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THE PRODUCTION OF TEXTBOOKS IN MATHEMATICS IN NORWAY: 1930–1986

Summary: To provide an overview of Norwegian mathematics textbook production 1930–1986, we replicated Johan Prytz' study of Swedish textbook production. Such a replication also facilitates comparisons between Norway and Sweden, two countries that have often had almost parallel developments in the school system and in mathematics curricula, with Sweden often a few years ahead. Our method includes systematic searches of the National Library of Norway catalogue, supplemented by searches in other sources, including lists of government approved textbooks, to create a database as complete as possible. We find that, as in Sweden, textbook production increases after curriculum reforms, but also that textbook production was more active in the period 1960–1987 than in 1930–1960. New publishers and authors were active from the 1960s. Also, foreign textbooks published in Norwegian editions played an increasing role from 1960. The theory that the abolition of textbook review in Sweden stimulated textbook production is not supported by our study, as Norway had a similar increase in production without the abolition of textbook review.

Keywords: textbooks, mathematics, mathematics education

Introduction

An important part of educational research is to study how and why subjects change, both to understand the past and to help inform future policy. Policy makers have faith in curriculum reforms as ways of changing what happens in classrooms, but reforms do not automatically translate into classroom practices. The role of mathematics textbooks in supporting reform has been increasingly recognized[1]. They have a key role in operationalizing the categories of the intended curriculum[2]. Therefore, mathematics textbooks are important sources for studying changes in mathematics teaching.

Conducting similar studies in different countries can facilitate comparative research. Norway and Sweden are often seen as two similar countries in many respects[3], which can make comparisons fruitful. An overview of when publishers have produced new textbooks and when new authors entered the scene is an important prerequisite for comparing changes in the content of the subject of mathematics, including comparing the impact of curriculum reforms. Prytz studied the production of textbooks in Sweden over a long period of time (1930–1980), including curricula, authors, and publishers[4]. To our knowledge, no corresponding studies exist in other countries.

The school subject that includes topics from mathematics has changed over time, both in name and content. In 1930, it was called 'arithmetic' (regning/räkning) in both Norway and Sweden. The academic content consisted of practical arithmetic, measurement, and some geometry. There was a focus on ensuring that students learned what they needed to manage in their daily lives. 'Mathematics' was only taught to students who chose to pursue education beyond the regular curriculum, such as attending a secondary school. The subject's name in primary school changed from arithmetic to mathematics in Sweden in 1955 and in Norway in 1960. It was not just the name of the subject that changed; the academic content also evolved. Increasingly more mathematics was introduced into the school curriculum.

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[1] S. Rezat, L. Fan, B. Pepin, *Mathematics textbooks and curriculum resources as instruments for change*, "ZDM Mathematics Education" 2021, vol. 53.

[2] S. Rezat, I. Westbury, *Textbooks and Curriculum from a Governance Perspective*, [in:] *Fourth International Handbook of Mathematics Education*, ed. by M. A. Clements, B. Kaur, T. Lowrie, V. Mesa, J. Prytz, Springer Nature Switzerland, Cham, 2024, p. 606.

[3] A.O. Telhaug, O.A. Mediås, P. Aasen, *The Nordic model in education: Education as part of the political system in the last 50 years*, "Scandinavian Journal of Educational Research" 2006, vol. 50, no. 3, p. 245–283.

[4] J. Prytz, *The production of textbooks in mathematics in Sweden, 1930–1980*, [in:] *"Dig where you stand" 4: Proceedings of the Fourth International Conference on the History of Mathematics Education*, ed. K. Bjarnadóttir et al., Edizioni Nuova Cultura, Rome 2017, p. 309–323.

Previous research

Research on historical mathematics textbooks is a growing area of study – there are significant contributions on textbooks in the conferences on history of mathematics education, and significant contributions of a historical nature in the conferences on textbook research. Most of this research consists of in-depth studies of one or a few key textbooks, while studies of the textbook production of a whole country in a certain period are rare. Prytz is such a study; a bibliometric study on the production of mathematics textbooks for grades 1–9 in Sweden for the period 1930–1980[5]. He created a database of mathematics textbooks and used this to analyse and discuss the textbook production in Sweden. In his discussion, he included factors such as the number of students, exam results, new curricula, and the abolition of mandatory textbook review in 1974. He found that the influx of new textbooks was greater in the period 1960–1980 than in 1930–1960, and observed an increase in new textbooks following new curricula, of course, but also an increase from 1975. He considered the abolition of mandatory textbook review a triggering factor for this increase, combined with increased marketing of the textbooks by the publishing companies in the 1970s. Later, in a study of the textbook contents, Prytz found that many of the post-1975 textbooks included no set theory[6].

