

Enhancing Medical Students' Reading Comprehension Skills through the VM 3.0 Project's Results

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ABSTRACT

The article focuses on the European project, titled “Digital Transformation of Histology and Histopathology by Virtual Microscopy (VM) for an Innovative Medical School Curriculum,” which is funded by the European Union under the Erasmus+ framework. It examines the translanguaging strategies employed and how the multilingual virtual slide library developed by the project was utilized to improve students' reading comprehension skills. Additionally, interpretation of the testimonials collected from teachers and students involved in the experiment provide valuable insights into the teaching and learning experiences.

KEYWORDS: *translanguaging, multilingual online resources, reading comprehension, medical students*

The European context and the Virtual Microscopy Project

The modern European context – marked by mobility, unprecedented advancement of digital technology, and globalization– has intensified the internationalization of universities and higher education. Now more than ever, universities must meet new

demands to enhance the quality of education and research and prepare students for a globalized world. Our project attempts to offer adaptive solutions to this new context through international collaboration and understanding.

The Digital Transformation of Histology and Histopathology by Virtual Microscopy for an Innovative Medical School Curriculum European Project (VM3.0) united medical universities in Greece, Spain, Romania, Bulgaria, Greece, and Poland to implement programs centered around Virtual Microscopy. The objective of the VM3.0 project (Ref. no.: 2022-1-RO01-KA220-HED-000089017) is to modify the medical school curriculum for histology and histopathology across the European Union and convert the teaching of microscopy in medical universities into a digital format, thus reducing disparities in education systems among Eastern European Union countries, and improving the practical skills of undergraduate and postgraduate students in emerging medical fields. Incorporating cutting-edge technology in the classroom enhances student engagement and learning by establishing strong connections to real-world applications and facilitates the creation of reliable multilingual teaching resources.

The project targets healthcare professionals, faculty members of medical universities in the histology and histopathology departments, medical students, postgraduate students undergoing training in histology and histopathology, specialists in histology and histopathology, as well as medical universities and educational centers. The products of this project include standardized European curricula on histology and histopathology, a digital library of virtual slides in histology and histopathology, a guide for advanced virtual microscopy teaching, and an online course on virtual microscopy. The library, guide, and online training course for advanced VM instruction in microscopy are accessible in six languages: English, Romanian, French, Bulgarian, Polish, and Spanish. These multilingual learning tools aim to meet the needs of international medical students who may face language challenges in comprehending lectures, reading academic publications, and engaging in discussions, which hinder overall academic performance. Through our projects, students can gain advantages from the project's multilingual online resources, which enhance both their medical professional growth and their foreign language acquisition.

The target group

To identify the students' needs and interests in terms of language use and identify the required method necessary to disseminate the project's multilingual online resources, we administered a questionnaire to 40 students in March 2024. The questionnaire revealed several key learnings about the students' language use, desire for academic materials in their mother tongue, perceived language-related challenges in the classroom, and interest in foreign languages.

The questionnaire first showed that students generally spoke two languages, and some of them even five or six. English or French were the most common languages spoken but were rarely the first languages of those surveyed. Students also expressed a desire for the creation of academic materials in their mother tongue and stated that studying materials in foreign languages (most frequently French or English) led to a decrease in their comprehension of complex topics, and to a perceived inability to perceive nuances in medical terminology.

The questionnaire also revealed a key interest in foreign languages, as well as the expansion of resources in their mother tongue. In fact, when asked to identify a challenge they frequently faced, students reported that they found the comprehension of written materials in the English language a challenge and expressed a desire to expand on the availability of multilingual materials. Students who were unable to speak or understand English and French also worried about lower access to career opportunities and connected this to their decreased ability to understand class material. Finally, the questionnaire showed that students used all their linguistic repertoire to comprehend medical texts.

