Educational research's influence on educational policy: A lens through the Namibian secondary school mathematics curriculum

Leena Ngonyofi Kanandjebo
Department of Applied Educational Sciences, University of Namibia (Main Campus)
lkanandjebo@unam.na

Abstract
There is a growing demand to strengthen the link between research and educational policies such as curriculum policies to provide evidence-informed decisions and enhance the quality of teaching and learning content. Through the microscopic lens of the mathematics curriculum, this study explored the extent to which educational research shapes Mathematics curriculum policy decisions. Through the Policy of Convergence as an analytical frame, the adopted a single-embedded case study design. In addition to conducting a document analysis, the data were triangulated by sampling Mathematics curriculum policymaker at the curriculum development institute and curriculum researcher at a premier institution of higher learning. These participants were purposively selected since they led Mathematics curriculum development activities in the country for more than a decade. The first set of data were collected by analysing the mathematics national curriculum policy documents to determine the visibility of research referencing. Second, a questionnaire was used to obtain perspectives of Mathematics curriculum policymaker and curriculum researcher on the accessibility, and relevance of research, challenges, and collaboration between educational researchers and practitioners, and to suggest measures for ensuring evidence-informed Mathematics curriculum policies. The findings revealed limited collaboration between researchers, curriculum policymakers, and decision-makers primarily due to inadequate communication platforms and differing interests. Based on the findings, there is a great need for improved collaboration between educational researchers and potential research findings users. The study recommends creation of regular platforms such as forums and national subject specific conferences to facilitate collaboration and improve the accessibility and timeliness of research findings. The conclusions of this study offer researchers and policymakers insights to consider value-addition and constraints afforded by research data to enhance the link between educational research and practitioners.

Keywords: *mathematics curriculum, policymakers, evidence-informed, educational research, policy decisions timelier*

Introduction

An effective Mathematics curriculum prioritises meaningful learning experiences for learners. The effectiveness of the mathematics curriculum hinges on its strong foundation based on research evidence. The alignment with research findings ensures that the curriculum is grounded in best practices and supported by empirical findings. Research plays a significant role in the educational processes, it provides valuable insights into societal needs, and world trends which can guide the planning, development, implementation, and evaluation of curriculum policies (Burrill et al., 2015; Helgetun & Menter, 2022). The evidence-informed policies therefore "help people make well-informed decisions about policies, programs, and projects by putting the best available evidence from research at the heart of policy development and implementation" (Davies, 2004, p. 3). An evidence-informed mathematics curriculum can significantly influence curriculum delivery as well as the economic development of a country; as mathematics is tied to a knowledge-based society (Government of the Republic of Namibia, 2004; Monaghan & Trouche, 2016). Generally, all educational spheres can benefit from research evidence. Some funding agencies require research evidence in order to fund or to be associated with certain curriculum issues (Lubienski et al., 2014). Thus strengthening the link between research, and educational policies, including in Mathematics is recognized as crucial and has been advocated for years in different parts of the world (Burrill et al., 2015; Ion & Iucu, 2015). Globally, the European Commission (EC) and other organizations, for example, have introduced initiatives directed at the adoption of evidence-informed policies and practices in education (Ion & Iucu, 2015). Curriculum policy documents provide terms of reference for curriculum interpretation and

implementation. As alluded to by the National Curriculum for Basic Education (NCBE) it also provides policy guidelines for teaching and learning, assessment, and direction for planning, organising, and implementing teaching and learning (Ministry of Education, Arts and Culture, 2016). Subsequently, specific policy documents such as the National Subject Policy Guide for Mathematics, provide guidelines for subject management and frame for operations required by the governing body, the Ministry of Education, Arts and Culture (Ministry of Education, Arts and Culture, 2019). However, curriculum policy documents also provide autonomy in implementation. Thus explicitly states "…it [policy] simultaneously strives to leave scope for each individual teacher to take initiative, especially in presenting subject content and facilitating learning" (p. 1) (Ministry of Education, Arts and Culture, 2019). This evidence (Ministry of Education Arts and Culture, 2019) recognises the complexity of curriculum issues ranging from planning to implementation.