There exists no similar study like Prytz's on the Norwegian textbook market, and no databases of Norwegian mathematics textbooks. A research project on the history of textbooks in Norway produced three volumes[7]. Of a total of 37 articles in these three volumes, only one article has mathematics textbooks as a theme. Here, Botten presents *Arithmetica Danica* from 1645, a textbook written in Norway by Tyge Hansøn[8]. The research project on the history of textbooks in Norway did not publish lists of textbooks of the kind analysed in Prytz's study.

Many researchers have studied specific textbook(s) in Norway. In addition to Botten, Kongelf studied mathematical methods and mathematical content in six textbooks used in lower secondary school[9], Smestad studied how the history of

[5] Ibidem.

[6] J. Prytz, *The New Math and school governance: An explanation of the decline of the New Math in Sweden*, [in:] *Researching the History of Mathematics Education: An International Overview*, ed. F. Furinghetti, A. Karp, Springer, Cham 2018, p. 189–216.

[7] *Norsk lærebokhistorie – en kultur- og danningshistorie*, ed. by D. Skjelbred, B. Aamotsbakken, Novus forlag, Oslo 2008; *Norsk lærebokhistorie II – en kultur- og danningshistorie*, ed. by D. Skjelbred, B. Aamotsbakken, Novus forlag, Oslo 2009; *Norsk lærebokhistorie III – en kultur- og danningshistorie*, ed. by D. Skjelbred, B. Aamotsbakken, Novus forlag, Oslo 2011.

[8] G. Botten, *Arithmetica Danica – ei norsk lærebok i regning fra 1645*, [in:] *Norsk lærebokhistorie – en kultur- og danningshistorie*, ed. D. Skjelbred, B. Aamotsbakken, Novus forlag, Oslo 2008, p. 9–29.

[9] T.R. Kongelf, *Matematisk innhold og matematiske metoder i lærebøker brukt på ungdomstrinnet i Norge. Gullgruve eller fallgruve for utvikling av matematisk kompetanse i problemløsning*

mathematics was integrated into the textbooks after the 1997 national curriculum[10], Opsal and Smestad studied when students were introduced to some selected concepts in the textbook series before, during, and after the period of New Math[11], Hovtun and Dreyer studied how different quadrilaterals were defined in textbooks after the two most recent curricula in Norway[12], and Krohg Østby studied how fractions were represented in Norwegian contemporary textbooks[13]. Few have studied the production of textbooks in Norway. An exception is Ribsskog, a review of available textbooks in arithmetic up to the new curriculum in 1939[14]. He described both the content of the textbooks and how the teaching of arithmetic was structured.

Aim and research questions

To facilitate further research on mathematics textbooks in Norway – and thereby on the history of mathematics education in Norway – an overview of the existing textbooks is needed. In this article, we will discuss the development of a database of Norwegian textbooks. We will analyse the resulting database to answer four research questions. The first two concern the textbook production in Norway, while the last two compare the situation in Norway with the situation in Sweden, as described in Prytz[15]:

- What were the active and less active periods of textbook production in the period 1930–1986 in Norway?
- At what times did new publishers and new authors arrive?
- To what degree are developments in Norway and Sweden similar?
- Did the abolition of textbook review in Sweden, and not in Norway, lead to differences in textbook production patterns?

og algebra?, PhD dissertation, University of Agder, 2019, https://uia.brage.unit.no/uia-xmlui/handle/11250/2616438 [accessed 4.12.2025].

[10] B. Smestad, *Historical topics in Norwegian textbooks*, [in:] *Study the masters: The Abel-Fauvel Conference*, ed. O.B. Bekken, R. Mosvold, NCM, Göteborg 2003, p. 153–168.

[11] H. Opsal, B. Smestad, *Concepts introduced in Norwegian textbooks before, during and after the New Math period*, [in:] *Proceedings of the Twelfth Congress of the European Society for Research in Mathematics Education (CERME12). Feb 2022, Bozen-Bolzano, Italy*, ed. by J. Hodgen, E. Geraniou, G. Bolondi, F. Ferretti, Free University of Bozen–Bolzano, ERME, Bozen–Bolzano 2022, p. 1–9.

[12] G. Hovtun, T. Dreyer, *Definisjoner på firkanter i lærebøker*, "Tangenten – tidsskrift for matematikkundervisning" 2024, vol. 35, no. 1, p. 34–47.

[13] M. Krohg Østby, *Representasjoner av brøk i lærebøker*, "Tangenten – tidsskrift for matematikkundervisning" 2024, vol. 35, no. 3, p. 31–43.

[14] O.K. Ribsskog, *Litt omkring rekneopplæringa i den danske skolen, fattigskolen, friskolen, almueskolen og folkeskolen i Norge*, Gyldendal Norsk Forlag, Oslo 1941.

