

Multilingual Scientific Communication in a Small Language Community: Lessons from the Journal of Special Education and Rehabilitation

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Abstract

BACKGROUND: English has become the predominant language of international scientific communication. Although the use of a common language facilitates international exchange, the dominance of English may create linguistic, economic, and professional barriers for researchers whose first language is not English. At the same time, scientific communication in national languages remains important for education, professional practice, policymaking, and communication with society. This narrative review discusses the advantages and challenges of publishing scientific research in Macedonian and examines the development of the Journal of Special Education and Rehabilitation (JSER) as a case study of the transition from national-language publishing towards bilingual and internationally oriented scientific communication.

AIM: This narrative review aims to examine the advantages and challenges of scientific publishing in Macedonian and to analyze JSER as a case study of how a small national journal can balance linguistic identity, local relevance, scientific quality, international visibility, and sustainability.

METHODS: A narrative review of literature addressing language choice in scientific communication, linguistic inequality in academic publishing, multilingualism, open science, and accessibility of scientific knowledge was undertaken. In addition, a historical and documentary analysis of the development of JSER was conducted using information presented in the author's documented presentation and publicly available journal and bibliographic information. The analysis focused on changes in publication language, peer review, editorial structure, indexing, accessibility, and internationalization. The analysis is limited by its narrative design and reliance on documentary sources regarding the historical development of JSER.

RESULTS: The experience of JSER illustrates the complex relationship between national-language publishing and international visibility. During its early period, the journal published full articles predominantly in Macedonian, with English abstracts. Subsequently, it adopted bilingual Macedonian-English publication, peer review, international editorial participation, online publishing, and broader indexing. This model increased international accessibility but also generated substantial financial and organizational costs associated with translation, language editing, printing, and information technology. The experience further demonstrates that abandoning the national language is not the only strategy for internationalization. Bilingual publication, English-language abstracts, multilingual metadata, professional translation, open access, and international indexing may provide alternative mechanisms for combining local relevance with international visibility.

CONCLUSIONS: Scientific publishing in Macedonian remains important for preserving linguistic diversity, strengthening national scientific terminology, supporting education and professional practice, and improving access to knowledge for Macedonian-speaking communities. However, national-language publication alone may restrict international discoverability. Such an approach is consistent with contemporary open science principles, which explicitly encourage multilingualism and bibliodiversity.

1. Introduction

Language is not merely a technical instrument for transmitting scientific information. It is also a medium through which knowledge is conceptualized, interpreted, taught, and incorporated into professional and social practice. The language in which scientific knowledge is communicated therefore influences who can access that knowledge, who can participate in its production, and how effectively research findings can be transferred to local communities.

English has become the predominant language of international scientific communication. The historical development of English as the principal language of scholarly communication has facilitated communication among researchers from different linguistic backgrounds and has provided a common medium for international journals, conferences, databases, and academic collaboration [1], [2]. However, the advantages of a common scientific language coexist with important inequalities. Researchers whose first language is not English may require substantially more time and effort to read, write, revise, present, and disseminate scientific information in English [3], [4]. The linguistic dimension of scientific inequality has received increasing attention. Non-Anglophone researchers may experience disadvantages not because their scientific ideas or methodological competence are weaker, but because they must communicate their work in a language that is not their first language. Ferguson et al. reported that many Spanish academics perceived themselves as disadvantaged relative to Anglophone scholars in academic publication, while also demonstrating that attitudes toward English are complex and cannot be reduced simply to a native-versus-nonnative distinction [2]. More recent evidence suggests that non-native English-speaking researchers, particularly those at earlier career stages, may spend considerably more effort performing scientific activities in English [3].

The dominance of English also has implications beyond individual researchers. Scientific knowledge published exclusively in English may be less accessible to practitioners, students, policymakers, journalists, patients, families, and members of the general public who do not have sufficient proficiency in English. This is particularly relevant in disciplines in which scientific findings have direct implications for education, health, rehabilitation, social policy, and professional practice. Scientific communication therefore has a dual function: it must facilitate international scholarly exchange while also remaining accessible to the communities in which research is conducted and applied. The importance of multilingualism has increasingly been recognized within the broader open science movement. UNESCO's Recommendation on Open Science explicitly identifies multilingualism in scientific practice, scientific publications, and academic communication as an important principle and encourages bibliodiversity, including diversity of publication

formats, languages, and non-profit scholarly publishing models [5]. Open science, therefore, should not necessarily be interpreted as synonymous with English-only science. Rather, openness includes the ability of diverse communities to access, understand, reuse, and participate in scientific knowledge. For small linguistic communities, including Macedonian-speaking researchers and professionals, these issues are particularly important. For small linguistic communities, the challenge is therefore to develop publishing strategies that preserve local accessibility while improving international discoverability. Conversely, publishing exclusively in English may improve international visibility but may weaken the connection between scientific journals and local professionals, students, educators, policymakers, and the wider society.