Autonomy afforded to curriculum implementers such as teachers and school management demands that they are well informed by a vast amount of best and effective practices in terms of subject administration and curriculum implementation. Consequently, curriculum implementers need to conduct research and/or collaborate with educational researchers to enhance learners' learning experiences and academic performance. Equally, curriculum developers, who are the gatekeepers, need to ensure that the curriculum, before implementation, is relevant for Namibia, and founded on research evidence. This is critical for Namibia, as evident from the 2022 national examinations, in which according to the ministerial media briefing, a total of four hundred and twenty (420) learners scored zero on a Mathematics paper (The Namibian, 2022).

Thus, scholars such as Josua et al. (2022) called for research to be in place early enough to fast track the realisation of the Namibian national development goals envisioned to be achieved through the school curriculum. Notably, educational systems now demand the use of scientific evidence in developing educational policies, to enhance their credibility and social status (Wiseman, 2010). Further, research influence increases the effectiveness of public services and policies (Dunleavy, 2011). Yet, the empirical foundation supporting policy formulation in education remains significantly less substantial in comparison with other fields (Ion & Iucu, 2015). Thus, a need to create a link between research and policy decisions. There is no study conducted in Namibia to examine the influence of educational research on educational policy, with the secondary school mathematics curriculum as a lens; despite the significant influence educational research can have on curriculum policies. Burrill et al. (2015) however, conducted a survey and collected information with a focus on the development and use of curriculum from eleven countries around the world including Namibia.

However, without explicitly naming the countries, they concluded that only a few countries reported a substantial role for research in designing and monitoring the development of their curriculum. The study aimed to answer the following research questions:

1. To what an extent is educational research referenced in the Namibian secondary school mathematics curriculum policy documents?
2. What are the perspectives of curriculum policymaker and researcher on the accessibility, relevance, extend of collaboration and challenges of using educational research in mathematics curriculum development?
3. What are the perspectives of curriculum policymaker and researcher on the measures to ensure evidence-informed Mathematics curriculum policies?

This paper, started with a discussion of the analytical framework, Policy of Convergence (PoC). Data from the national curriculum policy documents to determine the visibility of research benchmarking are presented first. Second, the researcher presents the perspectives of a Mathematics curriculum policymaker and a curriculum researcher on the accessibility, and relevance of research, challenges, and extent of collaboration between educational researchers and practitioners as well as measures for ensuring evidence-informed Mathematics curriculum policies.

Third, a discussion of the findings and lastly, conclusions and recommendations to researchers and policymakers on the value addition and constraints afforded by research to enhance the link between research and practitioners are provided towards the end of the paper.

Literature review

Complexities and challenges of evidence-informed curriculum policies

The usage and grounding of curriculum policies and guidelines on evidence is complex and thus challenging. This complexity can be seen in different terminologies used, such as research-informed, evidence-based (Slavin, 2020), evidence-informed (Davies, 2004; Pellegrini & Vivanet, 2021), scientific evidence (Wiseman, 2010) and or sometimes just research as it is referred to in this study. The interest of this paper is not on phraseology as these terms are interchangeably used in this paper to imply grounding on research evidence.

Research informed therefore, emphasises using proven practices and information, which are derived from rigorous research for benchmarking (Pellegrini & Vivanet, 2021; Slavin, 2020). Others refer to it as resources that are used in preparing curriculum documents (Burrill et al., 2015). These descriptions imply that research findings and conclusions provide guidance and foundational knowledge for curriculum policy development through implementation but may not dictate. Thus, research becomes a mere sharing of information and publications if there is no functional application of it, especially to policy that influences the way of doing things. O'Brien (2013) thus suggests, the need to build relationships of trust for efficient dialogue and exchange of information between researchers and potential research findings' users.

