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Managing expectations by projecting the future school :
Observing the Nordic future school reports via temporal topologies

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Abstract

This study focuses on the politics of time in education by analysing ‘The Future School’ reports published by Nordic state authorities between 2010 and 2015. Building on a system-theoretical understanding of social time, steering and second-order observations, we investigate how temporal political communication frames the future of Nordic basic education. By applying semantic analysis, we identified four temporal topologies according to which these reports deal with the future: (a) calculated futures based on future projections with numbers; (b) unpredictable futures based on future projections contrasting learning with adaptivity; (c) technology-determined futures; and (d) personalised futures based on child well-being. Whereas these topologies constitute a shared semantical base for discussing the future of school education, a comparison of the reports also reveals differences and paradoxes between the temporal topologies in the Nordic welfare state context.

Keywords

The future school, systems theory, education politics, Nordic countries, temporal topologies

Introduction

For education politics, the future seems to constitute a perennial problem. On the one hand, the future is often discussed as a new and better place where society is heading with the help of education. On the other hand, there is an increasing tendency to refer to the future as a state of emergency (Opitz and

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Tellmann, 2015) that is about to arise if we do not change our current educational policies and practices. In recent years, global and local policymakers have discussed these future-related educational opportunities and emergencies in terms of learning statistics (Nusche et al., 2011) and 21st-century skills in particular (Ananiadou and Claro, 2009; Organisation for Economic Co-operation and Development (OECD), 2018; Voogt and Roblin, 2012).

If one seeks to examine the future not just as something that might arrive sooner or later, but as a point of reference that reflects and shapes our current expectations, one should not overlook Niklas Luhmann's social systems theory. Although Luhmann did not witness the current politics of time, his theory offers conceptual tools for understanding the evolvement of temporal orders and the future (Opitz and Tellmann, 2015). In recent studies, Luhmann's understanding of social time has been used, for instance, when analysing the historically changing forms of the future in education (Mangez and Vanden Broeck, 2020). In this paper, the focus is on how educational futures as a matter of multiple co-existing expectations are dealt with in a contemporary policy context.

In contrast to the idea of chronological time, Luhmann (1993; 1995) approaches time as a systemic operation. Following Reinhart Koselleck's thinking, Luhmann (1976) defines the past as a space of experience and the future as a horizon of expectations. According to Luhmann (1990b), a system orients itself into the future with the 'mirror of the past'. A system's future is not past determined, however. Besides composing patterns between past experiences, the memory function of a social system also utilises forgetting, and the reconsideration or relevancy of past-present patterns. By referring to time, systems can thus increase or decrease their flexibility and freedom (Esposito, 2011; Luhmann, 1997b). The process in which the future is used to increase the number of options is called 'futurisation', whereas using the future to decrease the number of options is referred to as 'de-futurisation' (Luhmann, 1976).

In a functionally differentiated modern society, social systems, such as education, politics, science and economy, are related to each other in a co-evolutive manner (Vanderstraeten, 2006). Organised sensitivity between social systems means that their futures – that is, horizons of expectations – co-evolve. The oscillation between internal and external expectations constitutes a peculiar *temporal topology* (Philippopoulos-Mihalopoulos, 2009), one in which a system's internal communication is constantly irritated by external future projections. Besides the co-evolutionary change, intentional attempts are made to tailor school education to changing external expectations. In school education, this phenomenon often takes the form of a reform. Since the birth of modern mass schooling, reforming education has been a political affair. One could even argue that the political system has become the main domain in which various societal expectations related to schooling are managed (see Luhmann, 1990a: 75).

Luhmann, however, does not assume that the political system has direct control over the education system. Instead, Luhmann (1997a) uses the concept of *steering* to describe how systems attempt to influence the self-steering of other systems. This could be done by introducing a temporary foreign advice system, by difference-minimising programmes, or by contracts and numbers (Andersen and Thygesen, 2004; Luhmann, 1997a). When approaching education politics as a structurally mediated interference, one should pay attention to the relevance of *organisations*. Alongside function and interaction systems, organisations as the third type of social system have a special role in processing and balancing system-related expectations (see Luhmann, 1995; Nassehi, 2005). Unlike function systems, which are operationally closed around their binary codes, organisations are closed around decision-making, which enables them to bring together different system-related expectations (Luhmann, 2000).

In this study, we focus on the problem of the future in education politics by analysing 'The Future School' reports published by the state authorities between 2010 and 2015 in three Nordic countries: Finland, Norway and Denmark. From a system-theoretical perspective, comparing

Nordic future school reports is interesting for several reasons. On the one hand, the three countries are similar in that they can be said to belong to the North Continental welfare tradition (Esping-Andersen, 1990), in which the ideas of social inclusion and the universalism of education have strong and deep roots. Partly owing to their shared history of educational ideas, these countries also share a structurally similar comprehensive school model in K-9/10 basic education. One could therefore expect to find some similar patterns when it comes to the way in which the temporal political organisations in these countries project the future school. On the other hand, and despite globally or trans-locally shared educational ideas, education politics as well as education in the structural form of schooling are territorially organised. Hence, it is interesting to investigate how reports sharing the same title are approaching the future differently, and how these differences lead to a reconsideration of the regionality and globality of education politics in general.