[15] J. Prytz, *The production of textbooks in mathematics in Sweden, 1930–1980*.

Context – Sweden and Norway

Sweden and Norway are two Nordic countries with partly parallel histories. From 1814 to 1905, Norway was part of Sweden, with the same king but with a separate constitution. The countries separated peacefully in 1905, and they remain close, linguistically, culturally, and politically, although Sweden chose a more neutral role in international politics, for instance by refraining from joining NATO until 2024, while Norway had been a founding member. In the 20th c., the development of the school system was almost parallel in Sweden and Norway: in both countries, a *Folkeskole* of 6–7 years, followed by a *Realskole*, was replaced in the 1960s by a longer compulsory *Grunnskole*[16]. However, many small differences warrant a closer look at the context. In the following, we will discuss the development of the school systems (one country at a time), briefly discuss changes in the student numbers, and provide some key information on the conditions for textbook publishing in Sweden and Norway in the period 1930–1986.

In one of Prytz' papers, the Swedish school system of the period is described, focusing on *Folkskolan*, *Realskolan*, and *Grundskolan*[17]. *Folkskolan* originally consisted of grades 1–6, but a 1936 law made seven years compulsory. *Folkskolan* had a new curriculum in 1955. In some parts of Sweden, *Folkskolan* was even extended to grades eight and nine, by what was called *Folkskolans överbyggnad* (*Folkskolan's superstructure*). *Realskolan* was partly parallel, with students entering in grades 4, 5, or 7. *Realskolan* was meant to prepare students for *Gymnasium* and other advanced schools. *Realskolan* had new curricula in 1933 and 1955. A 1962 reform (taking ten years to implement fully) replaced '*Folkskolan* and *Realskolan* with a single, mandatory nine-year school: *Grundskolan*'[18]. The reform had been prepared with experiments since the 1950s. The 1962 curriculum for *Grundskolan* was replaced in 1969, which was when New Math was introduced in Sweden. Even though there was no new curriculum in Sweden until 1980, the National Board of Education in 1973, in an apparent move away from New Math, asked teachers to choose methods freely and prioritize basic skills[19].

In 1930, Norway had *Folkeskolen* (grades 1–7) with separate plans for urban schools and rural schools. *Folkeskolen* became compulsory for students in 1959. In 1955, experiments with a nine-year school for all started in a few municipalities and it was not until 1960 that there was an experimental plan for the municipalities that wanted to join. From 1969, the new nine-year school, *Grunnskolen*,

[16] B. Smestad, H. Opsal, *Trajectories of New Math in the Nordic Countries*, [in:] *The Nordic Education Model in Context. Historical Developments and Current Renegotiations*, ed. by D. Tröhler et al., Routledge, New York, London 2023, p. 158–175.

[17] J. Prytz, *The production of textbooks in mathematics in Sweden, 1930–1980*.

[18] Ibidem, p. 312.

[19] J. Prytz, *The New Math and school governance: An explanation of the decline of the New Math in Sweden*.

was made mandatory for all municipalities. *Grunnskolen* was divided into *Barneskolen* (1–6) and *Ungdomsskolen* (7–9)[20].

Before 1969, there were several alternative schools for students wanting to continue after *Folkeskolen*. In 1930, *Middelskolen* was a six-year preparation for *Gymnaset*. However, in 1935, *Middelskolen* was replaced by *Realskolen*, which was a three-year continuation of *Folkeskolen*, still aiming to prepare for *Gymnaset*. There was also a *Framhaldsskole*, a voluntary grade 8 of *Folkeskolen*. After 1969, *Gymnaset* was replaced by a three-year *Videregående skole*.

In Norway, preparing the curricula for *Grunnskolen* became problematic – there was a temporary curriculum in 1971, with two alternative plans in mathematics, one traditional and one based on New Math. This curriculum was replaced by a final curriculum in 1974, where the New Math alternative was gone. The next curriculum appeared in 1987.

Changes in the number of students can be a factor in triggering textbook production. Prytz shows an 18% reduction in the number of students in *Folkskolan* from 1930 to 1940, followed by a 54% increase in student numbers until about 1960, and a leveling off from then on[21]. The development in Norway has a similar pattern: A 19% reduction in student numbers in *Folkeskolen* from 1930 to 1940, a slight reduction from 1940 to 1950, and a 34% increase in student numbers from 1950 to 1960 (counting only students attending *Folkeskole* or *Barneskole*)[22].

Throughout the period we have looked at, the textbook markets both in Sweden and Norway had several active publishers. There was a government review of textbooks in Sweden until 1974 (when it became voluntary)[23] and in Norway until 2001 (when it was abolished)[24]. The schools decided which textbooks to use from the approved textbooks – and, after 1974/2001, from the published textbooks. At least in Norway, schools bought textbooks which would be lent to students until the books were lost, worn out, or replaced by newer books. There exists no public information about the sales of textbooks, unfortunately.

