКИ УМЕНИЯ У СТУДЕНТИ ПО ИНЖЕНЕРНИ ДИСЦИПЛИНИ
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РЕЗЮМЕ. Целта на курса по специализиран превод, преподаван на студенти по инженерни дисциплини в Химикотехнологичен и металургичен университет (ХТМУ), е да изгради у тях необходимите умения, така че да могат да работят автономно като професионалисти. Един добър начин за запознаване на студентите с особеностите на писмения научен и технически дискурс е чрез проектно-базираното обучение. Основно предимство на този начин на учене е така нареченото „учене чрез правене", което способства за придобиването на реален практически опит, както и научаването на самостоятелна работа и работа в екип. Използването на метода на проектно-базирано обучение при преподаване на преводаческа компетентност на студенти в инженерните специалности им помага както да анализират самия процес на превод, така и им дава възможност да работят автономно и в екип, за да развият умения за комуникация, организация и екипно вземане на решения.

Ключови думи: проектно-базирано обучение, специализиран превод, самооценка.

Introduction

Project-Based Learning (PBL) is a student-centered educational approach that transforms learning by actively engaging students in real-world problem-solving. Unlike traditional methods, PBL encourages students to take charge of their education and tackle meaningful issues collaboratively. Students embark on a journey of inquiry and investigation, conducting research, analysing data, and exploring diverse perspectives to understand problems deeply. Collaboration is a key aspect of PBL, fostering teamwork, effective communication, and empathy.

Through hands-on projects, students develop critical thinking, creativity, and problem-solving skills, taking ownership of their learning. Presenting their work to an audience reinforces learning and cultivates skills like critical thinking and communication. Ultimately, PBL prepares students for success in academia and beyond by equipping them with essential skills and fostering a life-long love of learning.

Key principles of PBL include (Thomas, 2000):

- Authenticity: Projects should be grounded in real-world problems or challenges, making learning relevant and meaningful (Kiraly, 2005; Hurtado-Albir, 2007).

- Inquiry: Students should actively investigate questions, gather information, and make connections between concepts.

- Collaboration: Working in teams allows students to learn from each other, develop social skills, and experience the benefits of diverse perspectives.

-Reflection: Regular opportunities for reflection help students think critically about their learning process, identify strengths and weaknesses, and set goals for improvement.

- Student Agency: PBL empowers students to take ownership of their learning, fostering independence, motivation, and a sense of responsibility (Margetson, 1997).

What makes PBL a powerful educational approach is that it prepares students for the challenges of the real world by equipping them with essential skills and knowledge (Finkel, 2013). Implementing PBL effectively requires careful planning and support (Hurtado-Albir, 2007). Teachers design projects that align with learning objectives and provide scaffolding to support students throughout the process. Technology can also play a valuable role in PBL, facilitating research, collaboration, and presentation of findings.

A vital feature of PBL is the so called scaffolding which is like building a structure to support learning. It is the idea that, when students are learning something new, they rely on their previous knowledge and experiences as a foundation (Alaoui, 2015). This previous knowledge acts as the scaffold, providing support for them to construct new understandings.

Moreover, scaffolding suggests that students learn most effectively when they are actively engaged in the learning process, rather than simply being told information. This active engagement allows them to explore, discover, and make connections, which leads to deeper understanding and retention of knowledge (Ellis, 1997). Thus, PBL advocates learning by doing, providing support and guidance to build understanding gradually, fostering a supportive environment tailored to individual competencies (Alaoui, 2015).

Translation of authentic documents: objectives

Specialised translation involves the translation of texts that require subject matter expertise in specific fields, such as medicine, law, engineering, finance, or technology. Unlike general translation, which deals with more common topics, specialised translation demands a deep understanding of the terminology (Newmark, 1988), concepts, and conventions unique to the field being translated.