This tension is particularly visible in small national scientific journals. The history of the *Journal of Special Education and Rehabilitation* (JSER) – **ISSN 1409-6099 (Print)** and **ISSN 1857-663X (Online)** provides an illustrative example. Established in 1997, JSER initially published full articles in Macedonian with English abstracts and had a predominantly national editorial and scientific orientation. Over subsequent periods, the journal introduced bilingual Macedonian-English publication, peer review, broader indexing, international editorial participation, and online Diamond Open Access publishing.

To the best of the authors' knowledge, the present article is the first study to examine the *Journal of Special Education and Rehabilitation* (JSER) specifically as a longitudinal case study of multilingual scientific communication within a small-language scientific community. Although related literature addresses linguistic inequality, multilingual scholarly communication, national-language publishing, and the internationalization of rehabilitation and special education journals, the present manuscript differs in its specific focus on the historical development of one Macedonian scientific journal and its attempts to balance national-language scholarship, bilingual publication, international visibility, editorial capacity, and publishing sustainability over time. A search of the relevant bibliographic sources did not identify a previously published article with the identical title and the same analytical scope. The present study should therefore be understood as a case-based analysis of JSER rather than as a replication of previously published work on multilingual scientific communication.

The **aim of this narrative review** is therefore twofold: first, to discuss the principal advantages and challenges associated with scientific publishing in Macedonian; and second, to analyze the evolution of JSER as a case study illustrating how a small national scientific journal may attempt to balance linguistic identity, local relevance, scientific quality, international visibility, and sustainability.

This article contributes to the literature by examining scientific publishing in Macedonian through the case of JSER and by proposing a balanced multilingual publishing model for small-language scientific communities.

2. Methods

2.1 Study design

This article was designed as a narrative review combined with a historical documentary case analysis. A narrative review was considered appropriate because the objective was not to estimate a pooled effect or answer a narrowly defined clinical question, but to synthesize conceptual, bibliometric, editorial, and policy literature concerning language choice in scientific communication and to relate these issues to the experience of a Macedonian scientific journal. The longitudinal analysis was based on an examination of the journal's publication history, language of publication, editorial and publishing practices, available bibliographic metadata, and major changes in its publishing model between 1997 and 2026.

The review considered literature addressing the following themes:

1. English as the predominant language of scientific communication;
2. linguistic barriers experienced by non-native English-speaking researchers;
3. advantages and disadvantages of national-language scientific publishing;
4. multilingualism and bibliodiversity;
5. accessibility and dissemination of scientific knowledge;
6. open science and multilingual scholarly communication; and
7. strategies for combining national-language publishing with international visibility.

The documentary case analysis focused on the historical development of JSER, particularly changes in publication language, peer-review practices, editorial organization, indexing, online publishing, and internationalization.

2.2 Bibliographic Record Verification

Because bibliographic coverage of JSER varies across external databases, the official journal archive was treated as the primary source for determining the journal's publication history, issue chronology, and article-level publication records. These records were cross-checked, where possible, against independent bibliographic and archival sources, including the ISSN International Centre, institutional repositories, OpenAlex, and available

indexing databases. Differences between sources were recorded rather than retrospectively harmonized when the reason for the discrepancy could not be established with certainty.

Such differences may result from incomplete metadata harvesting, delayed indexing, differences in inclusion criteria, duplicate records, changes in publisher or platform, incomplete digitization of older issues, or the distinction between issue-level and article-level records. Consequently, database-specific article counts should not be interpreted as definitive measures of the journal's historical output. For the longitudinal analysis, the official JSER archive and issue-level documentation were prioritized, while external databases were used primarily for independent verification and triangulation.

For the longitudinal analysis, the extracted indicators included publication output, language of publication, authorship geography, peer-review status, editorial orientation, digital publishing status, DOI availability, documented indexing and visibility, and publication continuity.

2.3 Literature search and selection

A targeted narrative literature search was conducted in Scopus, PubMed, and Google Scholar using combinations of the following terms: "scientific publishing", "English language in science", "national-language publishing", "multilingual scientific communication", "linguistic inequality", "bibliodiversity", "open science", "scientific terminology", and "language barriers in academic publishing". Additional relevant publications were identified through reference-list screening and citation tracking. Priority was given to peer-reviewed studies, policy documents, and established conceptual contributions addressing language choice, multilingualism, accessibility, and internationalization in scholarly communication. Because the purpose of the review was conceptual rather than systematic estimation of an effect, no formal meta-analysis or quantitative synthesis was undertaken.

3. The role of language in scientific communication

The emergence of English as the dominant language of scientific publication has created both opportunities and challenges. A shared language reduces the need for researchers to master multiple languages and facilitates international collaboration, dissemination, peer review, and access to scientific literature [1], [2].

However, the benefits of linguistic standardization are not distributed equally. For researchers who use English as an additional language, scientific communication may require substantial additional cognitive and temporal effort. A

large survey of environmental scientists found that non-native English speakers experienced greater difficulties in scientific activities conducted in English, including reading and writing papers, preparing presentations, and disseminating research [3].