In conducting a document analysis to examine the state of progress of evidence-based educational policies and challenges facing the development of evidence-informed education policies in Europe; Pellegrini and Vivanet (2021) concluded that although there is political will and support, the use of evidence in education has not yet been systematically integrated into practice. This is due to a lack of cohesion, possibly due to the absence of a clear roadmap with recommendations specifying objectives, tasks, roles, and deadlines (Pellegrini & Vivanet, 2021). Pellegrini and Vivanet also noted challenges with funding and resources which hamper key initiatives, such as raising awareness of the best educational research for translating evidence into practice.

Similarly, Ion and Iucu (2015) conducted interviews with two different key figures: the decision-maker, and researcher in Romania, to determine their perspectives on the influence of research on educational policy. Their study found the following challenges: disconnection between the researchers' and decision-makers' expectations and needs, with the needs of decision-makers being of "meeting political objectives" (p. 876), and language incompatibility between research and practice. Research reports are perceived by policy-makers to use technical and complex language (Ion & Iucu, 2015). They argued that most of the research results focus on dissemination and the transfer of research.

Lubienski et al. (2014) attest to this, that, there are unclear or indirect causal relationships between policy inputs and research thus "leaving substantial uncertainty around research claims about specific interventions" (p. 5). This could be attributed to the minimal measuring and tracking of the influence of research in educational decisions which is mostly based on a number of citations, references, or use of a piece of research (Dunleavy, 2011). The aggregation of impacts across an entire academic field does not always mean that there is no effect, as noted by Dunleavy (2011). This is because individual impacts cannot be tracked or subject to normative judgments. Helgetun and Menter (2022) in agreement with the above view argued that 'Of interest then is how contestation over what constitutes 'evidence' and what the 'evidence' says, and what are the outcomes from the contestation, shapes the use of 'evidence' in policy' (p. 92). This highlights the significance of understanding how different perspectives on evidence impact its influence in shaping educational policies.

It is also noted that there is a slow rate in the dissemination and implementation of research findings as most of the attention is on research production (Ion & Iucu, 2015). The implication is that the targeted users will not benefit from the findings and will not apply the recommendations to influence their impact. In addition, the costs of basing policy decisions on evidence can be exorbitant. As a result, research is confined to advancing political agendas (Lubienski et al., 2014). Research on curriculum issues by university-based Mathematics educators reported a gap between research and practice (Yuan & Yang, 2020).

Although, Yuan and Yang's (2020) study found a gap between research and curriculum development in mathematics, their focus was on higher education. The present study used the mathematics curriculum as a lens to fill a research gap on the influence of research on mathematics curriculum policy in Namibia. Despite reviewed studies being limited in terms

of geographical location, they were used to provide context to interpret and explore research influence in the mathematics curriculum policy. The reviewed studies highlight either a weak link between or a lack of systematic integration of research into educational policy (Ion & Iucu, 2015; Lubienski et al., 2014; Pellegrini & Vivanet, 2021; Yuan & Yang, 2020). Further, Lubienski et al. (2014) noted the difficulty of proving the influence of research. Helgetun and Menter (2022) on the other hand stated that constitutions of evidence and its meaning shape its use in influencing policy. Dunleavy (2011) cautions against relying on citations as a sole measure of research influence. Thus, this study used both document analysis and interviews as means of triangulation.

Analytical framework

This paper used the Policy of Convergence (PoC) as an analytical tool to discuss policy formulation (Bennett, 1991) (see Figure 1). The PoC is achieved through basing an educational policy on research evidence (Wiseman, 2010). Based on PoC, evidence-informed educational policymaking can occur in numerous ways. According to Wiseman (2010), this includes: (a) compliance with international and or supranational laws; (b) integration and adoption of domestic regulations to make an education system globally competitive; (c) evidence-based is imposition which is a result of political pressure or demand, such as requirements by the World Bank, International curriculum governing bodies, and Presidential Commission on Education reports. In addition, PoC through evidence-informed can be achieved through transnational communication. Humphreys (2002) described it as meeting "…international agreements or propositions on…goals and standards that national policies should aim to achieve, institutionalized peer review and identification of best practice (benchmarking)…" (p. 54).