The objectives behind translating real scientific-technical documents are the following (Orozco-Jutoran & Hurtado-Albir, 2002; Kiraly, 2005; Pop, 2017):

1)   To encourage students to take an active role in their learning by prompting them to think about how they translate, what resources they utilise, the time they dedicate, and the outcomes they achieve;

2)   to acquaint students with both independent work and collaborative efforts, wherein they hone their communication, organisation, and teamwork abilities;

3)   to create connections between the subject matter and other disciplines within the undergraduate program, such as chemistry, computer science, information science, and terminology.

Specialised translation by engineering students can offer several benefits, both in terms of language proficiency (Alaoui, 2015) and subject matter expertise (Pop, 2017). Here is how it can be advantageous:

1.   Deepens technical understanding: Translating engineering texts requires a strong grasp of technical concepts and terminology. Engaging in specialised translation tasks can deepen engineering students' understanding of their field by exposing them to technical content in both their native and target languages.

2.   Enhances language skills: Specialised translation challenges students to master technical vocabulary and complex language structures specific to engineering. This process strengthens their language skills in both languages, particularly in areas, such as precision, clarity, and academic writing style.

3.   Prepares students for their future career: Engineering students who develop proficiency in specialised translation can gain a competitive edge in the job market. Many engineering firms operate globally and require employees who can effectively communicate technical information across language barriers. Experience in specialised translation can enhance students' CVs and broaden their career prospects.

4.   Helps cross-cultural communication: Engineering is a global profession, with collaboration often spanning multiple countries and cultures. Through specialised translation, students not only learn technical content but also gain insights into how engineering concepts are expressed and understood in different cultural contexts. This fosters cross-cultural communication skills, which are valuable in today's interconnected world.

5.   Contributes for exchange of knowledge: Specialised translation by engineering students can facilitate the dissemination of engineering knowledge across linguistic boundaries. By translating technical documents, research papers, or instructional materials, students contribute to the exchange of ideas and innovations within the global engineering community.

6.   Fosters interdisciplinary learning: Translating engineering texts may require interdisciplinary knowledge, as technical topics often intersect with other fields, such as physics, mathematics, or computer science. This interdisciplinary approach broadens students' understanding and encourages them to make connections between different areas of knowledge.

However, it is important for engineering students to receive adequate training and guidance in translation techniques, terminology research, and cultural sensitivity to ensure the accuracy and quality of their translations (Hurtado-Albir, 2007; Pop, 2017). Additionally, they should continue to develop their engineering skills alongside their language abilities to excel in both areas.

Mastering translation competence

Translation competence refers to the knowledge, skills, and abilities required to effectively translate text from one language to another while accurately conveying the meaning, style, and nuances of the original content. This includes linguistic proficiency in both the source and target languages, cultural understanding, subject matter expertise, as well as proficiency in translation techniques and technologies (Orozco-Jutoran & Hurtado-Albir, 2002; Alaoui, 2015; Pop, 2017).

As Kiraly (2005) points out, translation competence emerges as a result of completion of authentic translation work and in the praxis of authentic translation work, students can acquire a privileged view of the nature of the translation process which is not a mere transcoding of texts but a creative and experience-bound construction process which requires taking the "right" solutions.

The focal points behind practicing scientific-technical translation by the engineering students are, on the one hand, the authentic practice which is working on real translation projects, such as translating descriptions of equipment, safety instructions, technical specifications, user manuals, websites, etc. The acquired knowledge and skills have to be meaningful for the student which provides the opportunity for inter-disciplinary learning where the students have to incorporate the contents of other subjects into constructing their own knowledge.

On the other hand, building terminological bases, also known as glossaries or terminology databases, may be a crucial aspect of specialised translation. These databases contain a comprehensive list of terms and their corresponding translations in one or more languages, along with relevant contextual information. Terminology databases can greatly enhance language acquisition in several ways:

- Language learners often need to acquire specialised vocabulary related to their field of study or profession. Terminology databases provide a centralised resource for accessing this specialised vocabulary, making it easier for learners to find and understand terms specific to their area/s of interest.

- Many terminology databases include contextual information, such as definitions, usage examples, and translations. This contextual information helps learners understand how terms are used in real-world situations, improving their overall comprehension and language proficiency (Ellis, 1997).