Considering our target group and our interest in enhancing the students' reading skills by making use of their linguistic repertoire, our research decided on translanguaging and not translation as a learning strategy. Translanguaging surpasses translation as an effective learning strategy for plurilingual students aiming to understand and demonstrate knowledge of medical texts. While translation is valuable for rendering meaning from one language to another, it imposes a rigid boundary between languages, potentially hindering deeper comprehension and fluid communication. Translanguaging, however, allows students to draw on their entire linguistic repertoire to make sense of complex material, integrating words, phrases, and concepts across languages within a cohesive framework. In the context of medical education, where nuanced understanding and precision are vital, translanguaging enables students to use familiar terminology from different languages, connecting complex ideas more intuitively. This method supports the dynamic use of language—students might use terminology in one language and elaborate or contextualize in another within the same sentence, creating a more accessible and personalized learning experience. Translanguaging fosters confidence and autonomy, reducing frustration by allowing students to rely on familiar linguistic resources, and aligning with Vygotsky's model of learning through social interaction. By recognizing the plurilingual competencies students already possess, translanguaging not only validates their linguistic identities but also promotes a holistic learning approach, supporting deeper, more flexible engagement with challenging medical texts. (Creese [et al], 2017; Laviosa, 2018; Garcia, 2014; Sato & Garcia, 2023)

The methodology: translanguaging

Translanguaging, introduced by Cen Williams in the 1990s, originated as a pedagogical practice known as *trawsieithu* within a bilingual Welsh/English educational program (Garcia, 2016). Initially, it denoted the fluid and dynamic linguistic practices of bilingual individuals who frequently alternate between languages, receiving input in one language and generating output in another to enhance comprehension. This practice demonstrated the complex methods by which bilingual individuals utilize their complete linguistic resources to enhance comprehension. The concept then gained popularity through the work of García and Leiva (2014), who expanded its application to educational contexts and advocated for its role in fostering inclusive and effective teaching practices.

The term “translanguaging” has evolved into a complex concept, incorporating multiple definitions and interpretations. Canagarajah (2011) argues that translanguaging transcends being merely an instructional strategy; it is a natural practice observable in multilingual classrooms. In many educational contexts, translanguaging occurs organically rather than through intentional teaching methods, mirroring the genuine language practices of learners. This viewpoint highlights the adaptability and resourcefulness of plurilingual learners, who effectively combine their languages to understand and engage with academic material.

Ofelia García's research (2014, 2016) is particularly influential in this regard, as it emphasizes the importance of incorporating the students' home languages into the educational process. By acknowledging and leveraging the full linguistic repertoire of learners, educators can enhance both language acquisition and content understanding. Ofelia García (2014) defines translanguaging in education as a sophisticated communicative practice where students and teachers draw on all the linguistic resources available to them. This approach challenges traditional notions of language separation, instead promoting an integrated view of language development that values the diverse linguistic backgrounds students bring to the classroom.

Therefore, translanguaging operates on multiple levels, serving as both an instructional tool and a theoretical framework. It offers a systematic method for educators to scaffold learning, making challenging academic material more accessible by allowing students to process information in their stronger language before transitioning to the target language. This function is particularly effective in complex subject areas, where understanding can be deepened through discussions and explanations in the students' home languages. By gradually introducing new vocabulary and concepts in the target language, educators can support students in building their knowledge base while also developing their language skills. (MacSwan, 2017; Duarte, 2018; Wei & Lin, 2019)

Beyond its practical applications, translanguaging carries significant symbolic and epistemological functions. Symbolically, it validates all languages present in the classroom, sending a clear message that these languages, along with the cultures they represent, are respected and valued. This inclusive approach fosters a sense of belonging and self-esteem among students, particularly those from minority linguistic backgrounds. It also bridges cultural and linguistic gaps, creating a more equitable educational environment where diversity is seen as an asset rather than a barrier. Epistemologically, translanguaging enhances both content and language learning by encouraging students to draw on their linguistic and cultural knowledge to explore and analyze academic subjects. This process can lead to deeper, more nuanced understandings and promote critical thinking skills as students compare, contrast, and synthesize information across languages. (García O. & Seltzer K., 2016; Ortega & Prada, 2020)