Consequently, it should come as no surprise that evidence-based educational policymaking can be viewed as a strategic avenue for the advancement of both international and national agendas (Wiseman, 2010). In this paper's context, the description of transnational communication by Humphreys (2002) entails networks of individuals, policymakers, and researchers alike, with common ideas about mathematical standards and knowledge. The PoC is relevant to this paper as all educational endeavours should be "based upon a consideration of what is already going on; upon the resources and difficulties of existing conditions" (Dewey, 1916, p. 110) all of which require reflection, reviews, and research.

The visual representation of PoC concepts of interest to this paper as discussed in this section are summarised and conceptualised in Figure 1. Figure 1 was used as analytical tool to analyse the documents available in the public domain. These were (a) the National curriculum for basic education, (b) the Mathematics subject policy, and (c) the Mathematics subject syllabus.

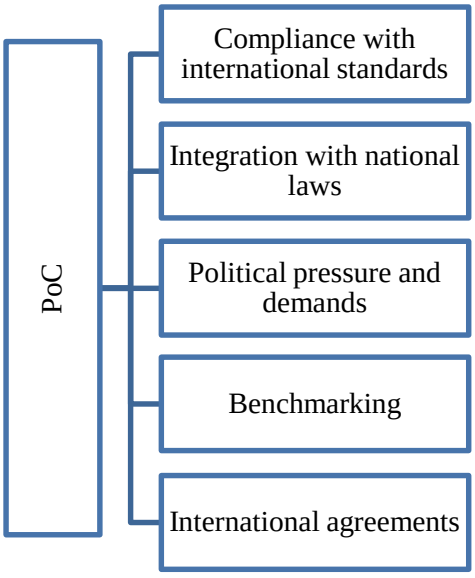

Figure 1: Conceptualised Policy of Convergence

Methodology

This qualitative study used a single embedded case study design (Scholz & Tietje, 2002), to explore and gain in-depth understanding of the evidence-based and Mathematics curriculum policy development process. In an embedded case study, the data is explicated through more than one various sub-unit of analysis; with the starting and ending points aimed at comprehending the case as a whole in its real-world context (Scholz & Tietje, 2002; Yin, 2001). The data were triangulated between various information sources, the analysis was organised using a circular method that alternated between data sources, theory, and the field to shed light on what was happening and infer the processes of policymaking in relation to the use of evidence (Helgetun & Menter, 2022).

Consequently, in this study, the researcher interpreted the mathematics curriculum documents, educational researcher, and mathematics curriculum developer as unique units of analysis, related to each other. The embedded case study was deemed appropriate for this study as it allowed triangulation between the units of analysis to describe features, and context in-depth for reliability of the research (Scholz & Tietje, 2002). The documents available in the public domain were analysed based on the descriptions of PoC. These were (a) the National curriculum for basic education, (b) the mathematics subject policy, and (c) the mathematics subject syllabus. The documents were examined to determine the visibility of research benchmarking. Research visibility was determined by the references to reports, articles, books, and or any publications published in a particular document (Dunleavy, 2011; University of Kwazulu-Natal, 2023).

Second, two key figures who led curriculum development activities for more than a decade were purposively selected. The first participant is from the National Institute for Educational Development (NIED), a directorate within the Ministry of Education, Arts and Culture, and the second participant is sampled from an institution of higher learning that has been at a helm of teacher education for more than a decade. The participants are described as follows respectively:

1. A leading mathematics curriculum developer at the helm of mathematics curriculum development at the curriculum development institute in the country.
2. An academic and researcher in curriculum development; who has been engaged in curriculum decision-making at curriculum development institute.