[20] H.-J. Dokka, *En skole gjennom 250 år. Den norske allmueskole – folkeskole – grunnskole 1739–1989*, NKS-forlaget, Oslo 1988.

[21] J. Prytz, *The production of textbooks in mathematics in Sweden, 1930–1980*.

[22] Statistics Norway, *Historisk statistikk 1994 = Historical statistics 1994*, Statistisk sentralbyrå, Oslo–Kongsvinger 1995 (Norges offisielle statistikk, C).

[23] J. Prytz, *When research met policy: a history of innovation and a complicated relationship in three Swedish development projects in mathematics education*, "ZDM Mathematics Education" 2021, vol. 53, no. 5, p. 1035–1046.

[24] B. Bratholm, *Godkjenningsordningen for lærebøker 1889–2001, en historisk gjennomgang*, "Fokus på pedagogiske tekster" 2001, Notat 5/2001, Vestfold University College, Tønsberg 2001, https://www-bib.hive.no/tekster/hveskrift/notat/2001-05/not5-2001-02.html [accessed 4.12.2025].

Method

To answer our research questions, we replicated the method in Prytz[25] in creating a database of all mathematics textbooks published in a given time period. For his 2017 article, Prytz used the period 1930–1980. For comparison, we decided on a similar period, but decided to end in 1986, as there was a new curriculum for *Grunnskolen* in 1987. We included *Folkeskolen*, *Middelskolen*, *Realskolen*, and *Grunnskolen*, and not upper secondary school. We will briefly describe the process of creating and editing the database.

Our main source for creating the database was the National Library of Norway, to which all publishers have, throughout our period, been obligated to send their books. The National Library has recently had a major digitalisation initiative, where all its books have been scanned and made publicly available in digital form[26]. Using the app Korpus[27], we first performed nine searches, resulting in 3909 books (see Table 1). After the removal of 912 duplicates, 2997 unique books remained.

Table 1. Searches.

Search	Number of books
Subject: matematikk [mathematics] and lærebøker [textbooks]	958
Subject: regning [calculation] and lærebøker [textbooks]	18
Subject: rekning [calculation] and lærebøker [textbooks]	0
Title: matematikk* [mathematics*]	2293
Title: regning* [calculation*]	314
Title: rekning* [calculation*]	34
Title: algebra* [algebra*]	138
Title: geometri* [geometry*]	131
Title: aritmetikk* [arithmetics*]	23

While subject field searches should, in theory, have been good enough, we had noticed earlier that the National Library catalogue contained many textbooks that were not registered with the subject ‘textbooks’. Therefore, more complex searches were needed.

At this stage, we excluded any book that was not a textbook for the relevant school levels. 1148 books were excluded based on the title, and 198 were marked

[25] J. Prytz, *The production of textbooks in mathematics in Sweden, 1930–1980*; Idem, *The construction of a database regarding Swedish historical textbooks in mathematics (grades 1–9), 1900–2015: A technical description*, Uppsala universitet, Uppsala 2016.

[26] The availability depends on the juridical status of each book, with many books being available in digital form only for research purposes.

[27] Nasjonalbiblioteket – National Library of Norway, *Definer et korpus med innholdsdata og metadata*, 2024, https://dh.nb.no/run/korpus/ [accessed 4.12.2025].

as needing further verification. We also checked the database using some lists of textbook series that we had developed for a previous project, based on archive and database searches[28]. We found several books that had not been included in our search so far and did supplementary searches with subject lærebok [textbook] and with title regne* [calculate*] and rekne* [calculate*], resulting in 263 additional books.

Finally, we checked the database meticulously. We accessed each of the remaining full-text books to check that the information in the database matched the information on the front page of the book. We also checked every textbook series to see if there were individual books missing (as books published for one grade could also be expected to be published for the other relevant grades). In the end, the database included 1948 books. For each book, we also coded for

- Type of book (student textbooks, exercise books, teachers' guides, and so on),
- Grade level,
- Edition,
- Corresponding curriculum,
- Country of first publication.

We decided to code for the country of first publication as we were, in the initial phases of coding, struck by the number of textbook series originating outside of Norway.

For the analysis in this paper, we only include the first edition of each textbook. The inclusion of all editions of textbooks would be very time-consuming, particularly as the publishers did not seem to adhere to a clear distinction between a new edition and simply a new printing with some minor changes. Therefore, inclusion of new editions would involve a careful analysis of whether the changes made should be considered important enough to call it a new edition. We are aware that the analysis of different editions of a textbook can be fruitful[29], but the scope of the current study made that impossible.