The problem is not simply linguistic proficiency. Scientific writing requires mastery of discipline-specific terminology, conventions of argumentation, academic style, rhetorical organization, and subtle pragmatic features. Difficulties in organization, cohesion, clarity, modality, and other aspects of English academic discourse can affect the reception and acceptance of manuscripts [5]. The increasing dominance of English in scientific communication has also contributed to the perception that English is inherently more appropriate for the production and dissemination of scientific knowledge, reinforcing linguistic hierarchies in academic publishing [7],[8].

Consequently, the language of publication may influence the visibility of scientific work independently of the underlying quality of the research. This raises an important question: should scientific quality be assessed through the quality of the research itself or partly through the ability of authors to express that research in the dominant scientific language?

3.1 Why publish scientific research in the Macedonian language?

Accessibility to local scientific and professional communities

One of the principal advantages of publishing in Macedonian is improved accessibility for researchers, students, practitioners, educators, policymakers, and other stakeholders who primarily use Macedonian in their professional or educational activities.

This is especially important in fields such as special education and rehabilitation, where scientific findings need to be translated into professional practice. Teachers, special educators and rehabilitators, psychologists, social workers, health professionals, parents, and policymakers may benefit directly from research findings, but not all members of these groups have the same level of proficiency in English. For this reason, communicating scientific knowledge in multiple languages can improve its effectiveness, accessibility, and societal relevance, particularly when research findings are intended for audiences beyond the international research community [9]. Publishing in the national language can therefore reduce the distance between scientific knowledge and its practical application.

3.2 Development of scientific terminology

Scientific publishing contributes to the development and standardization of professional terminology. When

a scientific field develops predominantly through publications in a foreign language, national terminology may remain underdeveloped or inconsistent.

Publication in Macedonian enables researchers to develop terminology that is adapted to the linguistic and cultural context of the Macedonian scientific community. It also creates educational resources for university students and professionals. The linguistic complexity of scientific writing may further influence accessibility, particularly for researchers and readers who use English as an additional language. Differences in linguistic complexity and writing conventions can therefore become an additional barrier to participation in international scholarly communication [10]. English has progressively assumed the role of a global language of science, facilitating international communication while simultaneously creating linguistic and structural inequalities for researchers who do not use English as their first language [10], [11]. For scholars whose first language is not English, preparing and publishing scientific papers in English may require substantially greater linguistic effort and additional time. This burden may affect the writing process, confidence, publication opportunities, and the ability of researchers to participate fully in international scholarly communication [12]. This does not mean that national terminology should be isolated from international terminology. On the contrary, bilingual terminology can facilitate communication between local and international scientific communities.

3.3 Educational value

Scientific journals in national languages can play an important role in higher education. Students often understand complex theoretical concepts more readily when they can access scientific literature in their first language. For countries with relatively small scientific communities, national-language journals may therefore function not only as vehicles of research dissemination but also as educational infrastructure.

3.4 Connection between science and society

Science cannot achieve its full societal impact if scientific knowledge remains accessible only to specialists capable of reading English-language literature. Multilingual scientific communication can strengthen communication between researchers and society. UNESCO's Open Science Recommendation explicitly emphasizes that open science should make scientific knowledge accessible and reusable regardless of language and encourages multilingualism and bibliodiversity [5].

Thus, publication in Macedonian should not be viewed as a retreat from international science. It can instead represent one component of an inclusive scientific communication system.

3.5 Cultural and linguistic sustainability

Scientific publishing also has a cultural dimension. A language develops partly through its capacity to express increasingly complex domains of human knowledge. Publishing scientific literature in Macedonian contributes to the development of academic vocabulary and demonstrates that the language can serve as a medium for advanced scientific discourse. For a small language community, this function is particularly significant because the disappearance of scientific publishing in the national language may progressively reduce the availability of contemporary scientific terminology and scholarly resources.

3.6 Challenges of publishing in Macedonian (Limited international visibility)

The principal disadvantage of publishing scientific articles exclusively in Macedonian is the limitation of international accessibility. Researchers who do not understand Macedonian are unlikely to read the full article. Consequently, even high-quality research may remain largely invisible outside the Macedonian-speaking community. This creates a paradox: publication in Macedonian may increase local impact while reducing international discoverability. The challenge is particularly relevant in the contemporary research environment, in which bibliographic databases, citation metrics, international collaborations, and academic promotion are strongly connected to publication visibility.

3.7 Citation disadvantage

Language can affect citation patterns. Articles published in less widely used languages may have smaller potential readerships and therefore fewer opportunities to be cited internationally. This does not necessarily indicate lower scientific quality. Instead, it may reflect the size and linguistic composition of the potential readership. Consequently, citation-based indicators should be interpreted cautiously when evaluating national-language scientific journals.

3.8 Translation costs

One of the most important practical challenges identified in the JSER experience is the cost of translation. During its bilingual publishing periods, the journal faced the need to translate articles between Macedonian and English, together with additional proofreading and editorial expenses. During the 2004–2017 period, the presentation similarly identifies difficulties associated with translation, proofreading, printing, and information technology. For small journals operating without substantial commercial revenue, these costs can become a major barrier to sustainability.

