Eco-Translation in Children's Literature: An English-Arabic Comparative Analysis Through Nida's, Baker's and Venuti's Lenses

Huda Ali Mouzughi

(**Department of English, University of Tripoli, Tripoli, Libya)**

h.mouzughi@uot.edu.ly

ABSTRACT

This study investigates the complexities of eco-translation in children's literature; it specifically focuses on the translation of English environmental narratives into Arabic. Through a qualitative comparative analysis of five translated stories, the study examines the linguistic, cultural, and pedagogical obstacles inherent in the transmission of ecological themes to young Arabic audiences. Situated within the theoretical framework of Eco-Translatology (Hu, 2011) and utilizing Baker's (2018) Translation Strategies alongside Venuti's (2008) Domestication/Foreignization dichotomy and Nida's (1964) Dynamic Equivalence, the study investigates pivotal excerpts pertaining mostly to climate change, pollution, and wildlife conservation. The findings elucidate that the translators adopt a variety of strategies, including lexical simplification, cultural substitution, and selective omission, to strike a balance between scientific precision, educational merit, and cultural pertinence. The analysis accentuates the manner in which translators navigate the inherent tensions between fidelity to the original text and necessary adaptations for the target readership, frequently prioritizing engagement and comprehension for the young audiences. Although the study recognizes certain limitations, notably its restricted corpus size, it contributes to the broader discourse on eco-translation by highlighting the vital need for culturally attuned, child-centric methodologies in Arabic children's literature. The findings emphasize the dynamic role of translation in promoting environmental consciousness while addressing the distinct requirements of cross-cultural communication for young readers.

Keywords: Nida's Dynamic Equivalence, Venuti's Dichotomy, Baker's Translation Strategies

الملخص

يدرس هذا البحث تعقيدات الترجمة البيئية في أدب الأطفال، مع التركيز بوجه خاص على ترجمة القصص البيئية من اللغة الإنجليزية إلى العربية. ومن خلال تحليل مقارن نوعي لثلاث قصص مترجمة، يستكشف البحث العقبات اللغوية والثقافية والتعليمية الكامنة في نقل الموضوعات البيئية إلى القرّاء العرب الصغار. يستند البحث إلى الإطار النظري للترجمة البيئية

(هو، 2011)، ويستفيد من منهجيات الترجمة لدى بيكر (2018)، إلى جانب مفهومي التوطين والتغريب عند فينوتي (2008)، ومبدأ التكافؤ الديناميكي عند نيدا (1964). ويتم تحليل مقاطع رئيسية تتناول موضوعات مثل التغير المناخي، والتلوث، وحماية الحياة البرية. تكشف النتائج أن المترجمين يعتمدون استراتيجيات متنوعة تشمل التبسيط المعجمي، والاستبدال الثقافي، والحذف الانتقائي، بهدف تحقيق توازن بين الدقة العلمية، والقيمة التعليمية، والملاءمة الثقافية. كما يسلّط التحليل الضوء على جهود المترجمين في الموازنة بين الأمانة للنص الأصلي والتعديلات اللازمة لتناسب الجمهور المستهدف، مع إعطاء الأولوية غالباً للتفاعل والفهم لدى القرّاء الصغار. وعلى الرغم من إقرار الدراسة ببعض القيود، ولا سيما صغر حجم العينة المدروسة، فإنها تسهم في إثراء النقاش الأكاديمي حول الترجمة البيئية من خلال التأكيد على أهمية اتباع منهجيات تراعي الثقافة وتتمحور حول الطفل في أدب الأطفال العربي. كما يؤكد البحث على الدور الحيوي للترجمة في تعزيز الوعي البيئي، مع مراعاة الخصوصيات الثقافية ومتطلبات التواصل عبر الثقافات لدى القرّاء الصغار..

الكلمات المفتاحية: التكافؤ الديناميكي لنيدا، ثنائية فينوتي، استراتيجيات الترجمة لبيكر

Introduction

The translation of literature pertaining to environmental issues targeted at children presents distinctive challenges that intersect the realms of linguistics, culture, education and entertainment. According to Mouzughi (2025), careful analysis of narrative structures allows researchers to gain valuable insights into how children develop comprehension abilities while simultaneously absorbing cultural values and social norms. Ibrahim (2025) further argues that short stories help instructors to teach literary, cultural, and higher-order thinking aspects. Together, these approaches create a comprehensive framework where children organically absorb cultural values through narrative structures while receiving explicit guidance from instructors, resulting in both intuitive understanding and structured learning of environmental concepts.

As the importance of environmental consciousness escalates for children's audiences, translators are required to navigate intricate considerations to facilitate the effective transmission of ecological messages across diverse cultural contexts. This study investigates the particular challenges and strategies associated with the translation of children's environmental literature from English into Arabic, with an emphasis on linguistic modification, cultural pertinence, and

educational efficacy.

According to (Hu, 2011), Eco-translation or ecological translation is an interdisciplinary approach in translation studies that applies ecological principles, such as adaptation, balance, and sustainability to the theory and practice of translation. It conceptualizes translation as a dynamic, interdependent process operating within a broader linguistic, cultural, and environmental ecosystem. Eco-translation represents a forward-thinking methodology in translation studies that weaves together environmental consciousness and sustainable practices throughout the translation process. Rather than focusing solely on linguistic conversion, this innovative approach embraces a holistic perspective that considers how translations influence our relationship with nature, shape social dynamics, and impact ethical considerations in our interconnected world.