For the analysis, we include only the primary textbooks, not books of tasks, teacher guides, and so on. Moreover, Norwegian textbooks are published in two variants of Norwegian: nynorsk and bokmål. We do not include textbooks in nynorsk, as all textbooks also exist in bokmål. After reducing the database in this way, the resulting number of textbooks included in the analyses in this paper is 467. We will refer to this selection of books from the main database as the reduced database. We have grouped textbooks into textbook series. In all, there are 101 textbook series, some consisting of just one textbook, others consisting of several books for each of up to seven grades.

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[28] H. Opsal, B. Smestad, *Concepts introduced in Norwegian textbooks before, during and after the New Math period*.

[29] See G. Schubring, *On the methodology of analysing historical textbooks: Lacroix as textbook author*, "For the Learning of Mathematics" 1987, vol. 7, no. 3, p. 41–51.

To answer the research questions, we have analysed the reduced database in four ways:

- Created timelines in the style of Prytz to identify active and less active periods in textbook series production[30]. (RQ1)
- Analysed for the arrival of new publishers and new authors on the stage. As part of this analysis, we analysed the import of foreign textbook series to Norway. (RQ2)
- Compared with Sweden, including the possible effect of the abolition of textbook review in Sweden. (RQ3+RQ4)

Findings

We will first provide an overview of the textbook production in *Folkeskolen* and *Barneskolen*. Then we will give a similar overview of *Framhaldsskolen*, *Realskolen*, and *Ungdomsskolen*. In the figures, we also mark the relevant national curricula (1939 and 1960 experimental curriculum for *Folkeskolen*, 1971 and 1974 for *Grunnskolen*, and 1935 for *Realskolen*). Thereafter, we will give more details on the publishers, authors, and nationalities of the textbooks.

Fig. 1 shows the production of textbook series for *Folkeskolen* (grades 1–7) and *Barneskolen* (grades 1–6). We chose not to include *Ungdomsskolen* (grades 7–9) in this figure, as *Ungdomsskolen* had separate textbook series, which would dominate the impression from the figure.

For *Folkeskolen*, there were textbook series produced in the 1930s, 1940s, and 1950s, with a peak in 1940/1941 with five textbook series (Fig. 1). This peak may be due to the curriculum of 1939. For *Barneskolen*, we find that textbook production increased in the early 1970s, as should be expected due to new curricula. The increase started in the late 1960s, with foreign textbook series, partly connected to New Math. However, there was also a peak in 1980, which cannot be linked to a new curriculum since there were no new curricula between 1974 and 1987.

From 1960 onwards, many textbook series were adapted to Norwegian curricula from foreign originals. Indeed, in this period, there were more foreign textbook series than Norwegian ones in *Barneskolen*. A total of 16 textbook series were published in the period from 1930 to 1959. All of these were Norwegian. Correspondingly, 21 textbook series were published in the period 1960 to 1983 (Fig. 1). Of these, 12 were of foreign origin.

Since the experimental plan for the nine-year compulsory school came as late as 1960, there were no textbook series for *Ungdomsskolen* before that year. For *Ungdomsskolen*, there was a peak in the number of textbook series in 1976, which can be linked to the new curriculum of 1974. Unlike for *Barneskolen*, there are more Norwegian textbook series than foreign ones in the period from

[30] J. Prytz, *The production of textbooks in mathematics in Sweden, 1930–1980.*

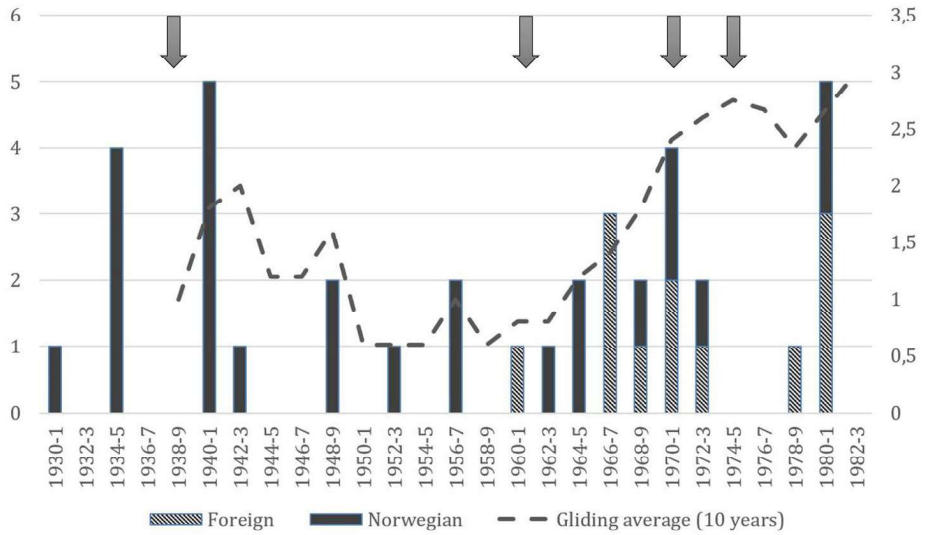

Fig. 1. Textbook series in *Folkeskolen* and *Barneskolen*, marked with Norwegian and Foreign. Arrows indicate new curricula.