These participants completed a questionnaire informed by Helgetun and Menter (2022), and Ion and Iucu (2015). A follow-up telephonic interview was conducted where in-depth understanding of the problem was needed. A comparison was drawn by way of major divergences or similarities (Cohen et al., 2007) to present a crystallised diversity of shared reasoning. The data were analysed by categorizing data in tables and identifying patterns and themes (Helgetun & Menter, 2022). Verbatim quotes were used to enhance the credibility of the research (Corden & Sainsbury, 2006) and to support an interpretation of participants' responses to questions.

Ethical consideration

An ethical clearance certificate was granted by the Decentralised Ethics Committees at the University of Namibia. Participants were provided with comprehensive informed consent and were asked to consent before they could proceed with completing the online open-ended questionnaire. No coercion or any form of enticement was used to lure participants into participating in this research. Participants had the right to withdraw from the study at any stage if they wished to do so. Withdrawal from the study resulted in no negative repercussions for the participants. Participant coding was used to ensure the confidentiality, privacy, and anonymity of participants. As result, MCD was used to refer to the Mathematics Curriculum Developer; and CR to refer to the Curriculum Researcher

Findings

The data were obtained from the following curriculum documents: (a) National curriculum for basic education, (b) Mathematics subject policy, and (c) Mathematics subject syllabus. These were used in determining research visibility and are presented first. Second, data collected through a questionnaire and an interview from the Mathematics Curriculum Developer (MCD) and Curriculum Researcher (CR) are presented.

Visibility of research benchmarking

Table 1 presents the research visibility based on citation of sources in the curriculum documents.

Table 1: Visibility of research benchmarking

Policy document	Evidence-informed source
The national curriculum for basic education (Ministry of Education, Arts and Culture, 2016)	The National Curriculum for Basic Education (NCBE) builds on the experience and achievements of the previous cycles of Namibian curricula and syllabuses as from 1990, namely: • The Constitution of the Republic of Namibia (1990) • Towards Education for All: A Development Brief (1993), • Report of the Presidential Commission on Education, Culture and Training (1999), • The Education Act (2001), • Language Policy for Schools in Namibia (1996) • The Language Policy for Schools in Namibia: Discussion Document (2003), • ICT Policy for Education (2005), • Learner-Centred Education in the Namibian Context: A Conceptual Framework (2003) • Sector Policy on Inclusive Education (2013) • Namibia Human Capital and Knowledge Development for Economic Growth with Equity (2005) • Curriculum reviews and syllabus revisions by NIED, • Curricula and syllabuses for basic education (then grades 1-10), senior secondary education and special needs education. • Other research, monitoring, and evaluation reports.
National subject policy guide for Mathematics Grades 4-12 (Ministry of Education, Arts and Culture, 2019)	No sources were provided, except that "it is essential for subject teachers to consult the National Curriculum for Basic Education (2016) constantly to ensure that they teach within the guidelines of the Ministry of Education, Arts and Culture" (p. 1)
Subject syllabus (National Institute for Educational Development (NIED), 2015, 2018, 2020)	No sources were provided, except that "the syllabus is designed to meet the requirements of the National Curriculum for Basic Education (NCBE)…" (p.1).

From Table 1 it is evident that the curriculum development process was informed by local and policies, reports and guidelines. This places the country's basic education graduates at a pivot to develop skills and knowledge that are relevant to the country's developmental needs. Notably, for documents, that is the National Subject Policy Guide for Mathematics Grades 4-12 and the Subject syllabus; which are continually used by the implementers – teachers and schools, no sources were cited, and only reference was made to previous sources. In the next sections, perspectives of Mathematics Curriculum Developer (MCD) and Curriculum Researcher (CR) on accessibility and relevance, challenges in incorporating research and measures for evidence-informed curriculum policies are presented.

