Literature reviews of absence: How can we map surprising cases where theories and concepts relevant to a topic of interest appear missing?

Max Aantjes

University of Cambridge

In an increasingly diverse field, mathematics education researchers may fail to take advantage of certain theoretical developments relevant to their analyses. Accordingly, it is useful to report surprising cases where some seemingly relevant theoretical development is *absent* from a given literature. Rather than seeing such cases as simple oversight, Foucault's analyses of power and knowledge indicate such surprising absences may be grounded in certain regimes of truth. This suggests a detailed literature review may be needed to capture how the absence in question came about and how it can be resolved. In this paper, I argue that this review approach seems poorly reflected in existing literature review typologies, and that a discussion about literature reviews starting from surprising theoretical absences is needed. For this purpose, I provide a theoretical grounding for such reviews drawing on Foucault, develop a tentative methodological framework, and explore examples where such reviews seem useful.

Key words: Foucault; literature review; narrative; systematic; case study

Introduction

The field of mathematics education has experienced a recent proliferation of literature reviews (Cevikbas et al., 2024). This trend addresses an imminent need in a field that since the turn of the century has increasingly become characterised by its theoretical diversity (Lerman, 2000). Mapping trends through literature reviews is one strategy to make most of diversity, and to avoid the isolation of findings within different subfields. As recent discussion on literature review papers by the journal *ZDM* indicates, a specific logic is also emerging about what makes a good literature review in mathematics education (Kaiser & Schukajlow, 2024). In particular, researchers are looking to other fields for different review types and taxonomies, including the categorisation of reviews as of the narrative, scoping or systematic type.

In this paper, I intend to argue that a focus on such taxonomies may detract from certain opportunities to make the most of the diversity in mathematics education. My argument is grounded in the observation that present taxonomies focus on the supposed systematicity of different parts of the review process (e.g., Grant & Booth, 2009). In the above-mentioned discussion in *ZDM*, narrative reviews are for instance typified by subjective choices made by researchers in the search, selection and analysis elements of the review process. Conversely, scoping reviews and systematic reviews are typified by their use of more standardised criteria in the search and selection elements. In turn, these types are differentiated from one another in the analysis element, with scoping reviews addressing broader, emerging questions, whilst systematic reviews addressing more restricted, pre-specified questions.

In my view, what seems lost in such typologies is the more fundamental question, 'What is the review really about?' To see why this question appears

fundamental, it is helpful to take a detour to discussions in case study research. Akin to taxonomies of literature reviews, taxonomies of case studies typically compare different ways of systematically delineating, analysing and generalizing one or more tangible cases. Thomas (2011) argues these debates may miss a critical point. In his view, what matters most is the relationship between the delineation of a tangible case, the *subject*, and the analytical frame the case is trying to capture, the *object.* If the *subject* is for instance a select group of schools engaging with a policy, the *object* is an emerging frame about what binds different schools or pulls them apart in their engagement with this policy. The question researchers should keep asking themselves is, "What really is the case?' or, 'What *object* emerges from this *subject*?'

How does this relate to literature reviews? Well, the typical approach to delineate the *subject* of a review is to determine a topic of interest, let's call this *x*, and then find and select works which explicitly discuss this topic. The typical approximated *object* is thus the relationship between works mentioning *x*. This raises the question, 'Are there other possible *subjects/objects*?' The answer is 'yes.' It is possible that research on some other topic is relevant for research on *x* but fails to mention *x*. Despite an expressed interest in *x,* reviewing work on this other topic seems useful: developments in work on the other topic may inform research on *x*; and the lack of consideration for *x* in such work may reveal an explanation for this absence. Another *object* worthy of approximation is thus the relationship between works that seem relevant to *x* but fail to mention it, as well as those that mention *x*. This would require an atypical *subject*: a survey of works that fail to mention *x*.

The remainder of this paper explores how a review that starts from a surprising theoretical absence can be written. The first section draws on Foucault to ground such a review theoretically. The second introduces a working methodology with reference to a much-cited but unclassified literature review (i.e., Bakker *et al.*, 2015). The final section then presents examples where such reviews may be needed.