Note: Created by the authors.

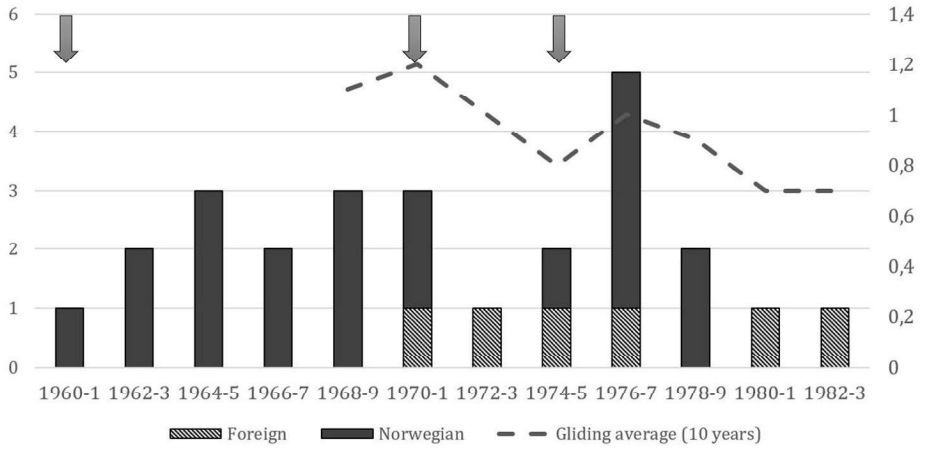

Fig. 2. Textbook series in *Ungdomsskolen*, marked with Norwegian and Foreign. Arrows indicate new curricula.

Note: Created by the authors.

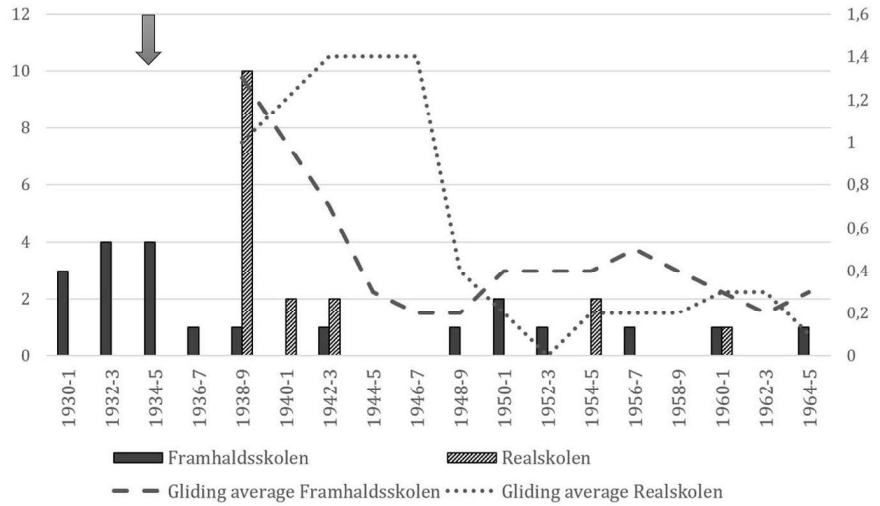

Fig. 3. Textbook series in *Framhaldsskolen* and *Realskolen* from 1930. Arrows indicate new curricula.

Note: Created by the authors.

1960 to 1982, with a total of 26 textbook series, 6 of which are foreign (Fig. 2). In addition, there were two textbooks that were written in collaboration between Norwegian and foreign authors, which we do not consider 'foreign' in that they were not first published elsewhere and then adapted for Norway.

Regarding the production of textbook series for *Framhaldsskolen*, no particular year stands out (Fig. 3). However, many new textbook series were introduced for *Realskolen* in 1938/1939. *Realskolen* was introduced with a law of 1935, leading to the need for new textbooks. When experiments with *Ungdomsskolen* started in 1955, an increasing number of students attended *Ungdomsskolen* instead of *Framhaldsskolen* and *Realskolen*. This may explain the lack of new textbooks at the end of this period.