Children's environmental literature nurtures ecological awareness by combining scientific accuracy with compelling storytelling. Well-crafted eco-literature not only teaches young readers but also motivates them to care for the planet, fostering both understanding and a sense of responsibility for the future.

Literature review

Being an interdisciplinary approach in translation studies, many researchers have contributed to establish its core theory. The works of Hu (2011), Jiang (2015) and Hermans (2014) have significantly contributed to the theoretical and practical foundations of Eco-translation. Hu (2011) pioneered Eco-Translatology, framing translation as an ecological process where linguistic and cultural adaptations must harmonize with the target environment. Jiang (2015) expanded this paradigm by emphasizing translation as adaptation and selection, integrating ecological principles into translation studies. Hermans (2014) provided a systemic perspective, analyzing how translations function within broader sociocultural ecosystems, while Venuti (2008) critiqued power dynamics in translation, advocating for strategies, like foreignization, to preserve ecological terminology's authenticity. Together, these scholars offer a robust framework for analyzing how eco-concepts are translated, adapted, and received across cultures. Various studies have focused on challenges and strategies in

translating children's books, including environmental terms. Epstein (2013) examines the complexities involved in conveying expressive language within children's texts, suggesting methodologies to preserve both authenticity and appeal. Lathey (2016) offers a comprehensive analysis of translation methodologies, underscoring the imperative for cultural sensitivity and adaptation within children's literature. O'Sullivan (2005) employs a comparative methodology, examining cross-cultural adaptations in eco-narratives and their consequential effects on juvenile readers. Concurrently, Van Meerbergen (2010) explores the manner in which translations of Dutch children's literature shape perceptions of childhood and youth across diverse cultural landscapes. Collectively, these scholarly contributions illuminate the intricate nature of translating children's literature, necessitating a delicate equilibrium among linguistic innovation, cultural pertinence, and audience engagement.

Gough (2017) examines how experiential eco-education fosters environmental stewardship in children. Using mixed methods, the study finds that proactive, nature-based learning enhances ecological awareness and sustainable behaviors, especially when embedded in school programs. However, barriers like inadequate teacher training limit long-term impact. The research underscores the need for policy-supported, immersive environmental education to instill lasting pro-environmental values in young learners, contributing to debates on effective sustainability pedagogy.

Cutter-Mackenzie and Edwards (2013) study how young children learn about sustainability in early education settings. They find that kids grasp environmental concepts best through hands-on play, like gardening or recycling projects, rather than traditional classroom lessons. The researchers argue that these playful, nature-based activities not only teach sustainability but also fit how children naturally learn and explore. By shifting focus from rigid instruction to interactive experiences, their work highlights how early childhood programs can nurture environmental awareness in a way that actually makes sense to little kids.

Unlike the current study, which focusses on eco translation in children's literature, Tashani, (2023) addresses the translation patterns of cultural specific items in al Koni's (1994) short story 'al-lisan'. It reveals a

strong preference for cultural adaptation in ecological terminology, accounting for over half of all instances. Literal translation emerges as a significant secondary method, while transposition and borrowing serve specialized purposes. This distribution suggests a thoughtful approach to balancing cultural relevance with technical accuracy in ecological communication. The strategic deployment of these methods demonstrates careful consideration of context and audience needs. Through this multi-faceted translation strategy, ecological concepts maintain both their scientific integrity and cultural accessibility. The selective use of different procedures indicates a nuanced understanding of when each approach is most appropriate for effective knowledge transfer.

Power et. al. (2023) analysis of the Arabic translations of Lewis Carroll's Alice through the cultural lens of various translators is an outstanding study. It aims to investigate language, meaning, foreignness, and otherness in the texts alongside their Arabic translations. This interdisciplinary approach combines close-reading post-colonial analysis with Venuti's translation strategies, illuminating both source and target texts for Arab readers. The resulting portrayal of Alice reveals her as both a language learner and a rule-bound guardian, an explorer and imperialist, as well as a vulnerable child and a tyrannical queen. The target texts exhibit a dichotomy between literary depth and playful nonsense, as well as a blend of complex post-colonial themes and local cultural celebration. Moreover, translators perceive the target texts as both enjoyable childhood tales adapted to local preferences and intricate literary allegories preserved for a discerning adult audience.

Abdellatif et al. (2025) investigate the complexities involved in converting the ecological themes of Lord of the Flies into Arabic, focusing on Abdelhamid Al-Jammal's 2004 translation. Framed within Ecolinguistics, Ecotranslation, and Schema Theory, the study examines linguistic and cultural barriers in conveying ecological meaning. Challenges include finding suitable equivalents for specialized terms, maintaining contextual depth, and adjusting symbolic representations. To overcome these, the authors suggest techniques like explanatory additions, blended translation methods, and contextual adaptations. The study stresses that translators must possess ecological and cultural knowledge to ensure accuracy and resonance. By doing so, translation

becomes more than a linguistic task ; it acts as a bridge for ecological understanding across cultures. This research aims to advance eco translation by illustrating how translated literature can enhance ecological consciousness globally.