- Terminology databases often support multiple languages, allowing learners to access translations and explanations in their native language. This multilingual support can be especially

beneficial for learners who are not yet fluent in the language they are studying.

- Some terminology databases offer interactive features such as quizzes, exercises, and multimedia resources. These interactive elements engage learners in active learning experiences, helping them retain information more effectively (Alaoui, 2015).

- Advanced terminology databases may offer customisation and personalisation options, allowing learners to tailor their learning experience to their individual needs and preferences.

Overall, specialised translation and term base building are interconnected processes that require expertise, attention to detail, and a commitment to delivering high-quality translations.

Methodology

The learning experience described here is related to my group of chemical engineering students at the University of Chemical Technology and Metallurgy (UCTM) who study a two-semester course of specialised English in their second year. The project work which was done in the students' second semester of study included three stages: stage of planning, dividing in groups, and assigning tasks; stage of translation; and stage of assessment.

The first stage was crucial because the students' success relied on their thorough understanding of the objectives they needed to achieve, comprehending the project methodology, and recognising the potential benefits they could gain from it. They were given the criteria for working on the project, as well as the deadline and the final assessment method. Then, students were divided into four groups of three and each student obtained an equal share of the whole document. The documents to translate were not chosen at random, but together with a colleague teacher of the chemical technology department. So, the students were aware that their work would be useful for their other studies as well. Then the students were assigned the following tasks:

1. ***Looking for Parallel Texts:***
o **Requirement:** This task involves searching for existing translations of similar texts in the target language. These parallel texts serve as reference materials for students, providing insights into how certain phrases or terms have been translated previously.
o **Skills Needed:** Effective searching skills to locate relevant parallel texts, critical thinking to evaluate the quality and suitability of the found translations, and the ability to adapt and apply insights from parallel texts to the current translation context.
o **Approach:** Students may utilise various resources, such as translation memory databases, online repositories, published translations, and professional networks to find parallel texts.

2. ***Searching for Terminology:***
o **Requirement:** Students need to research and identify accurate translations for specialised terminology and jargon used in the source text.
o **Skills Needed:** Strong research skills to locate authoritative sources, such as technical dictionaries, glossaries, industry standards, and online provided materials. Additionally,

critical thinking skills are necessary to evaluate the relevance and reliability of terminology sources.
o **Approach:** Students employ a systematic approach to terminology research, utilising both online and offline resources to ensure the accuracy and consistency of translated terminology. They may also consult subject matter experts or teachers for clarification on specific terms.

3. ***Translating:***
o **Requirement:** Students must accurately convey the meaning and intent of the source text in the target language while considering linguistic, cultural, and contextual nuances.
o **Skills Needed:** Proficiency in both the source and target languages, deep understanding of the subject matter, strong writing skills, and cultural sensitivity. Additionally, the ability to maintain consistency in terminology and style throughout the translation is essential.
o **Approach:** Students employ various translation strategies, such as literal translation, paraphrasing, cultural adaptation, and localisation to ensure the fidelity and readability of the translated text. They may also use translation software tools and reference materials to aid the translation process.

4. ***Proofreading:***
o **Requirement:** Proofreading involves reviewing the translated text to identify and correct errors in grammar, syntax, punctuation, spelling, and formatting.
o **Skills Needed:** Keen attention to detail, strong language proficiency in both the source and target languages, and familiarity with grammar and style conventions. Critical thinking skills are also necessary to identify and rectify inconsistencies or inaccuracies in the translated text.
o **Approach:** Proofreading is typically conducted after the initial translation to ensure the accuracy and quality of the final product. Students may use spelling and grammar checkers, style guides, and peer review to facilitate the proofreading process.

For stage two, blended learning approach (Finkel, 2013; Krumova et al., 2020) was used: This refers to an instructional method that integrates different modes of learning, such as in-person instruction and online learning, to create a more flexible and personalised learning experience. It means students did some tasks in class and others on their own, especially those requiring independent work and writing. Outside the class, students used e-mails, chat forums, document-sharing environments to keep in touch. Some class time was spent to let groups meet and discuss any problems and a whole class session was provided after the completion of the projects to let each group give a class presentation stating the procedures they had followed and the problems they had to overcome both related to translation and those related to teamwork.