Results and discussion

Four lecturers and 40 students from “Grigore T. Popa” University of Medicine and Pharmacy, Iași, Romania, took part in the experiment as an evolution of the VM 3.0 project. The experiment showed how to exploit the materials created within the project to develop the students' not only medical but also language competencies. It is important to mention that the lecturers involved had seldom used the translanguaging method prior to the experiment. In addition, none of the students had prior exposure to this methodology. After the experiment, both students and lecturers were asked to answer open-ended questions about the methodology, its drawbacks, challenges, and benefits.

The lecturers who teach English and French to medical students utilized the multilingual texts created by the project, and in-class discussions to highlight several key translanguaging strategies and promote reading comprehension, vocabulary acquisition, and mastery of the subject. The lecturers first assigned medical texts as homework which used the translanguaging method by encouraging students to use all their linguistic repertoire to comprehend the medical content and do their tasks. These texts, or “parallel texts”, featured both the students' native languages and the target language, and accompanied the reading with activities to develop strategic reading and note-taking techniques. Translanguaging strategies in reading and note-taking enabled students to leverage their entire linguistic repertoire, promoting a fuller comprehension of complex material. The lecturers were then encouraged to use translanguaging techniques in the classroom setting through lecture to promote student reflection on the material presented.

After both the at-home and in-class exercises, the students and lecturers agreed that translanguaging not only empowered students in multilingual classrooms but also enhanced their potential as future professionals in multilingual settings.

Reading strategies

Providing students with medical texts in both the target language (English) and their home languages allows a dual-layered reading experience. By first reading in their home language, students can grasp the overall context and content of the material. Following this, reading the English version aids in building specialized vocabulary and understanding of medical terminology. This sequential reading process promotes comprehension while allowing students to focus on linguistic nuances without losing the primary meaning of the text.

Creating bilingual glossaries of key medical terms enables students to cross-reference vocabulary quickly, reinforcing the acquisition of essential terms. Each glossary entry includes the term in both the home language and English, alongside brief definitions. This tool serves as an accessible reference, particularly in fields like medicine, where precise terminology is critical.

Encouraging students to summarize sections of the medical text first in their home language and then in English reinforces comprehension while ensuring that students internalize the material. Summarizing in their home language allows them to articulate ideas freely, while translating into English builds vocabulary and language skills essential for professional communication.

Collaborative reading activities support comprehension through peer discussion and language practice. For instance, students can read portions of a medical text in their home language within a reading group, followed by discussion in English. This approach fosters deeper understanding of the material and improves the students' abilities to express complex ideas across languages. Using a two-column system where one column is in the home language and the other in English organizes materials in a visually structured format. This division makes it easier for students to review material in both languages and strengthens their ability to navigate between languages effectively.

Providing medical texts with annotations in the students' home languages serves as a scaffold for complex terms and concepts. Students read annotated sections in their home language to clarify difficult points, then engage with the English text, using these annotations as a guide. This approach ensures a smoother transition to reading in the target language, allowing students to focus on new vocabulary without confusion over fundamental concepts.

Translanguaging note-taking strategies with parallel texts

Allowing students to take notes in both their home language and English provides flexibility in capturing their thoughts. Students may jot down complex explanations in their home language, while using English for medical terms and concise points. This bilingual notetaking approach creates a bridge between comprehension and professional language use, enhancing both understanding and vocabulary retention.

When creating outlines of medical texts, students can organize main headings in English with sub-points in their home language. This method aids in the logical organization of information and reinforces the connection between general ideas in English and detailed comprehension in the home language.