Some publishers have produced mathematics textbook series throughout the period we are studying in this paper, and for all school types. This applies to Aschehoug, Cappelen, and Gyldendal. In addition, Fabritius also published textbook series from the 1940s, but on a smaller scale than the others.

In our database, there are some publishers that only published mathematics textbook series in the 1930s and 1940s. Some of these were bought by other publishers, and others continued as publishers without publishing textbooks in mathematics. There were also some publishers who published textbook series for a shorter period, with Dreyer, Eide, Eli, NKMM, Samlaget, and Tanum only in the 1960s and 1970s. Some of these publications are mostly textbooks connected to New Math.

One interesting finding is the influx of foreign textbooks. We find no foreign textbooks published in Norwegian editions between 1930 and 1960. From 1960 to 1980, there were 12 foreign textbooks for *Folkeskolen* or *Barneskolen* published in Norway. There were also 6 foreign textbooks for *Ungdomsskolen*. In these numbers, we do not include textbooks written cooperatively across borders, for instance the Nordic Committee materials. The foreign textbooks were originally from Sweden (11), the US (6) and Denmark (1).

Table 2 shows that the percentage of authors who were new was higher from the 1960s. This was partly due to the increased number of textbook series published, of course, but also the increased number of authors per textbook series. While textbooks for *Folkeskolen* had 2.5 authors on average, textbooks for *Barneskolen* had on average 3.5 authors, and for *Ungdomsskolen* 3.8 authors. For every five-year period from 1960, the majority of authors were new authors. In the table, we also include foreign authors. By foreign authors, we mean the original authors of books that were first published outside of Norway, as we have not been able to establish the nationality or nationalities of each author. Due to the influx of textbooks from other countries, a significant number of authors in the period 1960–1982 were 'foreign' in this sense.

Table 2. Number of authors (Norwegian and foreign combined), new authors, and new foreign authors in different periods.

	Number of authors	Number of new authors	Percentage of new authors	New foreign authors
1930–1934	5	5	100%*	
1935–1939	5	1	20%	
1940–1944	6	3	50%	
1945–1949	9	4	44%	
1950–1954	6	2	33%	
1955–1959	6	1	17%	
1960–1964	19	16	84%	4
1965–1969	38	34	89%	9
1970–1974	39	32	82%	8
1975–1979	45	29	64%	
1980–1982	23	15	65%	10

* As this project does not include textbooks before 1930, all textbook authors in 1930–1934 is considered 'new authors'.

Due to the large number of authors, we have not been able to research the authors' backgrounds.

Most of the textbook authors have only written textbooks linked to one curriculum, but there are also several who have written textbooks linked to several cur-

ricula. There is only one author, Torgeir Bue, who was active in textbooks linked to four different curricula. Bue started as a teacher educator in Kristiansand in 1946, and he became the director of the practice school in Kristiansand in 1950[31]. He was the man behind one of the foremost textbook series in arithmetic at that time. He was asked by the publisher if he could revise the textbook series they published because there were no relatives of the previous authors who could do the work. He got his main ideas and inspiration from abroad. In addition to writing textbook series, he wrote in 1953 a book titled *Pedagogisk metodikk* [Pedagogical methodology]. This book was published in many editions throughout the 50s and 60s, and it is still frequently referred to today.

There are seven authors who are active both before 1971 and after 1974, i.e., they are active on textbooks linked to three different curricula. Regarding authors linked to two curricula, there are 7 authors who have written textbooks both before 1939 and after, 10 authors before 1960 and after, 4 before 1971 and after, and 6 before 1974 and after.

Concluding discussion

As in Sweden, textbook production was much more active in the period 1960–1980 than in the period 1930–1960. One of Prytz's points was that an increase in textbook production often followed new curricula, but that there were exceptions. Most prominently, there was a surge of new textbooks around 1976, many years after the new curriculum of 1969. Prytz connects this to the abolition of mandatory textbook review. However, we find a similar surge in Norway in 1980, years after the temporary curriculum of 1971 and the 'final' curriculum of 1974. Norway did not abolish mandatory textbook review until 2001, so that could not be a factor in Norway. We would like to propose two alternative theories: First, when some years have passed since a new curriculum was introduced, schools' textbooks are getting worn and teachers may be looking for alternatives. This may particularly be the case when a new curriculum is rather radical, as there may be many problematic sides with the first textbook series published. This reason would hold for both countries. In Norway's case, there is an additional factor, in that many schools must have believed in the government's statement that Alternative 2 of the 1971 plan (New Math) would eventually be the only plan. We know (based on our own experiences and personal communications) that many schools bought textbooks in 1971 that were heavy on set theory, and that they kept these books into the late 1970s. When many schools had to renew their textbook collection due to wear and tear and couldn't reasonably buy the old series with New Math that had, in the meantime (in 1974), been watered down in the curriculum, there was a significant market for modern textbooks with less New Math. This reason holds for Norway, but also

[31] *Øyslebømann som skal lære barna til å bli regnemestre*, "Lindesnes" 17.01.1964, no. 6, p. 4.

partly for Sweden, even though there was no new curriculum, as the message to schools and teachers was loosened in the mid-1970s. This theory is supported by Prytz's finding that some of the post-1974 textbooks in Sweden were without New Math[32]. Thus, while the abolition of textbook review in Sweden was necessary for publishers to publish textbooks that the schools wanted, in Norway, New Math had already been mostly removed in 1974, but schools were not necessarily ready to buy new textbooks until a few years later.