Accessibility and relevance of educational research

Both the Mathematics Curriculum Developer (MCD) and Curriculum Researcher (CR) indicated that research was relevant and applicable to curriculum decisions. Explicitly, the MCD on the question of applicability and relevance noted that: *"To a larger extent yes, educational research is applicable and relevant. Educational planners make decisions based on the evidence gained through educational research among others. Based on that background, it fits to say educational research supports curriculum developers in making relevant and informed decisions during the process of planning and reviewing the national curriculum".* The CR added that the relevance and applicability of educational research to curriculum decisions *"depends on the nature of the research and whether research results are released timely to inform curriculum decisions".*

Moreover, there was limited accessibility of educational research to the educational field, with MCD noting that research was accessible to curriculum developers to a *'lesser extent'.* In an interview, CR expressed the view that: *"Curriculum developers normally carry out desk research when they develop curriculum.*

They do not consult local research due to limited dissemination of local research. Some curriculum developers unexpectedly find some local research through other studies that have cited them". The CR also expressed the view that: *"There isn't much evidence to suggest that curriculum policies are not informed by research"*. When further asked about the evidence of research studies consulted during the curriculum development process, the CR indicated that: *"The evidence of consulted research studies is only found in discussion documents that are not publicly available, also curriculum documents have a certain format requirement based on international benchmarking"*. These views shed light on evidence benchmarking of Mathematics subject policy, and Mathematics subject syllabus as also found during document analysis (see Table 1). The views might imply compliance and benchmarking with international laws even though not explicitly mentioned by the participant.

Challenges in incorporating research

Various challenges reinforce difficulties in integrating research into curriculum decisions. MCD noted a lack of communication as there was *"Quite a gap in terms of collaboration between educational researchers and curriculum development officials"*. Further, there seemed to be a lack of transparency between researchers and curriculum policymakers as *"a number of officials [curriculum policymakers] are kept in darkness"*. The CR described the lack of collaboration as follows: *"There are cases where curriculum policymakers are researchers. In cases where curriculum policymakers and decision-makers are politicians, there may be no collaboration between researchers, and curriculum policymakers and decision-makers, because they operate on different spheres of policy influences"*.

Moreover, MCD noted that some educational researchers lacked understanding of the curriculum development process at the school level. MCD emphasized that: *"Educational researchers need to fully and holistically understand the process of curriculum development at school level"*. This seemed to pinpoint what CR noted about *"Not relevant"* research conducted on curricula issues. In addition, CR listed (a) untimely release of research results, and (b) political interferences as hindrances to the incorporation of educational research into curriculum decisions. The CR expanded on this and noted that: *"There are instances where politicians may impose policies on curriculum developers which are not informed by research"*. Moreover, in an interview, CR said that local research, for example, was poorly disseminated.

Measures for evidence-informed curriculum policies

The last question sought to solicit measures that could be put in place to ensure that curriculum policies were evidence-based. Both MCD and CR suggested improving collaboration between researchers and policymakers. CR added that realising research results on time should be done to facilitate effective collaboration. Thus, suggested the creation of research dissemination platforms at the local level for academics and educators to ensure that curriculum policies were evidence-based. Moreover, MCD noted that: *"Most effective measure is allocation of sufficient funds to support the process of collecting evidence such as monitoring and evaluation exercises"*. Next section presents the discussion of the findings.

Discussions

The curriculum documents reflected integration and adoption of domestic regulations to make an education system globally competitive (Wiseman, 2010). Notably, the analysis of curriculum documents is not informative enough to make sufficient conclusions about the influence and link between curriculum policies and research. This highlighted unclear and indirect causal relationships between policy inputs and research, leaving substantial uncertainty around research claims about specific interventions (Lubienski et al., 2014).

