THE VM PROJECT: THE PARALLEL TEXTS METHOD PROMOTING DEEP LEARNING ENGAGEMENT OF MEDICAL STUDENTS

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Abstract

The article draws on the VM project, Digital Transformation of Histology and Histopathology by Virtual Microscopy (VM) for an Innovative Medical School Curriculum, funded by the European Union under the Erasmus+ framework. The project has as its focus VM, which has come to be regarded as a modern tool boasting increased quality and utility in microscopy education in European medical schools. We aim therefore at digitally transforming microscopy teaching and learning in order to achieve a cost-effective implementation and successful use of virtual microscopy technology towards the improvement of the histology and histopathology curriculum. The paper looks into the project's objectives and results, among which standard E.U. curricula for histology and histopathology, a virtual slide library, a training guide on advanced VM teaching in microscopy, and an open online course on VM. As an add-on, we also introduce the parallel text reading approach and its beneficial effects on the quality of foreign language learning by medical students. In view of the transferability potential of its deliverables and its relevant methodology, we are confident that the VM project contributes to the overall modernization of the educational system.

Keywords: virtual microscopy, multilingual VM library, online course, language learning, parallel texts

The COVID-19 pandemic shifted education to online delivery. To achieve this goal, several medical universities from Greece, Spain, Romania, Bulgaria, Greece and Poland introduced programmes based on Virtual Microscopy (VM), which has already come to be regarded as a modern tool boasting increased quality and utility in microscopy education in European medical schools. Innovative platforms, stored teaching libraries, study sets, and individual cases were used to improve didactic teaching, monitor the acquisition of new skills (e.g., stain interpretation), and assess competencies. The use of VM enhances student learning and their overall performance in a dynamic learning environment. State-of-the-art technology integration in the classroom encourages student participation, improves learning through strong linkages to the real world, and promotes the development of trustworthy multilingual learning resources. This in turn contributed to the internalization of higher education and brought about the accomplishment of international academic standards and quality in research, teaching, and services. The multilingual learning materials produced by such programmes also met young people's needs related to mobility, another constant of our world. Mobility provides young people with opportunities in terms of their personal and professional development depending, however, on their language competencies in the new context.

Arguably, VM programmes and their multilingual materials are beneficial for students in terms of their medical and language development being in line with societal requirements. Nevertheless, in spite of their advantages, there are few VM standard programmes in Europe.

The European VM project aims to bridge this gap and establish a dynamic virtual microscopy educational system in response to the need for improving the histology and histopathology curriculum in our medical schools and increasing the digital transformation of the educational systems.

MATERIAL AND METHOD

The project aims to adapt the medical school curriculum of Histology and Histopathology at EU level, digitize the teaching of microscopy in medical universities, decrease the differences between education systems in Eastern EU countries and enhance undergraduate and postgraduate students' vocational skills in new medicine domains. The project addresses health care specialists, medical university staff from to the Histology and Histopathology departments, medicine students and postgraduate students in

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Histology and Histopathology training, specialists in Histology and Histopathology, medical universities and medical educational centers.

The project's results draw on partners' knowledge and competencies as well as on Covid experience: standard European curricula on histology and histopathology, a virtual slide library in histology and histopathology, a training guide for advanced VM teaching in microscopy and an open online course on VM aiming to increase students' competencies in microscopy/morphological sciences. The library, guide and training online course for advanced VM teaching in microscopy are available in six languages – English, Romanian, French, Bulgarian, Polish and Spanish. Thus, students can benefit from the project's multilingual online materials not only for their medical professional development but also for their foreign language learning. As an add-on of the project, in view of the transferability potential of its deliverables we introduce the parallel text reading approach and its beneficial effects on the quality of foreign language learning by medical students.

The term parallel text is generally understood to refer to versions of a text in two or more languages (Floros, G., 2004; Simard, M., 2019). The parallel texts reading method enables learners to understand the text with less difficulty since there are other versions of the text in other languages (including their mother tongue). If the students lack the knowledge of a lexical item, they can try to figure out its meaning from the context or resort to the version in the language they master.