Second-order observation, semantic analysis and comparison of temporal topologies

The research methodology applied in this study is based on Niklas Luhmann's idea of *second-order observation*, where the focus is on identifying how the world becomes observable through system-referential distinctions (Andersen, 2008; Luhmann, 1993). Our first point of entry to second-order observation is *semantic analysis*, which focuses on how different ideas, meanings and expectations are interrelated, thus constituting a semantic reservoir for communication (Andersen, 2008). Luhmann (1995: 75) highlights three meaning dimensions: the *temporal dimension* refers to the idea of a constantly moving present as a unity of the difference between the past and the future; the *social dimension* refers to how persons and social groups are socially constructed and redivided by using distinctions such as us–them; and the *factual dimension* refers to the choice of themes and objects for communication, that is, distinctions between *this* and *that* (Andersen, 2008; Luhmann, 1995). In this study, the empirical analysis focuses on the distinctions that are used to communicate on the future. Although the system/environment difference can be solely observed in the factual dimension, one could add the temporal condition to this distinction, for example by separating *this* from *not yet that* or from something that *has been the case* but will not apply anymore in the future (Luhmann, 2012: 267). To describe the guiding distinction that links the factual and temporal dimensions, we have applied the concept of *temporal topology*.¹

Originating from ancient Greek, the word *topos* has at least two different meanings. First, it refers to a topic: what is discussed. Besides topics, Luhmann uses the concept of themes, which are 'more or less indefinite and developable complexes of meaning about which one can talk and have the same but also different opinions' (Luhmann, 1971: 13). For the system of politics, themes are important semantic structures through which politics sensitises itself to the social environment (Luhmann, 1990a: 41). As Hannken-Illjes (2008) argues, in this sense Luhmann's concept of themes comes close to the idea of *topos* as a topic. Utilising the concept of temporal topology in the domain of semantic analysis, we aim to observe how the future emerges in regard to both *what* is discussed and *how* the future becomes temporarily projected. The second meaning of *topos* – and also our point of entry to a comparison of temporal topologies – is related to the idea of *topos* as a space, or spatiality of meanings, symbols and ideas (Tønnesson and Sivesind, 2016). When writing a theory of the social systems in the world society, Luhmann did not pay attention to the question of geographical spaces and borders. Instead, he focused on the social distinctions through which the notion of space becomes possible. The second-order observer can, however, draw distinctions between the spaces that the multiple first-order observers are observing, especially if the first-order observer can be understood as an organisation. Whereas function systems such as politics and

education are systems in the world society, organisations as social systems often have territorial boundaries (Luhmann, 1982).

Instead of comparing states, we compare three cases in which ad hoc committees assigned by state organisations are observing the problem of the future school in the Nordic context. In order to identify the similarities and differences between contextually different cases, we have applied functional analysis. In Luhmann's systems theory, the concept of function refers to the unity of a problem and a solution. The aim of applying functional analysis is to highlight the unity of differences in problem–solution selection – in other words, 'Functional analysis uses relations to comprehend what is present as contingent and what is different as comparable' (Luhmann, 1995: 53; see also Knudsen, 2010; Luhmann, 1971). Although Luhmann uses the functional approach mainly for historical analyses, it can also be used in the contemporary analysis of comparative politics, as we recommend through our analysis. After all, it is in the very nature of politics to communicate about problems from the perspective of solving them. Although the reports analysed in this study were published by different state organisations at different points in time, they could be compared in terms of *functional equivalency* (Luhmann, 1995: 55; Van Deth, 1998), as they present communication about expected changes in reference to the comprehensive school.

Future school reports as political steering documents

According to Luhmann (1990a), the function of politics is to produce collectively binding decisions. The basic challenge for the modern welfare state is that politics is expected to be inclusive when making decisions in a complex society requiring different kinds of expertise. For this reason, political decision-making has two sides: the production of decisions (*Herstellung*), which means preparing decisions in committees and expert boards, and the presentation of decisions (*Darstellung*), which refers to the way in which politicians debate the decisions in a way that is understandable for their voters (Brunczel, 2010). In this study, the focus is on public inquiry reports and on the production side of decisions being made in the contemporary organisation established by the state. As a document type, the reports are typical strategy documents that establish a basis for further decisions, thus reflecting the 'expectations about how to communicate about the competitive environment and what types of decisions are to be communicated' (Seidl, 2004).