Permitting language switching while taking notes enables students to record detailed concepts in their home language, reserving English for specific terminology and short phrases. This technique offers cognitive flexibility, allowing students to fully capture complex ideas without being constrained by vocabulary limitations in the target language. Concept maps and diagrams provide a visual representation of information with labels in both languages. Such maps allow students to categorize terms and concepts, connecting home language explanations with target language terminology. This bilingual visual aid reinforces relationships between terms and concepts, aiding in memory retention.

Criticism to translanguaging-based approaches

Criticism of translanguaging-based approaches as provided by the lecturers involved in the experiment centers around concerns related to educational efficacy, language development, assessment challenges, and broader sociocultural implications. They argue that relying on translanguaging could hinder the students' development of full proficiency in the target language (often the dominant or instructional language, like English in many contexts). When students use their home language as a bridge, they might not engage enough with the target language to reach an advanced or academic level.

Some educators worry that students may fall short of academic standards if they are not given consistent opportunities to fully immerse themselves in the target language. They argue that translanguaging can lead to code-mixing or a blending of languages that dilutes linguistic integrity. They fear that this might result in students acquiring neither language with a full, standard form and possibly developing a hybrid that lacks formal recognition.

In classrooms with students from multiple language backgrounds, managing translanguaging practices can be complex and time-consuming. The lecturers argue that attempting to accommodate numerous languages in one setting can lead to logistical difficulties and uneven support for students. When students share some, but not all, of the same language backgrounds, translanguaging practices may inadvertently exclude those who do not speak a particular language, creating a need for more nuanced, individualized instruction.

Switching between languages can increase cognitive load, which might distract from deep engagement with complex concepts, particularly in advanced or technical subjects. For instance, in a subject like science or mathematics, frequent language switching may cause students to focus more on linguistic transitions than on core content comprehension.

Some lecturers suggest that translanguaging may fragment the learning process, as students might split their focus across languages rather than deeply engaging with material in one language. This could make it harder for students to develop strong language skills and content mastery simultaneously.

Challenges in implementing translanguaging practices in education

Translanguaging, the practice of using multiple languages in the classroom to facilitate learning, presents a range of opportunities for fostering multilingualism and inclusive education. However, the lecturers involved in the experiment have stated that the implementation of translanguaging strategies in educational settings is often hindered by several significant challenges. These challenges can be categorized into issues related to teacher preparedness, curriculum and policy constraints, resource limitations, and assessment difficulties.

One of the primary challenges in implementing translanguaging practices is the lack of adequate training for teachers. Many educators may not have received the necessary professional development to effectively incorporate translanguaging strategies into their teaching. This lack of training can result in teachers feeling unprepared to manage multilingual classrooms, leading to a reliance on monolingual teaching methods that do not fully support the linguistic diversity of their students. Additionally, teachers may not be proficient in the multiple languages spoken by their students. This language barrier can make it challenging for educators to provide meaningful support for translanguaging practices. Without proficiency in the languages used by the students, teachers might struggle to guide them in leveraging their full linguistic repertoire, thereby limiting the potential benefits of translanguaging in the classroom.

Education systems that prioritize standardized testing often present a significant barrier to translanguaging. Standardized tests are typically administered in a single language, usually the dominant or official language of instruction. This focus on a monolingual approach to testing discourages the use of multiple languages in the classroom, as students are assessed based on their proficiency in only one language. Consequently, translanguaging practices may be seen as counterproductive in environments where success is measured by performance on these standardized tests.

Traditional assessment methods pose a significant challenge in accurately reflecting the linguistic abilities of students who use translanguaging. Standardized tests and other common forms of assessment are typically designed to evaluate proficiency in a single language, which does not capture the full range of a student's linguistic capabilities. As a result, students who engage in translanguaging may be unfairly assessed as underperforming, despite their multilingual competencies.

Finding appropriate metrics to assess the students' understanding and skills across multiple languages is another challenge associated with translanguaging. The complexity of evaluating multilingual competence requires assessment tools that are sensitive to the fluidity and dynamic nature of language use in translanguaging contexts. However, developing and implementing such metrics within existing educational frameworks is a difficult task, often leading to a continued reliance on traditional, monolingual assessments.