3.9 Terminological difficulties

Scientific translation is not equivalent to general translation. Translators must understand both languages and the relevant scientific discipline. The early JSER experience illustrates this problem. The presentation identifies insufficient experience among translators with special education and rehabilitation terminology as one of the challenges of publishing in Macedonian. Poorly translated scientific terminology can introduce ambiguity and reduce the quality of international communication.

3.10 Human-resource limitations

Small scientific journals may also have difficulty recruiting sufficient numbers of editors, reviewers, translators, language editors, technical staff, and information-technology specialists. The later history of JSER demonstrates that journal sustainability depends not only on language policy but also on the availability of committed editorial personnel and financial resources. The presentation reports a prolonged interruption of publication between 2019 and 2026 and emphasizes insufficient motivation among younger researchers, limited availability of dedicated editorial staff, and financial constraints. These factors demonstrate that language policy cannot be considered independently from the overall sustainability of scholarly publishing.

4. The Journal of Special Education and Rehabilitation as a case study

The development of JSER provides a useful example of the evolution of a scientific journal in a small linguistic community (Table 1).

Table 1: Evolution of the Journal of Special Education and Rehabilitation

Period	Publication language	Peer review	Editorial orientation	Online/ OA	Indexing	Main challenges
1997–2000	Macedonian full text; English abstracts	No	National	Print	None reported	Translation quality, cost, limited international accessibility
2004–2008	Macedonian and English full texts and abstracts	Yes	Increasingly international	Print	5 databases reported	Translation and proofreading costs
2009–2019	Macedonian and English full texts and abstracts	Yes	International Editorial Board	Diamond Open Access	>90 databases reported until 2017	Translation, proofreading, printing, IT costs
2020–2026	Publication interrupted	—	Reduced editorial activity	—	Loss of Scopus and other indexing reported	Financial constraints, insufficient editorial capacity, lack of motivation

Source: historical documentary information presented in [16]

4.1 The initial Macedonian-language period: 1997–2000

JSER was established in 1997. During its initial period, full articles were published in Macedonian,

while abstracts were provided in English. The journal had four issues per year and a national editorial structure. According to the author's historical documentation, it was not peer-reviewed and was not indexed in international databases during this period.

Between 1997 and 2000, the journal published 11 issues containing contributions predominantly from Macedonian authors, but also from Serbian, Bulgarian, Slovenian, English, and Norwegian authors.

This period illustrates the principal strength of national-language publishing: the journal provided a platform for local and regional researchers and created scientific literature accessible to Macedonian-speaking professionals. At the same time, the lack of peer review, limited indexing, and Macedonian-only full texts restricted its international scientific visibility.

4.2 Transition to bilingual publication: 2004–2008

A major transformation occurred during 2004–2008. JSER adopted full-text publication in both Macedonian and English, with abstracts also provided in both languages. The journal introduced peer review and was indexed in five databases according to the historical documentation. This represented a fundamental change in the journal's strategy.

Rather than choosing between Macedonian and English, the journal attempted to combine both functions:

- Macedonian maintained local accessibility;
- English facilitated international communication;
- bilingual abstracts improved discoverability;
- peer review increased scientific credibility;
- indexing increased visibility.

However, this approach also created substantial costs. Translation had to be performed in

both directions, and both language versions required proofreading.

4.3 Internationalization and Diamond Open Access: 2009–2017

The most internationally oriented period occurred between 2009 and 2017. JSER became an online Diamond Open Access journal in September 2009. During this period, full articles and abstracts were available in Macedonian and English, the journal had an international editorial board, peer review, and broader indexing. Historical journal documentation lists JSER in a large number of bibliographic and discovery services, including Scopus, DOAJ, EBSCO, ProQuest and other databases. Because indexing coverage changes over time, these historical listings should not be interpreted as evidence of continuous current coverage in every database. This period demonstrates that publication in Macedonian does not inherently prevent internationalization.

This period demonstrates that internationalisation can be pursued without abandoning the national language when bilingual publication is combined with appropriate editorial, digital, metadata, and indexing practices.

4.4 Interruption of publication: 2019–2026

The subsequent period illustrates a different problem. According to the author's documentation, only one issue was published during 2019–2026, followed by an interruption in publication between 2019 and 2026. The decline in publication activity may be partly associated with reduced engagement of younger researchers in editorial and publishing activities. Limited editorial capacity and difficulties recruiting new editorial personnel may have contributed to the interruption of publication (Figure 1).



Figure 1: Journal History Timeline of the Journal of Special Education and Rehabilitation the 1997–2026

The journal consequently lost indexing in Scopus and other relevant databases. This period is important because it demonstrates that journal visibility depends not only on language. Regular publication, editorial capacity, peer review, technical infrastructure, financial sustainability, and adherence to indexing requirements are equally important. In other words, changing the language of publication alone cannot

guarantee internationalization (Figure 1).