A Foucauldian starting point

Foucault has introduced a wide range of concepts throughout his works which have been adopted in different ways in mathematics education. Kollosche (2016) proposes it may be helpful to develop a more comprehensive framework for the field that captures the current underlying this variety: Foucault's interest in the inextricableness of knowledge and power. In brief, Foucault is particularly interested in how it becomes normal at a given time and place to say certain things (e.g., talk of 'madness'), delineate certain spaces (e.g., the 'psychiatric hospital'), act in certain ways (e.g., attempts to come across as 'sane') and separate subjects from one another (e.g., 'sane'/'mad' people). [1] Throughout, Foucault maintains this regulation of conduct does not stem from imposition of power from above (e.g., the state). Rather, it lies in an everlasting struggle in everyday practice over the production of certain knowledge(s), or regimes of truth (e.g., emerging definitions of 'madness'). These regimes of truth then reinforce certain practices, whilst thwarting others.

Given the position that regimes of truth emerge throughout society (rather than being imposed on it), Foucault tends to construct his analyses by reviewing a wide variety of typically neglected or forgotten texts, including letters to the king, coursebooks for the police, court documents, as well as forgotten (semi-)academic

[1] For the focus on this how question, and the ontology of a power struggle in practice, see 'The Subject and Power' in Foucault (1994). For the examples, see Foucault's (2003) *Madness and Civilisation.*

works.[2] In this vein, Kollosche proposes a comprehensive framework of a similarly broad focus. He proposes that mathematics education researchers should study issues at different levels, including texts about broader societal issues, texts about mathematics itself, texts about mathematics education in classrooms and texts about mathematics education research itself. On reflection, this comprehensive approach also seems to pose some questions for a literature reviewer. First, it seems unclear how to start such a complex multi-level review. Second, it seems unclear how each level could be comprehensively captured. As discussed, it could for instance be questioned if works not explicitly mentioning a topic of interest should be included.

In my view, other currents underlying Foucault's work on power and knowledge provide further insights for literature reviewers. In terms of starting points, Foucault has expressed strong views on how to select worthy topics of analysis. In a well-known interview on power, Foucault (1994, pp. 242–244) explains he often starts from a personal experience (e.g., working with prisoners), which transformed his views on a collective experience (e.g., delinquency). His choice of topics, such as madness and delinquency, is thus based on his own evolving interaction with the empirical world, and their exploration is meant to provide a parallel experience for the reader, uncovering regimes of truth and their potential transformation *en route*.

There seems to be parallels with this approach and suggestions from the edited volume *Networking Theories as a Practice in Mathematics Education* by Bikner-Ahsbahs *et al.* (2014). The volume documents an attempt by researchers with different theoretical backgrounds to analyse the same empirical data with respect to similar research questions. Through this experience researchers started to see relevant absences within their own theories. For example, theorists who analysed understanding based on speech, discovered they overlooked meaning-making through gestures. The retelling of such transformational experiences are a useful starting point for revealing regimes of truth underpinning theories and possible transformations.

Regarding a comprehensive way of capturing regimes of truth at different levels, Bacchi (2009) has noted Foucault often explores how things, spaces, acts and subjects are 'problematised'. One explicit example of this is Foucault's discussion of how different states problematised health differently:[3] the German state's concern with maintaining a healthy army led to a military-style medical state apparatus; the French concern with health as a risk for unrest and epidemics in urban spheres led to localised health management; and the English concern with the low productivity of the 'unhealthy' poor led to laws seeking to manage their conduct. As suggested by Bacchi, a focus on problematisations— including who or what is seen as an issue, how this is grounded in regimes of truths, how this influences lives and potential alternatives — could a support the development of more comprehensive analyses.

Primdahl *et al.* (2018) argues this focus on problematisation could also guide literature reviews; often present solutions for perceived issues ignore other possible issue configurations. Again, there are parallel concerns about problematisation in mathematics education. Pais and Valero (2012) argue that researchers often interpret the finding that students fail to see the usefulness of mathematics as a reflecting an issue concerning quality of teaching. They suggest this finding may instead be attributed to the limited relevance of mathematics seems to have for most in modern society. This focus on the contingency of the foregrounded issue thus lays bare a regime of truth — the assumption mathematics *is* useful — meriting reflection.

[2] This range is captured well in a collection of Foucault's work on *Power* (Foucault, 1994).
[3] See 'The Birth of Social Medicine' in Foucault (1994).

A tentative methodology

What happens when we bring these two Foucauldian insights together? The first Foucauldian insight suggests a researcher could start with a personal surprise when reading an analysis of an empirical phenomenon. Specifically, a researcher may be surprised that the typical analysis of a phenomenon seems to ignore a seemingly relevant theory or concept. A concrete example of this can be found in a review by Bakker *et al.* (2015) of research on scaffolding and dialogic teaching in mathematics education. The authors observe that studies of scaffolding in mathematics education rarely draw on theoretical work about dialogic teaching. This surprise is theoretically grounded; the notion of scaffolding and theory on dialogic teaching share certain theoretical antecedents, including Vygotskian concepts (ibid., pp. 1049, 1059).