The UNESCO (2023) report titled 'Eco-Literacy in Arab Education' concisely explores the importance of translation in promoting eco-awareness. Although it is not the central focus of the document, it notes that the majority of environmental literature available to Arab youth is primarily composed of translated Western texts, which often lack cultural and ecological relevance given the region's unique environmental challenges (e.g., desertification, water scarcity, or coastal degradation). The report critiques translations that are literal and non-adaptive, which fail to effectively localize concepts, making them less relatable or potentially misleading. Moreover, UNESCO emphasizes a shortage of skilled translators who possess expertise in both ecological terminology and pedagogical strategies appropriate for children, leading to texts that are either excessively technical or overly simplistic.

The existent body of literature indicates a pronounced deficiency in methodical investigations that scrutinize the translation of ecological lexicon specifically tailored for children's audiences, particularly within scholarly works that analyze eco-translation from English into Arabic. The main corpus of existing research predominantly centers on eco-translation pertaining to adult demographics ; hence, this study is essential for addressing this identified lacuna.

Methodology

This study utilizes a comparative qualitative methodological framework to investigate the translation strategies implemented in three English-language children's environmental narratives that have been translated into Arabic, with an emphasis on ecological terminology and cultural modifications. Anchored in the theoretical paradigms of Eco-Translatology (Hu, 2011), this inquiry meticulously analyzes seventeen selected excerpts across various themes, including climate change, pollution, and wildlife conservation, while employing Baker's (2018) framework of translation techniques (for example, literal translation, loanwords, semantic adaptation) alongside Venuti's (2008) domestication/foreignization theory to evaluate the rendering of eco

terms for Arabic-speaking children. Through a comparative examination of source and target texts, this analysis elucidates patterns such as lexical simplification, omission of technical explanations, and cultural substitution, concurrently assessing their implications for pedagogical clarity and ecological discourse. The employed methodology integrates textual analysis with a critique of translation theory to unveil how translators navigate the delicate balance between accuracy, readability, and cultural resonance within children's literature.

The chosen corpus consists of source texts that were originally composed in English along with their respective Arabic translations, selected specifically for their overt environmental themes to enable a systematic comparative analysis of ecological terminology. At the micro-linguistic level, this study discerns lexical patterns, inclusive of loanwords, calques, or culturally localized substitutions. At the macro-level, the analysis investigates broader cultural transformations, such as the alignment of ecological messaging with cultural environmental ethics or region-specific ecological consciousness.

While acknowledging certain limitations, including the constrained corpus size and the potential for interpretive subjectivity in assessing cultural adaptations, this research endeavors to enhance scholarly discourse on eco-translation within the realm of Arabic children's literature, particularly by addressing the tension that exists between fidelity to the source text and accessibility for the target culture. Ethical considerations, including compliance with copyright regulations concerning the utilization of textual excerpts, have been meticulously adhered to.

Ultimately, this study aspires to make a significant contribution to the expanding corpus of research on translation practices within ecological discourse, especially in relation to Arabic children's literature and its educational aims.

Analysis and Discussion

This study undertakes a comparative analysis of three English-language children's narratives that have undergone translation into Arabic. Through systematic examination of ecological terms and their linguistic transformations, this study aims to elucidate both the preservation of environmental discourse and the pertinent translation strategies

involved in the Arabic rendition.

Ozone Layer in Danger, Khiari, (2011)

1. “This perfume contains **chlorine**. It is one of the chemicals responsible for the depletion of the ozone layer !" (p. 5)

هذا العطر به مادة **الكلورين** التي تساهم في إتلاف طبقة الأوزون. (ص.5)

The translator has chosen to employ the strategy of literal translation strategy (Baker, 2018) for the technical term, chlorine. There exists a simplification of semantic structure in the target language (TL) that has resulted in a diminution of impact ; instead of the chlorine’s high responsibility in endangering the ozone layer in the source text (ST) it is only contributes to the destruction of the ozone layer.

2.” **Ozone** is a gas, mum. It’s made up of oxygen that forms a sort of envelope around the Earth to protect it from outer space.” (p.6)

"**الأوزون** يا أمي هو غاز يتكون من ذرات الأكسـجين، ويوجد بكثرة في الطبقة الجوية العليا المحيطة بالأرض." (ص.6)

The strategy employed is the transliteration or loanword (Baker, 2018), wherein a direct phonetic adaptation from the English term "ozone" is incorporated into the Arabic lexicon.

3. This gas is especially important for protecting the Earth from the sun’s **ultraviolet rays**. (p. 7)

ويلعب هذا الغاز دورا كبيرا في حماية كوكبنا من **الأشعة فوق البنفسجية** التي ترسلها الشمس، فتعكسها طبقة الأوزون. (ص7)

In ‘ultraviolet rays’, the strategy of translation used is the literal translation and descriptive translation (Baker, 2018), using a phrase to explain a complex eco-term. It transforms into feminine plural form to

follow Arabic syntax, with "ultra" (فوق) remaining unchanged, "violet" becoming (البنفسجية), and "rays" (الأشعة) maintaining its existing feminine plural form.