The period from 2019 to 2026 represents an important stage in the development of JSER, not only because of the interruption in regular publication but also because it illustrates the structural vulnerabilities faced by scientific journals operating within small-language communities. The interruption should therefore not be interpreted solely as an editorial or

organisational discontinuity. Rather, it demonstrates how the sustainability of a national scientific journal depends on a combination of factors, including stable editorial capacity, institutional support, financial resources, a sufficiently broad pool of authors and reviewers, reliable publishing infrastructure, and the ability to maintain international visibility while preserving the journal's national scholarly function.

5. National language versus English: a false dichotomy?

The debate is sometimes presented as a choice between two alternatives: publishing in the national language or publishing in English. Such a binary approach may be unnecessarily restrictive. A more productive strategy is to consider scientific publishing as a multilingual ecosystem in which different languages perform different functions.

Macedonian can serve local scientific communication, professional education, terminology development, and societal dissemination. English can provide international discoverability, collaboration, indexing, and access to the global scientific community.

Indeed, UNESCO's Recommendation on Open Science provides a policy framework supporting multilingualism and bibliodiversity rather than requiring scientific communication to operate through a single language [5]. The goal should therefore not necessarily be to replace Macedonian with English, but to develop mechanisms through which scientific knowledge can circulate in both linguistic environments.

5.1 Bilingual abstracts as a practical compromise

One relatively inexpensive strategy is the systematic provision of high-quality English abstracts for articles published in Macedonian.

English abstracts can substantially improve discoverability because they allow international readers and bibliographic databases to identify the topic, objectives, methods, major findings, and conclusions of a study even when the full article is written in Macedonian. The reverse is also possible: articles published in English can include Macedonian abstracts for local readers.

International journals have increasingly recognized the value of multilingual summaries. The use of translated abstracts can improve access to research findings for researchers and communities who do not routinely read English-language scientific literature. For small journals, this approach may be more financially sustainable than translating every full article into two languages.

A possible model for Macedonian scientific journals could therefore include:

1. full article in Macedonian;

2. extended English abstract;
3. English title;
4. English keywords;
5. bilingual metadata;
6. DOI;
7. standardized author affiliations;
8. ORCID identifiers;
9. English reference metadata where appropriate;
10. indexing in international databases.

Such a model would preserve the national language while substantially improving international discoverability.

Table 2: Selected indicators of the longitudinal development of the Journal of Special Education and Rehabilitation (JSER), 1997–2026

Period	Issues/articles	Language model	International authors	DOI	Indexing/visibility	Publication status
1997–2000	10/269	Macedonian	Predominantly Macedonian and former Yugoslav authors	No	No	Regular
2001–2003	No	/	/	/	/	Interruption
2004–2008	10/145	Macedonian /English	Documented international authorship	No	Increasing	Regular
2009–2017	18/212	Macedonian /English	Documented international authorship	Yes	Expanded international visibility/indexing	Regular
2018–2019	3/27	Macedonian /English	Documented international authorship	Yes	Continued international visibility	Reduced publication
2020–2026	No	/	/	/	/	Interruption

Note: Data were compiled from the official JSER archive and cross-checked, where available, against independent bibliographic and archival sources. "Indexing/visibility" refers to documented bibliographic inclusion and/or discoverability and is not equivalent to scientific quality. DOI status refers to documented article-level DOI assignment.

5.2. From Bilingual Publishing to a Multilingual Scientific Ecosystem

The JSER case demonstrates that the choice between publishing in a national language and publishing in English is a false dichotomy. For small-language scientific communities, the more sustainable approach is to conceptualise publishing as a multilingual ecosystem in which different languages perform complementary functions. The national language supports the development and transmission of disciplinary knowledge within the local professional and educational community, whereas English facilitates international communication, citation, collaboration, and visibility. Multilingual scientific publishing can therefore be understood not as a compromise between local and international scholarship, but as an infrastructure for maintaining both dimensions simultaneously (Table 2).

Such an approach is particularly relevant in the context of bibliodiversity and open science. Linguistic diversity constitutes an important dimension of scholarly diversity because scientific knowledge that is

available only in dominant international languages may remain inaccessible to practitioners, students, policymakers, and members of the wider public who work primarily in other languages. At the same time, national-language publication without mechanisms for international discoverability may limit the circulation of locally generated knowledge. The challenge for journals such as JSER is consequently to develop mechanisms that connect these two spheres rather than choosing one at the expense of the other.

6. Discussion

The central finding of this narrative review is that the question of scientific publishing language cannot be reduced to whether Macedonian or English is objectively "better." The appropriate language strategy depends on the intended audience, discipline, resources, scientific objectives, and desired geographical reach. English clearly provides substantial benefits for international scientific communication. It enables researchers from different countries to exchange knowledge through a shared linguistic medium and facilitates access to international literature. However, these benefits coexist with unequal burdens.