However, based on the perspectives of CR, this research evidence is contained in discussion documents that are not publicly accessible. Further, curriculum documents available in the public domain, are formatted according to the standards set by the international curriculum benchmarking organisation the country aligns itself with. This suggests that, grounding curriculum policies and guidelines on evidence is a complex discourse (Pellegrini & Vivanet, 2021; Slavin, 2020). In terms of challenges, CR and MCD perspectives accentuated the shared recognition of challenges associated with accessibility, the importance of research quality, timely reporting, and the

significance of collaboration between researchers and policymakers. First, the expression by CR that there was no evidence to suggest that curriculum policies were not informed by research could imply a lack of literature in that regard. This seemed to assent that the empirical foundation supporting policy formulation in education remains significantly less substantial in comparison (Ion & Iucu, 2015). It further, highlighted the minimal knowledge of measuring influence and impact (Helgetun & Menter, 2022; Lubienski et al., 2014; Dunleavy, 2011).

Second, there was limited accessibility of educational research to curriculum developers and policymakers. Curriculum developers relied on desk research, and there was a lack of communication between educational researchers and officials responsible for curriculum development. The findings align with those by O'Brien (2013) who found that educational research may be constrained by issues of accessibility. Ion and Iucu (2015) note that initiatives often lack cohesion, which possibly stems from the absence of clear roadmaps. The findings in this study also highlighted challenges such as the untimely release of research results, political interference, and the relevance of research to specific curricula. These challenges underscored the need for efficient dialogue, and trust-building, as suggested by O'Brien (2013), and Ion and Iucu (2015).

Moreover, the study found educational research to be relevant and applicable to curriculum decisions as it aligned with the PoC's emphasis on evidence-informed policymaking. Therefore, educational policies should be grounded in research evidence (Wiseman, 2010) and they should be based on reflection, reviews, and research (Dewey, 1916). It is evident from the study's findings that the relevance of research depended on its nature and the timely release of results. This resonated with the idea that research needs to be effectively translated into policy decisions for it to be impactful (Helgetun & Menter, 2022; Ion & Iucu, 2015). The identified gap in collaboration between researchers, curriculum policymakers, and decision-makers parallelled the challenge of limited communication mechanisms, interests, and influence of political objectives (Ion & Iucu, 2015). Yuan and Yang (2020) found a gap between research and practice, potentially stemming from shortcomings in communication. This gap could be attributed to research studies being perceived as using technical and complex language, making them less accessible to policymakers. Thus, enhancing collaboration and addressing communication issues is vital. Subsequently, based on the study's findings there is a need for creating research dissemination platforms at the local level. The suggested measure aligns with Pellegrini and Vivanet (2021) that raising awareness about the best educational research for translating evidence into practice is critical.

Conclusion

The challenges and complexities identified in the study resonated with the difficulties in translating research into effective policy, which is a central concern in the literature. The findings emphasized the importance of addressing accessibility issues, enhancing collaboration, and facilitating the timely dissemination of research for evidence-informed curriculum policies. Notably, there is a need to improve the accessibility and relevance of educational research and enhance collaboration. Thus, this study recommends developing more locally accessible and user-friendly repositories for depositing educational research publications.

There is also a need to create professional development opportunities for teachers to increase research output. The study also suggests establishing regular platforms such as forums for researchers and practitioners to collaborate and share insights. These platforms might be used as the medium to advocate for evidence-informed policy changes at the institutional and governmental levels. They might as well be used to communicate the importance of evidence-informed policies and collaboration. Finally, considering the *microscopic lens* used in this study in terms of participants and subject area, the study recommends exploration of a larger sample and subject areas in subsequent studies.

References

Bennett, C. J. (1991). What is policy convergence and what causes it? *British Journal of Political Science, 21*(2), 215–233.

Burrill, G., Lappan, G., & Gonulates, F. (2015).

Curriculum and the role of research. In S. Cho (Ed.), *The Proceedings of the 12th International Congress on Mathematical Education* (p. 247). Springer, Cham.

Cohen, L., Manion, L., & Morrison, K. (2007). Research methods in education. In *Research Methods in Education* (6th Ed.). London, UK: Routledge.

Corden, A., & Sainsbury, R. (2006). Exploring 'quality': Research participants' perspectives on verbatim quotations. *International Journal of Social Research Methodology*, *9*(2), 97-110.