An important issue of the problem-solving learning through technical text translation tasks is handing in the ready translations by a certain deadline. In our case, the deadline was in six weeks' time because the project was not aimed for the whole semester. When the students began the project, they established a timetable outlining the specific documents they needed to submit by the assigned deadline. These included a compilation of the parallel texts together with an explanation why these were important, as well as a glossary with the extracted terms and a self-evaluation report (see Appendix 1) commenting on the problems they had to solve during the project work.

The final stage was the assessment of the submitted translations but the focus here was not so much on the product of the translation process but rather on the whole learning experience which included active participation in all the stages of the translation process, as well as the teamwork done. So, this approach allows for ongoing evaluation (Palmer & Hall, 20011) of students' skills and progress throughout the project, fostering a dynamic learning environment where feedback can be provided and improvements can be made incrementally.

Results

All in all, students highly appreciate the chance to translate authentic documents because thus they stay close to their professionally oriented interests and feel their practice is beneficial for their studies. Of course, there may be some negative aspects, such as lack of experience in working in groups which can be a great challenge for the students (Margetson, 1997). They must be made aware that the success of the group depends on each of them and working individually is not well tolerated, nor is relying too much on the efforts of other members of the group. Students generally liked this learning-by-doing approach to the studied material and felt pleased with the results. Moreover, independently working without the teacher's guidance cultivates individuals who are self-reliant and capable of working with greater efficiency. Another issue may be the big overload for the teacher who needs to check and assess all the submitted materials.

On the other hand, PBL provides an avenue for teachers to not only track the outcomes of student projects but also to closely observe and assess the students' learning journey (Thomas, 2000; Krumova et al., 2020). Through PBL, teachers can continuously monitor how students engage with the material, their problem-solving approaches, their collaboration skills, and their ability to apply knowledge in real-world contexts. This holistic observation enables educators to gain insights into students' evolving understanding, identify areas where they may need additional support, and tailor instruction to meet individual or group needs effectively. In essence, PBL offers teachers a comprehensive view of students' learning progress, beyond just the final project deliverables.

Conclusion

Overall, PBL empowers teachers to take an active role in monitoring and supporting of students' learning progress throughout the problem-solving process. By providing ongoing assessment, feedback, and guidance, teachers can ensure that students not only achieve academic objectives but also develop essential skills and competencies for lifelong learning.

In the PBL approach, students are deeply engaged and show increased dedication because they grapple with real-world issues and are responsible for organising and overseeing their learning tasks. Additionally, they are required to articulate and defend their ideas to peers, fostering deeper comprehension and engagement. Hence, PBL is a powerful educational approach that fosters deep learning, critical thinking, collaboration, and student engagement. By immersing students in authentic, real-world experiences, PBL prepares them for success in an increasingly complex and dynamic world.

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Appendix 1

Self-assessment questionnaire

1. Did you find working on a project-based translation beneficial for you?
2. Do you think translating authentic documents can be beneficial for your studies?
3. What is the function of the text you have translated?
4. Did you try to identify the main idea of the text before you began to translate?
5. Did you read the whole text through before you started to translate?
6. Which dictionary did you use most frequently?
7. Did this dictionary answer all your questions?
8. What are the major translation problems you encountered during your work?
9. Do you think you have solved the problem?
10. Do you find it difficult to find parallel texts that will help you resolve translation problems?
11. Do you find it difficult to analyse parallel texts that will help you resolve translation problems?
12. Do you find it difficult to resolve terminology problems?

13. Did you read the whole text of the translation before you submitted it?

14. Did you verify that your translation is lexically and terminologically correct before submitting it?

15. Qualify the text you have translated from one to ten on a scale of difficulty?

16. Was it hard to work with your fellow students?

17. Do you value the contributions of your fellow students?

18. Did you manage to keep the time limits?

19. Did you attend to all the meetings?

20. Did you get help from your fellow students?