Researchers who do not use English as their first language may need more time and resources to prepare manuscripts, presentations, and grant applications [2], [3]. This burden can be especially important for early-career researchers, who are simultaneously expected to establish international networks and develop publication records. At the same time, abandoning national-language publishing would create another form of inequality. Local professionals and communities could become increasingly dependent on translated or foreign-language information. In fields directly affecting education, health, disability, rehabilitation, and social policy, this could reduce the practical accessibility of research.

Beyond issues of visibility and citation, multilingual publishing is increasingly discussed as a matter of knowledge equity. Scientific knowledge is not only produced through international research networks but is also applied within local linguistic and cultural contexts. When scientific communication occurs exclusively in English, important pathways for the transfer of knowledge to practitioners, educators, policymakers, and citizens may be weakened. Multilingual publishing therefore contributes not only to linguistic diversity but also to a more equitable distribution and use of scientific knowledge.

The JSER case demonstrates that a middle path is possible. The journal's transition from Macedonian-language publication to bilingual publishing and subsequently to online internationalized publishing demonstrates that national-language identity and internationalization can coexist.

However, history also demonstrates the cost of

such coexistence. Translation and proofreading in two languages, printing, information technology, editorial work, and indexing all require substantial resources. Therefore, language policy should be considered as part of a broader journal sustainability strategy. Recent advances in artificial intelligence-assisted translation may provide new opportunities for small scientific journals. Although professional scientific editing remains essential, AI-based translation tools may reduce some of the financial and logistical barriers associated with bilingual publication. Future studies should evaluate whether such technologies can support multilingual dissemination while maintaining scientific accuracy and editorial quality.

The recent policy environment is increasingly favorable to multilingual approaches. UNESCO explicitly links open science with multilingual access to scientific knowledge and calls for bibliodiversity [5]. This is conceptually important because it challenges the assumption that internationalization necessarily requires linguistic homogenization. Scientific openness should mean that knowledge is accessible across linguistic communities whenever reasonably possible. For journal editors, the key issue is no longer whether to publish in a national language or in English, but how to design publication workflows that maximize accessibility, discoverability, quality assurance, and long-term sustainability.

For Macedonian scientific journals, this suggests that a bilingual or multilingual model may offer the greatest balance between local relevance and international visibility.

6.1 Limitations

This article has several limitations. First, it is a narrative review rather than a systematic review. Literature was selected to provide conceptual and policy context rather than according to a formal systematic-review protocol. Second, the historical analysis of JSER relies substantially on documentary information contained in the author's presentation.

Although this provides detailed first-hand historical information, some historical indicators, particularly database coverage and indexing status during earlier periods, should ideally be independently verified against archival journal records and database records before publication. Third, no bibliometric analysis was performed to quantify the effect of publication language on citations, downloads, international authorship, or readership of JSER. Fourth, the conclusions derived from the JSER experience should not automatically be generalized to all Macedonian or other small-language scientific journals.

These limitations notwithstanding, the historical case provides useful insight into the practical challenges and potential solutions associated with multilingual scientific publishing.

6.2 A Balanced Model for Multilingual Scientific Publishing

The experience of the *Journal of Special Education and Rehabilitation* supports a balanced model in which national-language and English-language publishing fulfil complementary functions. Such a model may include full-text publication in the national language when local relevance is particularly important, English-language versions or extended abstracts for international readers, bilingual titles and abstracts, English-language metadata, DOI assignment, rigorous peer review, online Open Access availability, and inclusion in appropriate national and international repositories and indexing services. This approach can preserve the cultural and educational function of the national language while simultaneously improving the international discoverability of research. It also recognizes that scientific communication has multiple audiences and that no single language can optimally serve all of them.

The central question should therefore not be

whether scientific journals should publish in Macedonian or English. The more productive question is how journals can use Macedonian and English strategically to maximize both **local relevance and international visibility**. Such an approach transforms language from a perceived barrier into an element of a broader publishing strategy.

Ultimately, the experience of the journal demonstrates that national-language scientific publishing remains valuable even in an increasingly English-dominated academic environment. Its sustainability, however, depends on combining linguistic accessibility with modern editorial standards, digital publishing infrastructure, international metadata, peer review, Open Access, and stable institutional support. The future of scholarly communication in smaller scientific communities may therefore lie not in choosing between local and global communication, but in developing publishing models capable of serving both simultaneously (Figure 2).