Davies, P. (2004). Is evidence-based government possible? In *Jerry Lee Lecture* (p. 30). http://www.sandy-campbell.com/sc/KTC_Module_1_files/ KTC Module 1 - 2.3b - Davies 2004.pdfnt+Possible+?#0

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York, NY: Free Press.

Government of the Republic of Namibia. (2004). *Namibia vision 2030 policy framework for long-term national development*. Windhoek: Office of the President.

Helgetun, J. B., & Menter, I. (2022). From an age of measurement to an evidence era? Policy-making in teacher education in England. *Journal of Education Policy*, *37*(1), 88–105.

Humphreys, P. (2002). Europeanisation, globalisation and policy transfer in the European Union: The case of telecommunications. *Convergence*, *8*(2), 52–79.

Ion, G., & Iucu, R. (2015). Does research influence educational policy? The perspective of researchers and policy-makers in Romania. In P. Curaj, A., Matei, L., Pricopie, R., Salmi, J., Scott (Ed.), *The European higher education area*. Springer, Cham.

Josua, L. M., Auala, R. K., & Miranda, H. (2022). Chronicle of basic education curriculum transformations in pre- and post-independent Namibia: A responsiveness perspective. *Creative Education, 13*(04), 1154–1169.

Lubienski, C., Scott, J., & Debray, E. (2014). The politics of research production, promotion, and utilization in educational policy. *Educational Policy*, *28*(2), 131–144.

Ministry of Education Arts and Culture. (2016). *The national curriculum for basic education*. Okahandja: National Institute for Educational Development.

Ministry of Education Arts and Culture. (2019). *National subject policy guide for Mathematics Grades 4-12*. Okahandja: National Institute for Educational Development.

Dunleavy, P. (2011). A beginner's guide to the different types of impact: why the traditional 'bean-counting approach is no longer useful in the digital era. *Impact of Social Sciences Blog*.

Monaghan, J., & Trouche, L. (2016). Mathematics teachers and digital tools. In J. Monaghan, L. Trouche, & J. M. Borwein (Eds.), *Tools and mathematics: Instruments for learning* (pp. 357–384). Springer International Publishing Switzerland.

National Institute for Educational Development (NIED). (2015). *Junior secondary phase Mathematics syllabus (Grades 8 &9)*. Okahandja: National Institute for Educational Development.

National Institute for Educational Development (NIED). (2018). *Mathematics syllabus ordinary level, Grades 10-11*. Okahandja: National Institute for Educational Development. Okahandja: National Institute for Educational Development.

National Institute for Educational Development (NIED). (2020). *Mathematics syllabus advanced subsidiary*. Okahandja: National Institute for Educational Development.

O'Brien, S. L. (2013). *Information seeking sources of education policy makers*. University of Montana.

Pellegrini, M., & Vivanet, G. (2021). Evidence-based policies in education: Initiatives and challenges in Europe. *ECNU Review of Education*, *4*(1), 25–45.

Scholz, R. W., & Tietje, O. (2002). *Embedded case study methods: Integrating quantitative and qualitative knowledge*. Sage Publications, Inc.

Slavin, R. E. (2020). How evidence-based reform will transform research and practice in education. *Educational Psychologist*, *55*(1), 21–31.

The Namibian. (2022, December 31). Numbers Dilemma. *The Namibian*.

University of Kwazulu-Natal. (2023). *Information studies: Publishing and research visibility*. Libguides. Retrieved

January 11, 2023, from https://libguides.ukzn.ac.za/c.php?g=771135&p=5531911

Wiseman, A. W. (2010). The uses of evidence for educational policymaking: Global contexts and international trends. *Review of Research in Education*, *34*(1), 1-24.

Yin, R. K. (2001). *Case study research and applications: Design and methods* (6th Ed.). Sage Publications.

Yuan, R., & Yang, M. (2020). Understanding university-based teacher educators' boundary crossing experiences: voices from Hong Kong. *Teachers and Teaching: Theory and Practice*, *26*(2), 193–213.