The design of the existing curricula often lacks the flexibility to accommodate translanguaging practices. Traditional curricula are usually structured around a monolingual framework, which does not account for the diverse linguistic needs of plurilingual students. Implementing translanguaging strategies would require significant adjustments to the curriculum, such as integrating multilingual resources and allowing for language fluidity in teaching and assessment. Another challenge in promoting translanguaging in schools is the lack of teaching materials and resources that support multilingual education. Most educational materials are designed for monolingual instruction, leaving teachers without the tools they need to effectively implement translanguaging strategies. The absence of bilingual or multilingual resources can limit the ability of educators to create a classroom environment that values and utilizes the linguistic diversity of students.

Addressing these challenges requires a comprehensive approach that includes better teacher training, flexible curricula, adequate resources, and innovative assessment methods. Only by overcoming these obstacles can schools fully embrace the potential of translanguaging to support the diverse linguistic needs of all students.

Benefits of the translanguaging strategies as signaled by the students themselves

In our project, the students appreciated the practical integration of the multiple languages they knew into their learning process as they were able to use their linguistic repertoire within the same task or activity. This allowed them to fluidly switch between languages to enhance comprehension and expression. In addition, translanguaging also encouraged the students to annotate a medical text in English with notes in their home language and vice versa, promoting deeper understanding.

Translanguaging enabled the students to use their stronger language skills to support understanding of material in their weaker language. They admitted that when faced with challenging medical terminology in English, they were able to use their home language to annotate and make sense of the concepts, then revisit the material in English with greater clarity. Translanguaging allows students to use their home language to fully grasp the complex medical concepts before transitioning to the target language, ensuring a deeper and more accurate understanding. This strategy also ensured the acquisition of the medical terms in the languages the students used when reading the text and making sense of it.

The students also stated that translanguaging mirrored the real-world practice when they needed to switch between languages and dialects when interacting with diverse patient populations. It acknowledged that effective communication in healthcare often involved mixing languages to ensure patient understanding and care. Translanguaging practices in education train students for such scenarios. A few students agreed that translanguaging raised their awareness of their learning processes and strategies for overcoming linguistic challenges. By constantly negotiating meaning between languages, they probably developed better problem-solving skills and adaptability, which were essential for medical practice.

Finally, the students appreciated that translanguaging recognized and valued the students' home languages, fostering an inclusive environment where all linguistic backgrounds were respected. The experiment made them feel valued and included, which could boost their confidence and participation.

Conclusions

Although the study had limitations, such as the small number of students and lecturers involved and the brief duration of the experiment, its results are still worth considering. The translanguaging activities proposed by the lecturers emphasized the integrated and dynamic use of multiple languages within the same task or conversation, leveraging skills such as fluid language switching, critical thinking, collaboration, multimodal

literacy, reflective abilities, and cognitive/metacognitive skills. The use of the students' full linguistic repertoire enabled them to enhance comprehension, communication, and learning in a more flexible and inclusive manner. Translanguaging, with its emphasis on fluid and dynamic language use, could be thus favored in contexts requiring deep comprehension and practical application of complex material, such as in medical education.

While translanguaging presents an innovative approach for multilingual classrooms, critics emphasize the need for careful consideration of these potential drawbacks. They argue for a balanced approach that integrates rigorous training, clear assessment criteria, and sufficient resources to maximize the benefits of translanguaging. Addressing these criticisms could help create a more inclusive, effective application of translanguaging that supports multilingual students without compromising their proficiency or educational outcomes in the target language.

In summary, translanguaging represents a transformative approach to education that acknowledges and harnesses the full linguistic capabilities of students. By integrating translanguaging into mainstream education, educators can create more inclusive, supportive, and effective learning environments that recognize and respect linguistic diversity. This approach not only improves language and content acquisition but also fosters a richer and more equitable educational experience for all students.

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Webography

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