4. "Of course, mum. Besides chemicals like chlorine, there's **fluoric acid**…" (p. 9)

" بالطبع يا أمي فبالإضافة إلى **مركبات** الكلور، **والفليور** ..." (ص.9)

The translator has selected the approach of utilizing loanwords (Baker,2018) to convey the term 'fluor' as the borrowed lexeme " فليور" ; the term for the acid is articulated as a compound without providing an elucidation, although it could have been accurately rendered as " حمض الفلوريك."

5. High-flying jet planes release chemicals like **nitrogen oxides one and two**. (p.9)

نجد كذلك **أول أكسيد النتروجين وثاني أكسيد النتروجين** اللذين تنفثهما بعض أنواع الطائرات.

The loanword strategy (Baker,2018) has been employed, with "أكسيد" being a lexical borrowing from "oxide" and "النيتروجين" having been transliterated from "nitrogen." It is noteworthy that the translator has adopted a generalization regarding the types of aircraft that emit the oxides, in contrast to the source text which specifies 'the high-flying jets.' The simplification approach may suggest that the translator has intentionally refrained from detailing the specific types of aircraft to avoid necessitating extensive elaboration for the intended audience within the Target text.

6. "…To fight fires, we need foams which contain different sorts of **halogens**…" (p. 10)

ونجد كذلك **الهالونات** المستخدمة في مكافحة الحرائق. (ص.10)

The translation of "halogens" into "هـالـونـات" employs the loanword strategy (Baker,2018). There is a combination of phonetic transliteration and morphological adaptation, preserving the Greek root "halo-" while incorporating Arabic plural patterns (-ات) to create a scientifically accurate term that maintains cross-cultural communicative effectiveness. While the translation of "halogens" to "هالونات" demonstrates sophisticated linguistic techniques, neither version provides adequate context for young readers, focusing primarily on vocabulary acquisition without proper explanatory framework within the narrative structure.

2. **Global Warming**, Khiari, (2011)

7. A news item about an international summit on **global warming** attracted my attention. (p.6)

وقد لفت انتباهي خبر عن مؤتمر دولي حول **الإحتباس الحراري**. (ص.6)

The semantic translation strategy (Baker,2018) of "global warming" into Arabic as "الاحتباس الحراري" demonstrates a sophisticated linguistic adaptation that preserves both scientific accuracy and conceptual clarity. Through this translation strategy, the term undergoes a meaningful transformation where "global" becomes implicitly embedded within the concept of "الاحـتـبـاس" (trapping/containment), while "warming" is rendered as "الحـراري" (thermal/heat-related). This translation choice effectively captures the fundamental mechanism of the greenhouse effect, where heat becomes trapped within Earth's atmosphere, creating what scientists refer to as thermal trapping. The Arabic terminology thus achieves a dual purpose: maintaining technical precision while employing metaphoric representation that enhances comprehension of this complex environmental phenomenon. This environmental concept exceeds Arab children's cognitive abilities, yet it remains intentionally incorporated into their vocabulary development process.

8. The energy it gets from the sun is called '**thermal energy**' because of the heat that comes with it. (p.7)

...يكتسب كوكب الأرض **طاقته الحرارية** من أشعة الشمس التي تنعكس من الأرض... (ص.7)

The translation of "thermal energy" to "الطاقة الحرارية" employs a strategic combination of direct translation and grammatical adaptation, where "thermal" becomes "حـراريـة" and "energy" becomes "طـاقـة", then restructured according to Arabic's noun-adjective pattern while adding the definite article "ال-" to create a cohesive unit that maintains scientific precision while conforming to Arabic syntactic norms. While the translation preserves the term 'thermal energy', it regrettably omits an important explanatory paragraph about global warming mechanisms. This omission denies Arabic readers crucial information about climate change processes that was presented in simple terms in the original text.

9. "… Decisive action must be taken to avoid disturbing the **thermal balance** of our planet before it's too late". (p.10)

فلا بد من اتخاذ الإجراءات الحاسـمة لتلافي اختلال **التوازن الحراري** لكوكبنا قبل فوات الأوان. (ص.10)

The translation exemplifies Baker's (2018) strategy of semantic adaptation, wherein specialized terminology such as "thermal balance" is retained as direct translations ("توازن حراري"), while discourse oriented towards action is systematically transformed to align with Arabic linguistic conventions. This methodology facilitates optimal translation outcomes by preserving scientific accuracy through the direct rendering of specialized terms, while simultaneously ensuring natural expression through the semantic adaptation of functional components. Functional components pertain to the action-oriented segments of the translation ("decisive action must be taken") that undergo semantic adaptation to align with Arabic linguistic conventions, in contrast to technical terminology, which is maintained as direct translations.