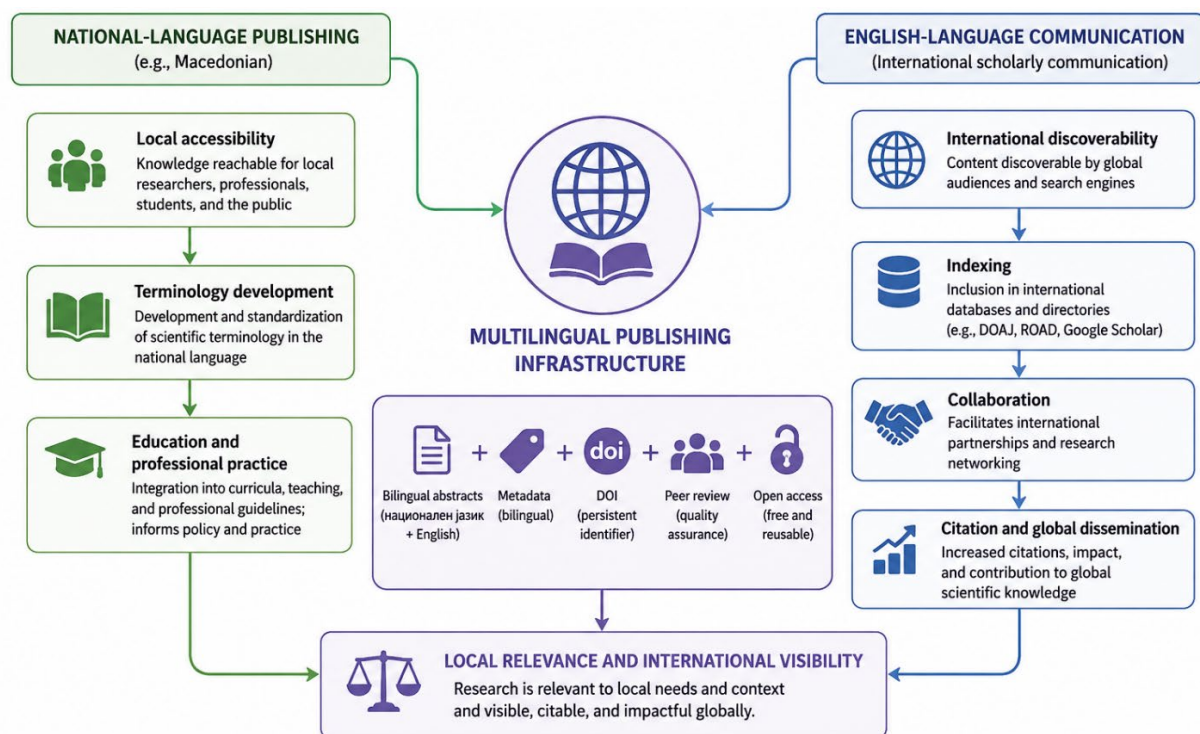


Figure 2: A balanced model of multilingual scientific publishing

6.3. DOI Registration and Digital Publishing

The DOI history of the *Journal of Special Education and Rehabilitation* (JSER) reflects successive stages in the journal's digital publishing development. Documentary evidence indicates that DOI identifiers were assigned to JSER articles from 2011. The available records show that articles published in 2015 used the DOI pattern *10.1515/JSER-2015-xxxx*, while from 2016 onwards the journal used

the *10.19057/jsr.year.article-number* pattern. The change in DOI structure is consistent with a transition between different DOI registration arrangements.

Some discrepancies are apparent between the DOI records associated with individual articles and the retrospective information currently available on the journal website. These discrepancies should be interpreted cautiously, as the journal's web archive does not necessarily provide a complete historical

representation of all DOI-assigned content. Accordingly, the present analysis prioritises article-level DOI records and independently verifiable bibliographic sources when establishing the chronology of DOI assignment, rather than relying exclusively on information presented retrospectively on the journal website.

The discrepancy between the bibliographic DOI record and the completeness of the journal's online archive can also be understood in the context of changes in the journal's editorial and technical infrastructure. Following the appointment of a new Editor-in-Chief in 2018, the journal experienced a period in which adequate technical support for maintaining and updating the online platform was not available. Consequently, the final two issues of 2018 (Vol. 19, Nos. 3–4) and the first two issues of 2019 (Vol. 20, Nos. 1–2) were not uploaded to the journal website in a timely manner. This created a discrepancy between the journal's actual publication history and the completeness of its online archive. The absence or delayed availability of web-based records should therefore not be interpreted as evidence that the corresponding issues or their DOI registrations did not exist.

This episode illustrates an important aspect of the digital sustainability of small scholarly journals: the existence of DOI infrastructure alone does not guarantee the long-term accessibility and discoverability of published content. Continuous technical support, systematic metadata management, digital preservation, and timely updating of journal platforms are essential for maintaining the integrity and continuity of the scholarly record.

6.4. Distinguishing Visibility, Indexing, and Scientific Quality

International visibility, bibliographic indexing, and scientific quality are related but conceptually distinct dimensions of journal development. International visibility concerns the discoverability and accessibility of scholarly content beyond the journal's immediate linguistic and geographical community. Indexing refers to formal inclusion in a specific bibliographic or abstracting service and is dependent on the criteria and coverage policies of that service. Scientific quality, in contrast, concerns the rigor, validity, transparency, ethical standards, peer-review procedures, and scholarly contribution of published research. Progress in one dimension does not necessarily imply progress in the others. For small-language journals, sustainable internationalisation therefore requires simultaneous attention to editorial and scientific quality, discoverability, appropriate indexing, and multilingual accessibility.