The second Foucauldian insight suggests that the next step for the researcher could be to explore how certain things, acts, places or subjects are problematised in the typical analysis of the empirical phenomenon. Bakker *et al.* for instance conduct a systematic search of mathematics education research on scaffolding and then explore how this corresponds with the concerns of dialogic theorists. One key finding is that dialogic theorists are concerned about the open-endedness of dialogue, whilst scaffolding researchers' concern lies in enabling students to achieve certain pre-specified learning goals. The authors then explore why this ostensible tension is actually a 'straw man discussion' (ibid., 1062). They thus question the apparent diverging regimes of truth about the issue at stake, offering a bridge across fields.

Taking stock, the proposed Foucauldian approach could be sketched as follows: (i) it starts with an empirically grounded surprise that a certain concept or theory is largely absent in a given set of analyses; (ii) then explores in a more or less systematic way of how this surprise relates to the foregrounding of certain issues in this set of analyses, and the absent concept or theory; (iii) and through this process reveals and challenges regimes of truth. The crux here is a deliberate choice at stage (ii) to look at both work which starts making some connections with the largely absent theory or concept (e.g., papers on scaffolding which mention 'dialogue'), and that which does not (e.g., papers on scaffolding not mentioning 'dialogue'). In this way, relevant regime(s) of truth explaining this relative absence rare revealed.

The review by Bakker *et al.* demonstrates why it is difficult to capture this point with reference to existing typologies. On the one hand, their review seems narrative given the subjective focus on a surprising absence of a given theory. On the other hand, the review seems akin to a scoping review, given its strict search criteria and broad research questions. The authors themselves do not classify their review but do refer to treating scaffolding as an integrative concept, perhaps implying the intention for the work to be an integrative review. Such reviews are characterised by cataloguing work *mentioning* a given topic in two or more isolated fields for the purpose of integrating findings (Torraco, 2016). In either case, these typologies do not seem to capture the authors' focus on a surprising theoretical *absence*.

Two brief examples

I presented two other examples at the BSRLM spring and summer conferences in 2025 where a literature review of theoretical absences seems in order. The first is that research into norms in mathematics education seems to rarely consider emerging theory about the exclusion of disabled students. This is surprising, because norms are often explored in an ethnomethodological fashion (Cobb et al., 2001; Herbst &

Chazan, 2012): a norm is seen as a largely unconscious expectation in practice that merits a response when breached (e.g., for students to conduct proofs with reference to a given diagram); and norms thus become particularly visible when breached. As norms rarely keep disabled people in mind (e.g., a blind person cannot access certain visual diagrams), the ethnomethodologist Robillard (1999) argues that disabled persons' lived experiences make norms visible and allow for reflection about altering norms for inclusion. However, studies on norms in mathematics education seem to consider the main issue to be a lack of awareness of norms for the average student, resulting in methodological tools with non-descript characters or a focus on whole-class normative shifts (literature review presented at summer conference). This potential regime of truth indicates a missed opportunity; a focus on the narratives of excluded students could reveal such norms whilst fostering reflection on inclusion.

The second example is that research into teaching mathematics for social justice (TMSJ) rarely concerns mathematical proof. This is surprising, because TMSJ invites practitioners to reflect about the role of mathematics in society (Wright, 2016). As implied by Kollosche's (2016) framework, such a reflection can cover multiple levels, including mathematics itself. At the level of the discipline, researchers often emphasise that the marginal status of proof activities in curricula is a key issue, as it conceals the structures underlying mathematics (Hanna, 2000). Considering a range of handbooks on TMSJ (e.g., Gutstein & Peterson, 2005; Wright, 2016), TMSJ researchers seem instead concerned with how the curriculum conceals the ways in which mathematics shapes the world around students in tangible ways. This focus on tangible effects results in contextualised activities far removed from proof. What this potential regime of truth seems to overlook is that proof does also shapes students' everyday experience in mathematics classrooms in relatively tangible ways (e.g., Andrade-Molina & Valero, 2017). A discussion of the potential relevance of proof to TMSJ may thus be in order (unpublished paper presented at spring conference).