According to Krashen, learners can take in a great deal of grammar and vocabulary when exposed to large amounts of linguistic material just above their current ability (comprehensible input: at least 70% of learners' known vocabulary) in a low-anxiety environment; thus, they feel comfortable and maximize their learning (Krashen, S., 1982; Krashen, S., 2013). Butzkamm and Caldwell (2009) identify two levels of comprehension: functional (understanding meaning) and formal (noticing specific linguistic instances and how things are expressed). Noticing is an important part of language acquisition because it demonstrates awareness and focus during the language-learning process (Schmidt, R., 2010; Nhung, N. T. P., 2020). Only when reaching the two levels of comprehension, can learners turn input into intake, which enables them to be independent readers (Butzkamm, W. and Caldwell, J., 2009). Butzkamm and Caldwell claim that the mediation of the first language or mother tongue (L1) plays a critical role in developing a comprehensible input. The parallel texts method can help learners become successful independent readers by exposing them to vast amounts of reading material.

The effectiveness of the strategy also depends on the learners' profession or language experience. The parallel texts reading method can take advantage of medical students' native language vocabulary base and subject background knowledge (medical background knowledge), which highly influence their acquisition of medical vocabulary in a foreign language (Drumhiller, M.F., and Schwanenflugel, P. J., 2013). Since the vocabulary is often similar to the target language, if the students already know the field-related vocabulary in their mother tongue and they also have topic knowledge, that will facilitate their understanding of the unknown words. As conceptual knowledge is not stored in different parts of the brain for the two languages, it is easily retrievable in either language, which facilitates and accelerates second-language vocabulary learning. Secondly, they may know one or two languages, which can help them with vocabulary acquisition in terms of comparison and commonality, as they can bring the language learning skills acquired through their rich language experience to the acquisition of another language.

RESULTS AND DISCUSSIONS

Having the opportunity to teach foreign languages to medical Romanian and international students taking up English and French courses and also interested in other languages, our teachers use the multilingual texts produced by the project; the discussions with the teachers highlight that most of the activities using this method focus on students' reading and work on the texts accompanied by vocabulary/grammar exercises they encounter in the texts.

Our experience and research reveal that activities based on parallel texts are either student-driven, in which case students are autonomous or teacher-driven, when students are given concrete tasks to perform under the teacher's guidance (Abdallah, A., 2021; Becker, D. P., 2012). While the former case encourages the student to work independently having a relatively rich experience with the language, the latter relies on the teacher's feedback or digital language learning exercises with automatic answers.

Student-driven activities The student-driven activities are usually carried out as a home assignment as students want to deepen their medical and language knowledge. Such activities are first modeled in class and then done at home. Students also get some tips on how to proceed and are encouraged to find their own strategies while reading the parallel texts. We recommend the following activities:

- Students read the target language/ foreign language (L2) text first and try to understand as much as they can without resorting to the L1 version. This helps them improve their comprehension and identify the words and phrases that they need to look up; these are the words which impede the understanding of the text.
- Students look the identified words up in an L2-L1 dictionary if they don't understand a whole sentence. This will help them enrich their vocabulary and improve their understanding of the text.
- Students compare the L2 text to the L1 text to identify and notice the grammatical forms/ structures that are used in context. This will help them improve their grammar and comprehension.

- Students write down new words and phrases. This will help retain the new vocabulary.
- When reading students do not read both texts. Students can have a look at the text in L1 as a backup to reinforce or confirm their understanding.

Another strategy invites students to read the text first in the language they are familiar with, then in L2. They are advised to start with a small text, depending on how much they can digest and their mind can process. They can start gradually from a sentence to a paragraph at a time. They are encouraged to put down new words or phrases they have encountered and revise them from time to time.

Once they feel comfortable with the target language, they can reverse the process: read only in the target language and stop when they come across a word or phrase that hinders their understanding. Then they have to check out its meaning in the text written in the L1 language.

Some teachers advise students to read the passage in the foreign language out loud. Reading out loud is known to enhance fluency and pronunciation.

Teacher-driven activities The teacher-driven activities are carried out in class. The teacher introduces the topic of the parallel texts and invites students to discuss it, which activates their prior knowledge on the topic. The teacher can also use the KWL chart stimulating students to think about what they know (K), what they want to know (W), and what they have learned about a topic at the end of the learning session (L). This strategy activates students' background knowledge, develops a purpose for learning, summarizes and revises the learning input. The discussion is in the target language (L2), focusing on the topic, the title or pictures and eliciting students' knowledge and key vocabulary words. After the discussion with the whole group, students study the texts in L2 but they can use the L1 version whenever necessary. Students are given a task (e.g. comprehension questions on the text) to do either in pairs or in groups and are instructed to read the text in their pairs or groups and answer the questions.