10. This heat is reflected off the Earth's surface and back to the atmospheric cover where gases like CO 2, water vapor and **methane** are trapped. (p. 7)

حيث تحبس الغازات الدفيئة(مثل ثاني أكسيد الكربون، وبخار الماء، **والميثان**،...(ص.7)

The translation employs a sophisticated combination of Baker's (2018) translation strategies, primarily utilizing semantic translation to preserve meaning while adapting to Arabic conventions. The process flows through three main strategies : semantic translation maintains conceptual accuracy, term modification handles scientific terminology appropriately, and structural adjustment optimizes the text's organization for Arabic readers. The translation transforms the English text's process-oriented structure ("heat is reflected...") into a more direct Arabic presentation beginning with the outcome ("where greenhouse gases are trapped"), while explicitly stating "الغازات الدفيئة" (greenhouse gases) followed by specific examples. This strategic approach creates a text that balances scientific precision with natural Arabic expression, effectively communicating complex environmental concepts while respecting linguistic and cultural norms. The translator enhances clarity by providing both the collective term "greenhouse gases" and listing its component parts, offering a dual-level explanation that ensures complete understanding of the concept.

11. In addition, there are fewer forest areas and green spaces which contribute to a balanced composition of the **atmosphere** by absorbing carbon dioxide. (p.8)

أضف إلى ذلك تقلص مساحات الغابات، والمساحات الخضراء التي تساهم في التوازن الخارجي **للغلاف الجوي** بامتصاص ثاني أكسيد الكربون من الجو ... (ص.8)

The translation utilizes a domestication strategy (Venuti,2008), which is demonstrated by the modification of technical terminology and the seamless flow of ideas in the target text. The Arabic rendition preserves the scientific precision of terms such as "carbon dioxide" (ثاني أكسـيد

الكربون) while employing idiomatic Arabic expressions for ecological concepts, exemplified by "تقلص مساحات الغابات" (diminution of forested areas) and "التوازن الخارجي للغلاف الجوي" (external atmospheric equilibrium). This methodology engenders a fluid and natural reading experience in Arabic, while simultaneously safeguarding the technical semantics of the original text, a fundamental attribute of the domestication approach. The translator has adeptly aligned the text with the conventions of the Arabic language, all the while retaining its scientific substance, thereby exemplifying the efficacy of domestication in technical translation, where clarity and accessibility are of utmost importance.

12. … by absorbing carbon dioxide. It's one of the most important **greenhouse gases** in the air. (p.8)

... بامتصاص ثاني أكسيد الكربون من الجو، وهو أحد أهم **الغازات الدفيئة**. (ص. 8)

The strategy of domestication (Venuti, 2008) employed in this translation serves as a prime illustration of how scientific discourse can be effectively assimilated into Arabic dialogue while upholding technical precision. The translator strategically utilizes domestication by incorporating culturally resonant Arabic scientific lexicon, such as "غازات دفيئة" for greenhouse gases, which facilitates immediate recognition among Arabic-speaking readers. This methodology is particularly manifest in the transformation of the phrase "by absorbing carbon dioxide" into "بامتصاص ثاني أكسيد الكربون من الجو," wherein the inclusion of "من الجو" (from the air) highlights the focus of domestication on clarity for the intended audience. The strategy is further augmented through the employment of natural Arabic syntactic structures and word order, resulting in a text that exhibits a seamless flow and aligns with the conventions of Arabic scientific writing. Through these intentional decisions, the translator adeptly bridges the scientific content and the Arabic-speaking populace while safeguarding its technical essence, thereby exemplifying how domestication can facilitate understanding without sacrificing accuracy.

3. ***Enemies of the Environment***, Khiari, (2011)

13. Others use **automatic** rifles or certain nets and traps that are not legal either. (p.6)

... فهناك أنواع من الصـــيد المحظور، مثل الصـــيد بهذه الطريقة أو مطاردة الحيوانات... وكذلك استعمال البنادق **الأوتوماتيكية** ...(ص.5)

The Arabic translation exemplifies the domestication strategy (Venuti, 2008) by transforming the source text to align seamlessly with Arabic cultural and linguistic patterns. The phrase "automatic rifles" is rendered as "البنـادق الأوتومـاتيكيـة", employing the Arabic term for rifle (بندقية) followed by the Arabicized form of "automatic," demonstrating how domestication adapts technical terminology to native patterns. Furthermore, "certain nets and traps" becomes "مطاردة الحيوانات", meaning "chasing animals," illustrating how domestication replaces literal translation with culturally familiar expressions. This strategy, as noted by Venuti (2008, p.16) involves "an ethnocentric reduction of the foreign text to target-language cultural values" creating a fluent and natural Arabic text that minimizes the foreignness of the original English version.

According to Nida's theory of dynamic equivalence (1964), the translation transforms technical terms into culturally relatable expressions while maintaining core meaning. The phrase "automatic rifles" becomes "البنادق الأوتوماتيكية" by merging Arabic vocabulary with technical terminology, while "nets and traps" transforms into " مطاردة الحيوانات" (chasing animals), representing a shift from literal translation to culturally meaningful expressions that feel natural to Arabic speakers

14. “What kind of hunting is allowed then ?” … eagles, falcons and **sparrow hawk of Houuaria** in the Cap Bon peninsula…” (p. 7)

إذن ما هي وسـائل الصـيد المرخص فيها؟ ...بندقية الصـيد، والطيور الجوارح، مثل **طير السـاف المشهور بالهوارية**... (ص.7)

The translation exemplifies a sophisticated implementation of the domestication strategy (Venuti, 2008), wherein cultural elements are meticulously adapted to resonate with the target Arabic-speaking audience while upholding semantic equivalence. The phrase "sparrow hawk of Houuaria" is adeptly transformed into "طير الساف المشهور بالهوارية," utilizing domestication by substituting a potentially unfamiliar regional reference with a culturally entrenched term. This adaptation illustrates how domestication fosters proximity between the writer and the reader, thereby creating a more accessible text that retains meaning while drawing on familiar cultural references. The translation strategy effectively dismantles cultural barriers while ensuring the text appears natural and fluent for Arabic readers, thereby demonstrating how domestication can enhance comprehension without compromising accuracy.