A striking finding in our study was the influx of foreign textbooks from 1960 onwards, which were translated and edited to suit the Norwegian curriculum and context. It is perhaps reasonable that foreign textbooks entered the market at a time when there were international efforts to change the content of mathematics. However, according to Prytz (personal communication, December 20, 2024) foreign textbooks were rare in Sweden in the 1960s and 1970s. In Norway, we see that this trend continued well after the New Math period had passed. In our material, as late as 1982, a new textbook series with foreign origin was introduced. We are aware that many later textbook series on the Norwegian market also have foreign origins[33], even though that is not part of the current study, and that Norwegian textbooks have also had foreign editions[34]. Obviously, the influx of foreign textbooks can be seen as just a part of a general internationalization in society, but we find it reasonable that New Math had a role to play. As Norway was a bit behind Sweden, it makes sense that New Math textbooks from Sweden were published in Norwegian editions. Once publishers experienced that textbooks could successfully be imported and edited for a new curriculum, that solution must have seemed tempting to many.

The period from 1960 was a time of new ideas in mathematics education, which is also visible in the percentage of new authors. We also notice an increase in the number of authors per book. We can provide some suggestions for why this happened: in a period of curriculum reforms, it is important to get to the market quickly, so it may be simply a question of publication speed. Also, we have a theory (which we have not analysed) that the textbook series (including exercise books, teacher guides, etc.) became more voluminous, thereby demanding more authors.

Future research

To understand how curricula are implemented, it is essential to consider textbooks. To understand textbooks' role, it is necessary to understand how textbook

[32] J. Prytz, *The New Math and school governance: An explanation of the decline of the New Math in Sweden*.

[33] For instance, the Swedish textbook *Räkneresan*, published in Norway as *Regnereisen*.

[34] For instance, the Norwegian textbook *Multi*, published in Sweden as *Pixel*.

production has varied over time. For example, our study demonstrates that when new curricula were introduced in Norway during the 1960s and 1970s, the new textbooks were not predominantly authored by established textbook writers. Instead, there was an influx of new authors, as well as foreign textbooks that were edited for the Norwegian market. This aspect should be considered when explaining the implementation of New Math.

Our study provides an overview of textbook production in Norway from 1930 to 1986. The comprehensiveness of the National Library, along with our work to check for omissions, ensures that our overview is nearly complete. However, for this study, we decided not to include new editions of textbooks, as we found that publishers' definitions of a new edition varied widely. Furthermore, due to the lack of public information on book circulation, our study cannot distinguish between commercial successes and failures, which means we do not know which individual textbooks reached the most classrooms.

The findings in this study point to other possibilities for research. The influx of foreign textbooks from 1960 onwards presents an opportunity to study the modifications made to foreign textbooks when they were adapted for the Norwegian market and curriculum. Such a study could highlight what the key differences perceived by publishers at the time were between, for example, Norway and Sweden. Additionally, it would be interesting to investigate whether similar (but opposite) modifications are made when Norwegian textbooks are adapted for other markets and curricula.

A similar idea concerns textbook series that are based on previous textbook series by the same authors and publishers. It would be of interest to see which modifications are made to a textbook series when it is adapted to fit a new curriculum, and how this compares to textbook series that are written from scratch for a new curriculum.

Moreover, the database of Norwegian textbooks presents several opportunities for future research. The National Library offers apps that allow for full-text searches in the books that are included in our database. We are already investigating which possibilities such full-text searches provide for investigating the content of the mathematics subject over time by searching for words in the textbooks[35]. For such purposes, having 1986 as an endpoint is not reasonable, so we are considering expanding the database to the present. We do hope that other countries will also create such databases, which will make comparisons between countries possible.

[35] B. Smestad, H. Opsal, *Studying curricula reform through a full-text database of Norwegian textbooks: Findings and methodological considerations*, unpublished manuscript, typescript, 17.01.2025; Iidem, *Definitions of quadrilaterals in Norwegian mathematics textbooks from 1930 to 1987*, unpublished manuscript, typescript, 17.01.2025.

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