

## AI-ASSISTED CROSS-CULTURAL ANALYSIS OF PHRASEOLOGICAL UNITS DENOTING HUMAN INTELLECTUAL ABILITIES

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**Abstract.** *This study investigates the role of artificial intelligence in the cross-cultural analysis of phraseological units denoting human intellectual abilities, focusing on English and Uzbek languages. The research explores how AI-based translation tools interpret culturally bound idioms and whether they preserve semantic and cultural meanings. Using a dataset of 16 phraseological units, the study compares human interpretation with AI-generated translations. The findings reveal that while AI systems successfully translate literal meanings, they often fail to capture cultural nuances embedded in idiomatic expressions. The results highlight the importance of integrating cultural and cognitive linguistic knowledge into AI systems for more accurate translation and interpretation.*

**Keywords:** *phraseological units, artificial intelligence, cross-cultural analysis, idioms, intellectual abilities, Uzbek, English*

### INTRODUCTION

Phraseological units, commonly referred to as idioms, represent fixed expressions with figurative meanings that reflect cultural and cognitive patterns of a speech community. These units are essential in expressing abstract concepts such as intelligence, stupidity, wisdom, and quick thinking. In both English and Uzbek, phraseological units serve as a linguistic mirror of national mentality, social values, and worldview.

Recent developments in artificial intelligence, particularly in machine translation and natural language processing, have opened new possibilities for analyzing phraseological units across languages. However, idioms remain one of the most challenging areas for AI systems due to their non-literal meanings and cultural specificity. Studies show that idiomatic expressions require contextual and cultural knowledge for accurate interpretation, which AI systems often lack.

The present study aims to examine how AI tools process phraseological units denoting intellectual abilities and to what extent they preserve their semantic and cultural characteristics in cross-linguistic translation between English and Uzbek.

**METHODS.** The research adopts a qualitative and comparative approach combined with a small experimental analysis. A corpus of 16 phraseological units related to intellectual abilities was selected from English and Uzbek. These units include expressions describing intelligence, cleverness, foolishness, and mental sharpness.

The methodology consists of three stages: selection of phraseological units, AI-based translation, and comparative analysis. The phraseological units were translated using an AI-based system (e.g., Google Translate or ChatGPT). The results were then compared with their culturally appropriate equivalents provided by human interpretation.

The analysis focuses on three criteria: semantic accuracy, cultural equivalence, and metaphor preservation. This approach is grounded in cognitive linguistics, which

considers idioms as conceptual metaphors shaped by human experience and cultural models.

**RESULTS.** The table below presents selected phraseological units, their literal translations, AI-generated translations, and culturally appropriate equivalents.

No	English Phraseological Unit	Uzbek Equivalent	AI Translation Output	Issue	Cultural Explanation
1	sharp as a tack	juda ziyrak	o'tkir mixdek	Literal translation; figurative meaning lost	English uses sharpness metaphor
2	bright spark	zukko odam	yorqin uchqun	Literal translation; metaphor unclear	Light metaphor for intelligence
3	not the brightest bulb	uncha aqlli emas	eng yorqin lampochka emas	Partial transfer; humorous tone weakened	Humor through light imagery
4	quick-witted	tez fahmli	tez aqlli	Acceptable but simplified	Speed metaphor
5	brainy	bilimdon	miyali	Incorrect lexical choice	Literalization error
6	slow on the uptake	sust fahmli	sekin qabul qiladi	Misinterpretation of idiom	Idiomatic meaning lost
7	a walking encyclopedia	bilimlar xazinasi	yuradigan ensiklopediya	Literal but understandable	Partially correct
8	empty-headed	kallasi bo'sh	bo'sh boshli	Accurate equivalence	Shared metaphor
9	clever as a fox	tulkidek ayyor	tulkidek aqlli	Slight semantic shift	Animal metaphor
10	know-it-all	hamma narsani bilaman deydigan	hamma narsani biluvchi	Pragmatic nuance lost	Negative connotation missing
11	have a sharp mind	o'tkir aql	o'tkir ong	Accurate	Direct equivalence
12	thick-headed	kallasi to'la	qalin boshli	Accurate	Cultural match
13	brain like a sieve	g'alvir miya	miyasi elakdek	Metaphor preserved	Equivalent imagery
14	wise as an owl	boyo'g'lidek dono	boyo'g'lidek dono	Accurate	Universal metaphor
15	not all there	sal g'alati	hammasi joyida emas	Euphemistic mismatch	Tone differs
16	think outside the box	noodatiy fikrlash	qutidan tashqarida o'ylash	Literal translation; idiomatic meaning weakened	Culture-specific expression

**DISCUSSION.** The analysis demonstrates that AI systems show mixed performance in translating phraseological units. In cases where metaphors are universal or shared across cultures, such as “wise as an owl” or “empty-headed,” AI translations are relatively accurate. This supports the idea that some conceptual metaphors are universal, rooted in shared human experience.

However, in culturally specific expressions, AI systems often produce literal translations that fail to convey the intended meaning. For example, “sharp as a tack” is translated literally as “o‘tkir mixdek,” which does not exist in Uzbek phraseology. Similarly, “think outside the box” becomes a direct translation that lacks idiomatic value. These findings confirm that idioms are deeply embedded in cultural contexts and cannot be interpreted solely through lexical analysis.

English phraseological units frequently rely on metaphors related to light, sharpness, and speed, reflecting a cognitive model of intelligence as efficiency and clarity. In contrast, Uzbek phraseology often associates intelligence with moral qualities, wisdom, and social behavior, highlighting the importance of cultural values.

The experiment also reveals that AI struggles with pragmatic nuances. Expressions like “know-it-all” carry negative connotations that are not fully captured in translation. This indicates that AI lacks sociolinguistic competence, which is essential for interpreting evaluative meanings.

Moreover, the results align with previous research showing that phraseological units are stable yet culturally specific linguistic structures that reflect national identity and worldview.

**CONCLUSION.** This study highlights the potential and limitations of AI in analyzing and translating phraseological units denoting intellectual abilities. While AI systems demonstrate effectiveness in handling literal and universal metaphors, they face significant challenges in interpreting culturally bound idioms and pragmatic meanings.

The findings emphasize the need for integrating cultural, cognitive, and contextual knowledge into AI-based linguistic systems. Future research should focus on developing idiom-aware models and expanding multilingual corpora to improve translation accuracy. In conclusion, phraseological units remain a complex intersection of language, culture, and cognition, and their accurate interpretation requires not only technological advancement but also deep linguistic and cultural understanding.

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