15. Dogs also can be used for hunting : the **Saluki dog** and many terrier dogs are the best in the world. (p.7)

إذن ما هي وسـائل الصـيد المرخص فيها؟ ...بندقية الصـيد، والطيور الجوارح، مثل طير السـاف المشهور بالهوارية، كذلك كلاب الصيد مثل **السلوقي**. (ص.7)

The translation strategy employed in this text demonstrates a sophisticated approach to cultural and linguistic adaptation (Venuti,2008). The Arabic text maintains the original structure while incorporating culturally-specific terminology, using "بنـدقيـة الصـيـد" (hunting rifle) and "الطيور الجوارح" (birds of prey) to preserve scientific accuracy. Notably, the text employs the Arabic term "السـلوقي" (Saluki) rather than translating it, reflecting the breed's deep cultural significance in Arabic-speaking regions. This approach successfully balances scientific integrity with cultural adaptation, maintaining the technical accuracy of hunting terminology while using appropriate regional references that resonate with Arabic-speaking readers.

16. "…Some are **so evil** that they dare practice their so-called 'sport' in natural **reserves** and **parks** !" (p.9)

... أو تبلغ به **الخسة والنذالة** إلى ممارسة عملية الصيد داخل **المحميات الطبيعية.** (ص.9)

The Arabic translation demonstrates sophisticated cultural adaptation (Venuti, 2008) through strategic domestication. In translating "natural reserves," the text transforms it into "المحميات الطبيعية," creating a culturally resonant term that better connects with Arabic-speaking readers. This approach extends to moral expressions, where "so evil" becomes "الخسة والنذالة," capturing deeper cultural nuances of shame and moral corruption. The translation enhances the severity of condemnation by adding "أو تبلغ به," showing how thoughtful domestication can strengthen both cultural relevance and emotional resonance while preserving the fundamental meaning.

17. "Our wildlife is a valuable treasure, …" It plays an important role in keeping **the balance in ecosystems**. …" (p.10)

ثروتنا الحيوانية البرية كنز ثمين، نظرا لما تلعبه من دور هام في **مجال التوازن البيئي** ...(ص.10)

The translation illustrates the process of domestication (Venuti, 2008) through several significant adaptations: the term "wildlife treasure" is rendered as "ثروتنا الحيوانية البرية" (our animal wealth in the wild), while the metaphorical phrase "valuable treasure" is converted literally to "كنز ثمين" (precious treasure); the syntactic structure is modified to align with Arabic linguistic norms, commencing with the possessive pronoun "ن" (our); specialized terminology such as "ecosystems" is translated as "مجال التوازن البيئي" (field/environmental balance); and although the ecological significance is preserved, the translation employs culturally resonant terminology and maintains a formal tone while conforming to

Arabic stylistic conventions.

The analysis integrates key translation theories and strategies from prominent scholars, primarily drawing on Baker's (2018) taxonomy including literal translation (e.g., "ozone layer","طبقة الأوزون"), loanwords (e.g., "halogens", "هالونات"), semantic translation (e.g., "global warming", "الاحتباس الحراري"), and descriptive translation. Venuti's (2008) framework is explicitly applied, with domestication evident in cultural adaptations like "sparrow hawk of Houuaria", " طير الساف المشهور بالهوارية" and foreignization in retaining source-culture terms like "halogens", "هالونات.". Nida's dynamic equivalence emerges in prioritizing naturalness, as seen in "the phrase "automatic rifles" becomes "البنادق الأوتوماتيكية". Additional techniques such as simplification, selective omission, and cultural adaptation reflect a sophisticated, receptor-oriented approach to translation, prioritizing accessibility while negotiating linguistic and cultural boundaries.

Findings and Results

The analysis of the translation strategies employed in rendering eco-terms from English into Arabic reveals a combination of approaches, including literal translation, loanwords, transliteration, and descriptive adaptation. The translator demonstrates a preference for maintaining scientific accuracy through direct borrowing and phonetic adaptation (e.g., "هالونات" "فليور," "أوزون,"), while occasionally simplifying or generalizing complex concepts (e.g., omitting "high-flying jets" and reducing the impact of chlorine's role in ozone depletion).

However, while these strategies ensure terminological consistency, they sometimes result in a loss of contextual depth or explanatory clarity, particularly for younger readers. The translation could benefit from additional explanatory notes or simplified paraphrasing to enhance comprehension without sacrificing scientific precision. Overall, the translator successfully navigates the challenges of technical terminology but could further optimize readability and engagement for

the target audience by balancing accuracy with pedagogical accessibility.