Such an approach is consistent with contemporary open science principles, including UNESCO's support for multilingualism and

bibliodiversity and the Helsinki Initiative's call for the simultaneous promotion of international scientific communication and research dissemination in national languages, reinforcing the broader argument that the internationalization of science should not be equated with the replacement of national languages by English, but rather that English should be recognized as an important language of international scientific exchange while national languages are preserved and strengthened through multilingual publishing strategies that combine local relevance with international dissemination [13], [14], [15], [16].

Recent developments in machine-assisted translation and multilingual metadata offer additional opportunities for small-language journals. Automated translation can reduce some of the cost and time associated with producing English versions of abstracts, keywords, metadata, and, where appropriate, full texts. However, machine-generated translations should complement rather than replace expert linguistic and subject-specific review, particularly for specialised terminology and scientifically sensitive content. At the same time, multilingual metadata can improve discoverability by allowing the same scholarly object to be retrieved through searches conducted in different languages. Persistent identifiers, standardised metadata schemas, author identifiers such as ORCID, and consistent English-language titles, abstracts, and keywords can therefore function as bridges between national-language scholarship and international discovery systems. These technologies should be viewed as enabling infrastructure rather than substitutes for editorial quality control.

7. Conclusions

Scientific publishing in Macedonian remains an important component of the national scholarly ecosystem, even within an increasingly English-dominated international research environment. Publication in the national language facilitates access to scientific knowledge for researchers, students, educators, practitioners, policymakers, and the wider public, while contributing to the development and preservation of disciplinary terminology and strengthening the educational, professional, and societal functions of science. At the same time, exclusive reliance on Macedonian may constrain the international discoverability and dissemination of scholarly work and may reduce opportunities for international readership, collaboration, citation, and participation in global research networks. The findings of this review therefore indicate that the relationship between Macedonian and English should not be conceptualised as a binary choice. Rather, the two languages can fulfil complementary functions within a broader and deliberately designed multilingual model of scientific communication.

The longitudinal experience of the *Journal of*

Special Education and Rehabilitation (JSER) provides a particularly relevant illustration of this model. The journal's development from predominantly Macedonian-language publishing towards bilingual and increasingly internationally oriented scholarly communication demonstrates that the preservation of national-language scientific publishing can coexist with internationalisation. The introduction of English-language content, expansion of international authorship and editorial participation, adoption of digital publishing practices, implementation of DOI identifiers, Open Access dissemination, and broader bibliographic visibility contributed to the journal's transition from a primarily national publication towards a more internationally accessible scholarly platform. This experience demonstrates that internationalisation does not necessarily require the abandonment of the national language; rather, it can be achieved by creating mechanisms through which national-language scholarship becomes accessible and discoverable beyond its original linguistic community.

At the same time, the JSER case demonstrates that multilingualism alone cannot ensure the long-term success or international visibility of a scientific journal. Sustainable scholarly publishing requires the coordinated development of several interdependent components, including consistent editorial management, a qualified and stable editorial and reviewer base, regular publication, rigorous peer review, appropriate language and copy-editing support, reliable digital infrastructure, persistent identifiers and metadata management, effective digital preservation, financial and institutional support, and compliance with recognised standards of scholarly publishing and research integrity. The interruption in JSER's publication history further illustrates the vulnerability of small scholarly journals to limitations in technical, organisational, and institutional capacity. Thus, journal internationalisation should be understood as a multidimensional and continuous process rather than as an outcome achieved through language change or indexing alone.

For small-language scientific journals, a strategically designed multilingual publishing model offers the most sustainable balance between local relevance and international communication. The experience of JSER demonstrates that linguistic diversity and internationalisation are not competing objectives but complementary components of scholarly communication. By combining national-language publication with English-language titles, abstracts, metadata, and, where appropriate, full-text content, journals can preserve accessibility, disciplinary terminology, and national scholarly identity while improving international visibility and dissemination. However, multilingualism should support rather than replace scientific quality, which remains dependent on rigorous editorial standards, peer review, digital infrastructure, and long-term sustainability mechanisms. The future of scientific publishing in

small-language communities therefore lies not in replacing national languages with English, but in developing inclusive publishing ecosystems that simultaneously promote local relevance, international accessibility, bibliodiversity, scientific quality, and sustainable knowledge dissemination. Development of scientific terminology.

Declarations

Ethics approval and consent to participate

Not applicable. This article is a narrative review and historical documentary analysis and did not involve human participants, identifiable personal data, or interventions.

Consent for publication

Not applicable.

Availability of data and materials

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Author contributions

VT conceived the article, developed the conceptual framework, contributed the historical documentary material concerning the Journal of Special Education and Rehabilitation, reviewed the literature, and prepared the manuscript.

Use of artificial intelligence

Artificial intelligence-assisted technology was used during manuscript preparation for language refinement, organization of the manuscript, and assistance in identifying and synthesizing relevant literature. The author reviewed and critically evaluated all AI-assisted output, verified the scientific content and references, and assumed full responsibility for the accuracy, integrity, originality, and final content of the manuscript. AI tools were not used as primary sources and are not listed as authors.

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