Conclusion

As these examples seem to call for a careful review of absences in literature left unaddressed in review typologies, the proposed methodology (i-iii) may provide a direction forward. It seeks to encourage researchers to look for empirically-grounded surprises of the absence of theories or concepts, emphasises studies which fail to mention such theories or concepts are worthy of review, and suggests mapping how issues are foregrounded may reveal regimes of truths and opportunities for change.

References

Andrade-Molina, M., & Valero, P. (2017). The Effects of School Geometry in the Shaping of a Desired Child. In H. Straehler-Pohl, N. Bohlmann, & A. Pais (Eds.), *The Disorder of Mathematics Education* (pp. 251–270). Springer International Publishing. https://doi.org/10.1007/978-3-319-34006-7_15

Bacchi, C. L. (2009). *Analysing policy: What's the problem represented to be?* Pearson Australia.

Bakker, A., Smit, J., & Wegerif, R. (2015). Scaffolding and dialogic teaching in mathematics education: Introduction and review. *ZDM*, *47*(7), 1047–1065. https://doi.org/10.1007/s11858-015-0738-8

Bikner-Ahsbahs, A., Prediger, S., & Networking Theories Group (Eds.). (2014). *Networking of theories as a research practice in mathematics education*. Springer.

Cevikbas, M., Kaiser, G., & Schukajlow, S. (2024). Trends in mathematics education and insights from a meta-review and bibliometric analysis of review studies. *ZDM – Mathematics Education*, *56*(2), 165–188. https://doi.org/10.1007/s11858-024-01587-7

Cobb, P., Stephan, M., McClain, K., & Gravemeijer, K. (2001). Participating in Classroom Mathematical Practices. *Journal of the Learning Sciences*, *10*(1–2), 113–163. https://doi.org/10.1207/S15327809JLS10-1-2_6

Foucault, M. (1994). The Politics of Health in the Eighteenth Century. In J. D. Faubion (Ed.), *Power: Essential Works* (pp. 91–105). Editions Gallimard.

Foucault, M. (2003). *Madness and Civilization* (0 ed.). Routledge. https://doi.org/10.4324/9780203164693

Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, *26*(2), 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x

Gutstein, E., & Peterson, B. (Eds.). (2005). *Rethinking Mathematics: Teaching Social Justice by the Numbers*. Rethinking Schools, ltd.

Hanna, G. (2000). Proof, Explanation and Exploration: An Overview. *Educational Studies in Mathematics*, *44*(1/2), 5–23. https://doi.org/10.1023/A:1012737223465

Herbst, P. G., & Chazan, D. (2012). On the instructional triangle and sources of justification for actions in mathematics teaching. *ZDM - Mathematics Education*, *44*(5), 601–612. https://doi.org/10.1007/s11858-012-0438-6

Kaiser, G., & Schukajlow, S. (2024). Literature reviews in mathematics education and their significance to the field. *ZDM – Mathematics Education*, *56*(1), 1–3. https://doi.org/10.1007/s11858-023-01541-z

Kollosche, D. (2016). Criticising with Foucault: Towards a guiding framework for socio-political studies in mathematics education. *Educational Studies in Mathematics*, *91*(1), 73–86. https://doi.org/10.1007/s10649-015-9648-5

Langer Primdahl, N., Reid, A., & Simovska, V. (2018). Shades of criticality in health and wellbeing education. *Journal of Curriculum Studies*, *50*(6), 733–753. https://doi.org/10.1080/00220272.2018.1513568

Lerman, S. (2000). The social turn in mathematics education research. In J. Boaler, *Multiple Perspectives on Mathematics Teaching and Learning* (1st ed., pp. 19–44). Praeger. https://doi.org/10.5040/9798400688362

Pais, A., & Valero, P. (2012). Researching research: Mathematics education in the Political. *Educational Studies in Mathematics*, *80*(1–2), 9–24. https://doi.org/10.1007/s10649-012-9399-5

Robillard, A. B. (1999). *Meaning of a disability: The lived experience of paralysis*. Temple University Press.

Thomas, G. (2011). A Typology for the Case Study in Social Science Following a Review of Definition, Discourse, and Structure. *Qualitative Inquiry*, *17*(6), 511–521. https://doi.org/10.1177/1077800411409884

Torraco, R. J. (2016). Writing Integrative Literature Reviews: Using the Past and Present to Explore the Future. *Human Resource Development Review*, *15*(4), 404–428. https://doi.org/10.1177/1534484316671606

Wright, P. (2016). *Teaching Mathematics for Social Justice*. ATM.