The analysis demonstrates how the translator skillfully navigates the challenges of rendering scientific environmental discourse from English into Arabic by employing a balanced combination of semantic precision, structural adaptation, and cultural domestication. The translations maintain rigorous technical accuracy through direct terminological equivalents like "الاحتباس الحراري" for "global warming" and "الطاقة الحرارية" for "thermal energy," while simultaneously adapting syntax and style to conform to Arabic linguistic norms and rhetorical patterns. Strategic decisions such as transforming passive constructions into active Arabic phrasing, adding clarifying elements like "من الجو," and listing specific examples after general terms enhance both comprehension and natural flow. While this approach occasionally sacrifices some explanatory depth for the sake of conciseness and readability, it successfully achieves the dual objectives of preserving scientific integrity and ensuring accessibility for Arabic readers. The translator's methodology, particularly the effective blending of semantic fidelity with cultural adaptation, serves as an exemplary model for handling specialized scientific content in Arabic translations, demonstrating that technical accuracy and linguistic naturalness can coexist when approached with thoughtful, audience-aware strategies. This balance proves especially crucial for environmental communication, where both conceptual precision and broad comprehension are essential for meaningful engagement with these critical global issues.

The analysis of these translations demonstrates how domestication serves as a powerful strategy for rendering English texts into culturally resonant and linguistically natural Arabic. By adapting terminology, syntax, and cultural references, the translator ensures that the content remains accessible and meaningful to Arabic-speaking audiences while preserving the core message. For instance, technical terms like "automatic rifles" become "البنادق الأوتوماتيكية," blending borrowed and native linguistic elements, while culturally specific references like

"sparrow hawk of Houuaria" are transformed into " طير الســاف المشــهور بالهوارية," replacing unfamiliar terms with locally recognized ones. This approach not only bridges linguistic gaps but also embeds the text within the cultural framework of the target audience, enhancing comprehension and engagement.

Moreover, the translations reveal how domestication extends beyond mere word-for-word substitution to encompass emotional and rhetorical adaptation. Phrases like "so evil" are intensified as "الخســـة والنـذالـة," leveraging Arabic's rich lexicon of moral condemnation to amplify the original tone. Similarly, ecological concepts such as "wildlife treasure" are rendered as "ثروتنـا الحيوانيـة البريـة كنز ثمين," incorporating possessive pronouns and culturally familiar metaphors to foster a sense of shared responsibility. These choices reflect a deliberate effort to align the text with Arabic values and communication styles, ensuring that it feels native rather than foreign.

However, this strategy is not without trade-offs. While domestication enhances readability and cultural relevance, it occasionally omits or simplifies details that might enrich the reader's understanding, such as specific ecological mechanisms or regional nuances. Despite this, the overall approach succeeds in making specialized or culturally distant content accessible to Arabic audiences. The translator's skillful balance of fidelity to the source text and adaptation to the target culture exemplifies the effectiveness of domestication in technical and environmental communication. Ultimately, these translations highlight the importance of audience awareness in scientific and advocacy texts, demonstrating that the most accurate translation is often one that resonates as deeply as it informs.

The analysis reveals a sophisticated interplay between dynamic equivalence, domestication, and cultural adaptation strategies to ensure both accuracy and natural resonance with Arabic-speaking audiences. The translator consistently prioritizes readability and cultural familiarity while preserving the core medical information, demonstrating how technical content can be effectively localized

without sacrificing precision. For instance, terms like "reserves" and “parks’ become "المحميات الطبيعية" employing Arabic's existing ecological lexicon rather than foreign borrowings, which enhances immediate comprehension.

The translations demonstrate a dynamic interplay between domestication and foreignization strategies, carefully calibrated to balance cultural accessibility with fidelity to the source text. While some passages adopt domestication to align with Arabic linguistic norms and storytelling conventions, such as rendering ‘some are so evil’ as "تبلغ به الخسة والنذالة" transforming descriptive asides into action-oriented narration to convey maximum moral condemnation, others employ foreignization to preserve culturally specific elements like species names (e.g., "االسلوقي" for "Saluki dog") and ecological terminology (e.g., "المحميات الطبيعية" for "reserves and parks"). The translator’s strategic choices reflect a nuanced understanding of audience expectations, opting for fluid, idiomatic Arabic where narrative flow is prioritized (e.g., merging clauses for rhetorical cohesion) while retaining foreignized terms when scientific or cultural authenticity is paramount. This dual approach ensures that the text remains both engaging and informative, bridging the gap between source-text precision and target-culture naturalness. Ultimately, the translations succeed in making environmental and zoological concepts resonate with Arabic readers without erasing the original’s distinctive character, illustrating how skilled negotiation between domestication and foreignization can yield translations that are as culturally vibrant as they are accurate.

This study examination of eco-term translation strategies from English into Arabic for children highlights the delicate interplay between scientific accuracy, cultural relevance, and pedagogical accessibility. The analysis demonstrates that successful translation in this specialized domain requires more than linguistic competence. It demands a thorough understanding of how young readers engage with scientific concepts within their cultural framework. The translator's hybrid approach, combining domestication and foreignization strategies,

proves largely effective in maintaining terminological precision while ensuring natural Arabic expression. However, the findings reveal critical areas for refinement to optimize both comprehension and engagement for child audiences.