During the following class, the text is read and discussed as an activity involving the whole class. Each group presents their answers to the questions and participates in the discussion. Students discuss the challenges they came across while reading and the differences in sentence structures of both texts. When needed, for instance in case of exceptionally difficult passages and concepts, it is always advisable for teachers and students to use the original L1 text. Teachers can provide students with explanations and exercises on problematic structures. When these sections are identified and solved, the passages and entire text may be read again in L2 to consolidate the vocabulary and structures.

In addition, the parallel reading method is supported by reading, writing and speaking activities when students practice and use the recently acquired language input. For example, the teacher introduces new vocabulary and asks students to try to guess the meaning from the context (L2 text) and then check (L1 text).

Other times, the text can be used to recycle vocabulary:

- The teacher gaps the L2 text and asks the students to fill in the missing words (multiple choice quizzes) and then check their solution with the parallel texts (either L1 or L2 or both).
- The students get the L2 text cut up and jumbled up in separate sentences or paragraphs and have to rearrange it based on the L1 (or another language they are familiar with) text.
- The students can practice vocabulary by matching lists of L1 words with L2 words in the text, matching lists of L2 words with synonyms in the text; doing true or false exercises, questions and answers; summaries etc.
- The students get a modified version of the L1 text in L2, where the L2 contains errors 'planted' by the teacher. The learners have to spot and fix the mistakes.

Benefits of using the parallel texts reading method

Our experience and research highlight that the method impacts foreign language learning.

The method stimulates learners' appetite for reading. The parallel text reading method encourages less confident learners to read by providing them with a text in the language they know to use whenever they have problems understanding the text in L2. The existence of parallel texts reduces the anxiety levels of such learners and provides a solid affective scaffold. On the other hand, the method should be used sensibly when students feel stuck or want to check to see whether their assumptions are correct.

The method improves comprehension: Parallel texts help learners to understand the content (especially at the beginner and intermediate levels) and also develop learners' knowledge of cognate words.

The method expands vocabulary. Reading parallel texts also exposes students to new words and phrases in authentic contexts, facilitating the recycling or expansion of vocabulary.

The method improves grammar. By comparing the texts in different languages, students can see how sentence structures and grammatical forms are used in context, which can help them improve their grammar skills.

The method provides reading practice. Reading parallel texts is a great way to practice reading skills in the language, which is an essential part of language learning. Parallel texts make it possible for learners to access higher-level texts by providing valuable support by means of multilingual translations.

The method draws learners' attention to similarities and differences between languages. Through parallel texts, teachers can draw learners' attention to linguistic as well as cultural differences that can be referenced in the texts. Teachers can draw learners' attention to meaning, structure, and vocabulary-related aspects.

The method provides scaffolding using L1 text as reference material. While reading a text in L2, students

find it difficult to comprehend it as they encounter unfamiliar words. In such a situation, they lose interest and stop reading the text. But if they have a translation side by side, they can fall back on the text in L1, find the meaning of the unfamiliar words and proceed to read. Such scaffolding can be withdrawn as they become self-reliant.

The method encourages self-reading and stimulates students to become independent readers. Parallel texts can facilitate self-reading without depending on the teacher. Learners can find meanings in the text and read them in context.

The method is less time-consuming and more effective. While reading parallel texts students do not have to resort to the dictionary all the time.

The method enhances learners' self-esteem. It confirms learners' decisions and encourages them to make choices and change decisions based on the parallel texts.

Disadvantages of using parallel texts

The method focuses on reading, which is only one of the language skills; however, the development of the other skills must not be ignored if the learners want to use the language. The method cannot be used as standalone but alongside other methods engaging students in integrated skills activities.

Students may become too dependent on the L1 translation, making it hard for them to understand the target language texts without it. The method relies on the silent reading of texts and depends on the use of parallel texts for clarification or confirmation.

CONCLUSIONS

The VM project, Digital Transformation of Histology and Histopathology by Virtual Microscopy (VM) for an Innovative Medical School Curriculum, funded by the European Union under the Erasmus+ programme, aims at digitally transforming the teaching and learning of microscopy in order to achieve a cost-effective implementation and successful use of virtual microscopy technology. The project's results, among which standard E.U. curricula for histology and histopathology, a virtual slide library, a training guide on advanced VM teaching in microscopy, and an open online course on VM will have a major contribution to the modernization of medical universities. The parallel text reading approach and its beneficial effects on the quality of foreign language learning by medical students draws attention to the transferability potential of the project's deliverables and its relevant methodology.

The multilingual character of the results increases the accessibility to VM learning material. The parallel text reading approach will enhance students' reading skills. Moreover, by supplementing it with other techniques teachers can help students improve their listening, writing and conversational skills.

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