

Adapting Digital Annotations for Teaching Ancient Greek in Persian

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This study discusses the significance of digital annotations in filling linguistic and cultural gaps in historical language pedagogy, examining how integrating digital annotations with conventional teaching methods can provide new possibilities for a more inclusive and effective approach to teaching historical texts in languages that have limited resources, such as Persian. We focus on employing digital tools and annotations to address the scarcity of educational materials available in Persian for studying Ancient Greek.

As a result of the long history of cultural contact between Ancient Greece and Persia, the Ancient Greek language has become essential for understanding Persian history; however, the scarcity of direct translations and educational resources in Persian has hindered the thorough understanding of Ancient Greek texts, a gap which has a considerable impact on many cultural and intellectual aspects in Persian-speaking communities (Chiara Palladino et al., 2022).

While the digital age has transformed how we interact with languages, there is still a significant digital divide since online resources and data often are only accessible in a very small number of languages. This study examines how proper localization of digital annotations available in English could fill this gap by creating pedagogical resources for teaching Ancient Greek in a low-resource language, such as Persian. This approach incorporates treebanks, parallel corpora, and other similar digital tools. It evaluates them in an educational context, assessing their impact on language acquisition, translation skills and reading comprehension in Persian-speaking learners. We are particularly focusing on resources that are cross-lingual or do not require a high degree of competence in another language to make them easier to translate and more accessible for speakers of other languages. For instance, treebanks, with their universal applicability, can be effectively used by Persian speakers simply through memorising a few key tags. Treebanks allow learners to visualize and analyze the grammatical structure of Ancient Greek sentences, enhancing their syntactic comprehension and ability to understand complex sentences (Mambrini 2016). Moreover, we have used parallel corpora as a foundational resource, enabling learners to compare Ancient Greek texts with their Persian translations. We have used Ugarit translation alignment tool for building word-level alignments, either with an existing Persian translation or the student's own translation (Yousef et al., 2022). Translation alignment has been used to replace or enrich other conventional exercises and evaluation methods, a method which has already been shown to facilitate learning and deepen comprehension of the source materials for English speakers (Palladino, 2022). Our findings from applying these methods in the classroom indicate the effectiveness of teaching Ancient Greek to Persian speakers through digital annotations, demonstrating how digital tools and annotations can be used to democratise access to Ancient Greek learning resources, enabling Persian speakers to directly engage with source texts, and not only improve the existing indirect translations in Persian, but to produce direct translations that are significantly more accurate (Shamsian & Crane, 2022).

Additionally, this research highlights the importance of localizing resources to align with the target language's linguistic framework and cultural context, addressing the distinct challenges faced by Persian-speaking learners. We have used modular grammar tools to provide learners with tailored grammatical explanations that were modified to meet Persian linguistic characteristics, inspired by the *Pedalion modular grammar* (Van Hal & Anné, 2017). For this purpose, *Didakta Grammar for Annotation* was developed by modifying Smyth's "A Greek Grammar for Colleges" (1916) into a versatile, open-source grammar to provide comprehensive explanations and annotations for Ancient Greek syntax for learners (Shamsian, 2023). The adaptability of *Didakta* makes it suitable for implementation in a range of language learning environments and backgrounds. Through references to *Pedalion grammar* and *Cambridge grammar for classical Greek* (Emde Boas et al., 2019), *Didakta* aims to provide learners with comprehensive, contextually relevant information about other resources, bridging linguistic gaps and enhancing their overall understanding.

Didakta further offers an opportunity to customise a translation's content. For instance, The Persian translation of *Didakta* has been tailored to address the specific linguistic challenges faced by Persian speakers, such as the absence of certain grammatical concepts in Persian that are frequent in Ancient Greek. For instance, Persian lacks definite articles, consequently, speakers of Persian may require more explanation of the concept compared to speakers of English. Another example where we can see the importance of localization is the translation of optative mood. Although there is no optative mood in English, certain optative forms have been retained in Persian and Kurdish, which allow for more accurate translation of optative of wish into these languages. Thus, the translation of the sections on optative into Persian and Kurdish is not merely a lexical transfer but involves careful consideration of the appropriate morphological forms. In Persian, verbs of "being" in optative, such as "باد" or other similar forms, can be employed. The form "با" can be used in Kurdish translations for translation of optatives. Additionally, phrases with بهشکم or خوابکا can also be used, as we see in the following translations:

Soph. Aj. 550: "ὦ παῖ, γένοιο πατρὸς εὐτυχέστερος"

Persian translation: "ای پسر، از پدر نیکبختتر بادی"

Kurdish translation: "ئهی کورم، بهشکم تو له باوکت بهختهوتر تر بیت"

Finally, we point out that this approach to localizing historical language resources is applicable to other historical languages and texts such as *Shahnameh*. Digital annotations can play a pivotal role in enhancing the accessibility of underrepresented text such as Early New Persian literature and promoting a more inclusive distribution of educational resources. We are currently developing a digital edition of the *Shahnameh*, however this project is still in its early phases. The ongoing progress can be accessed via [GitHub](#) (Crane, 2024).

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