The translations excel in cultural adaptation, particularly through narrative restructuring and the use of culturally resonant metaphors. Transformations like rendering "wildlife treasure" as " ثروتنا الحيوانية البرية كـنز ثـمـين" demonstrate how ecological concepts can be effectively grounded in Arabic value systems. Yet the study identifies several missed opportunities for enhancing conceptual clarity, particularly where simplified phrasing omits key explanatory elements or causal relationships. These omissions suggest the need for supplementary educational supports, such as visual aids, glossaries, or interactive digital content, to compensate for necessary simplifications in the main text.

The study emphasizes that effective eco-translation for children requires a delicate balance between preserving scientific accuracy, ensuring age-appropriate accessibility, and creating genuine engagement through storytelling. While the analyzed translations successfully maintain scientific integrity and adapt content appropriately for young readers' linguistic and cultural backgrounds, they could strengthen their narrative elements and interactive components to better capture children's interest and imagination.

Moreover, this study proposes a practice framework for children's eco-translation that emphasizes amalgamates stratified terminological frameworks that align specialized vocabulary with elucidated interpretations, thereby rendering intricate concepts more comprehensible. It utilizes culturally embedded narrative techniques to enhance retention and comprehension of fundamental principles, whilst also integrating multimodal resources such as visual aids and interactive components to reinforce understanding of complex scientific subjects. Furthermore, it employs assessment strategies that are tailored to the developmental stage of children to evaluate both cognitive understanding and engagement, thereby ensuring that the educational

content resonates effectively with young learners.

Ultimately, these findings contribute to broader discussions about science communication in translation, particularly for young audiences in the Arabic context. The study demonstrates that when translation moves beyond mere lexical transfer to embrace cultural storytelling and pedagogical design, it can become a powerful tool for nurturing both environmental literacy and linguistic identity in the next generation of Arabic speakers. Future research may explore how these translation strategies perform in real-world educational settings and across different Arabic dialects to further refine approaches to this vital form of science communication.

Conclusion

This study's investigation into the translation methodologies for eco-terminology from English to Arabic for children underscores the intricate relationship between scientific fidelity, cultural pertinence, and educational accessibility. The evaluation elucidates that effective translation within this specialized field necessitates more than mere linguistic proficiency ; it requires a sophisticated comprehension of the manner in which young readers engage with scientific ideas through the lens of their cultural context. The translator's integrative methodology, which amalgamates domestication with foreignization strategies, demonstrates considerable efficacy in preserving terminological accuracy while facilitating a natural expression in Arabic. Nevertheless, the findings indicate significant areas that require enhancement to maximize both understanding and engagement for young audiences.

The translations exhibit exceptional performance in cultural adaptation, particularly through narrative reconfiguration and the employment of culturally resonant metaphors. Transformations such as interpreting "wildlife treasure" as "ثروتنا الحيوانية البرية كنز ثمين" illustrate how ecological notions can be effectively embedded within Arabic value systems. However, the investigation identifies numerous missed opportunities for augmenting conceptual lucidity, particularly in instances where simplified expressions fail to include critical

explanatory components or causal connections. The identified omissions suggest an imperative for additional educational materials, such as visual representations, comprehensive glossaries, or dynamic digital resources, to compensate for the fundamental simplifications present within the principal text.

The study highlights crucial aspects that effective eco-translation for children must balance, maintaining precise scientific terminology while adapting content to suit young minds through culturally sensitive approaches, and fostering genuine engagement through compelling narratives. While the translations demonstrate strong performance in preserving scientific accuracy and achieving age-appropriate accessibility, there remains opportunity for growth in developing more consistent and engaging storytelling methods that truly connect with young readers.

This study proposes a comprehensive framework for eco-translation tailored specifically for children, integrating several key elements into a unified approach. At its core, the framework establishes a structured vocabulary system that progressively introduces specialized environmental terminology while providing clear explanations accessible to young learners. Cultural narratives serve as the foundation for knowledge transmission, leveraging storytelling techniques that resonate with children's diverse backgrounds to enhance learning retention. The framework incorporates various educational resources presented through multiple formats, ensuring that complex scientific concepts are communicated effectively through engaging visual, auditory, and practical learning opportunities. Finally, the study implements assessment methods specifically designed for children, measuring both their understanding of environmental concepts and their level of engagement with the learning process. This integrated approach ensures that environmental knowledge is conveyed in a way that is both meaningful and memorable for young learners.

Ultimately, these findings contribute to broader discourses regarding science communication in translation, particularly for children within the Arabic context. The study illustrates that when translation transcends mere lexical transference to incorporate cultural storytelling

and pedagogical frameworks, it can serve as an influential instrument for fostering both environmental literacy and linguistic identity among the forthcoming generation of Arabic speakers. Future inquiries may investigate the efficacy of these translation methodologies within practical educational environments and across diverse Arabic dialects to further refine strategies related to this crucial aspect of science communication.

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