The research material used for this study comprises six future school reports from Denmark, Finland and Norway. The documents were systematically selected on the basis of their topics, with the 'future school' concept included in the title (*Fremtidens Folkeskole* (DEN) = the future public basic school, *Tulevaisuuden Peruskoulu* (FIN) = the comprehensive school of the future and *Fremtidens Skole* (NOR) = the future school). Another selection criterion was that the reports were published either by an official state author, such as the Ministry of Education, or by a task force assigned by the state. The country-specific list of documents analysed, including the composition of work tasks, is presented in Table 1.

The Norwegian Future School Committee, which was appointed by the national government, included three professors of education, a chief municipal education officer, a journalist, a person known from public debate with a professional background in medicine, an industrial leader, a school principal and a physics doctoral student. A group of officials with educational/scientific backgrounds and experience from the national agency of education assisted the committee, which invited various stakeholder groups to provide comments during the report-writing process. The original assignment for the commission was to assess the skills that will be needed in the future and to point out which skills, competences and qualifications students should acquire to succeed throughout their academic careers, and to be able to actively participate in civil society and working life in the future. After one year of work, the commission published an interim report, 'NOU

Table 1. Research data: three countries, six reports.

Country	Publisher	Document(s)
Denmark	Skolestyrelsen (The Agency for Evaluation and Quality Development of Primary and Lower Secondary Education), The Danish Evaluation Institute (EVA)	Three reports: Skolestyrelsen (2010). <i>The School of the Future – One of the Best in the World</i> Report A: Recommendation report (2010a) Report B: Background report (2010b) Report C: Case catalogue (2010c)
Finland	Finnish Ministry of Education and Culture	One report: OKM (2015). <i>The Comprehensive School of the Future</i>
Norway	Norwegian Ministry of Education, Norges offentlige utredninger (NOU)	Two reports: NOU (2014: 7). <i>Pupils' Learning in the School of the Future</i> NOU (2015: 8). <i>The School of the Future. Renewal of Subjects and Competences</i>

2014: 7. Pupils' Learning in the School of the Future'. A year later, on 15 June 2015, they delivered the final report called 'NOU 2015: 8. The School of the Future. Renewal of Subjects and Competences' to the Ministry of Education and Research.

The Finnish future school task force, appointed by the Finnish Ministry of Education and Culture, included various representatives from the Ministry of Education, the National Board of Education, political parties, the Trade Union of Education in Finland, the Association of Finnish Principals, the Association of Finnish Independent Education Employers, the Trade Union of the Public and Welfare Sectors, the Association of Finnish Local and Regional Authorities, the Finnish Parents' League, the Office of the Ombudsman for Children, and secondary-level student organisations. The task force, operative from 28 February 2014 until 1 June 2015, was also joined by 45 volunteer researchers from several universities, who accepted the responsibility for writing the report. The steering group was given the task of preparing a description of the present state of comprehensive education, clarifying the reasons and phenomena behind declining learning outcomes and identifying development needs. In 2015, the task force delivered its final report 'The Comprehensive School of the Future' (OKM, 2015).

In Denmark, a task force of six people was appointed by the government: a research director, a Swedish professor of education, a comprehensive school leader, a director of an upper secondary school and two teachers (Skolestyrelsen, 2010b: 8–9). The task force's mandate was to map the strengths and weaknesses of the Danish school system and provide recommendations and solutions to enable the government to move the Danish school system into the top five in international rankings by 2020 (Skolestyrelsen, 2010b: 169–171). The task force's reports were based on Danish and international research and reports, and on 20 school visits (17 of which were conducted by the Danish Evaluation Institute). Three hundred people were interviewed. The task force also held meetings with 21 interest groups (e.g. the Danish Teachers Association, Local Government Denmark, and the Association of Danish School Pupils) and with researchers. Nine research projects were conducted for the task force by researchers and consultants (Skolestyrelsen, 2010b: 9–12). The work of the task force resulted in three reports: Report A briefly summarises the recommendations; Report B is the background report containing the research and knowledge on which the recommendations were based; and Report C communicates the findings and recommendations for practitioners as 'best practice'. In this article, we primarily focused on Report B, 'The School of the Future – One of the Best in the World', which comprises 14 chapters.

Despite contextual differences, all of the documents included in this study have a mutual informative status in representing serious semantics (Stäheli, 1997) of state-driven education politics in the Nordic welfare context. As such, the reports can be observed as functionally equivalent steering documents (Luhmann, 1997a); by projecting futures, framing problems and offering solutions, future school reports do not directly oblige educational actors to change their practices, but rather create conditions and delicately suggest rethinking the school with reference to society's future challenges and opportunities.

We began our analysis with a thorough first reading of the texts, paying attention to the factual and temporal dimensions of what was discussed in regard to the future. The second step required translating the texts from the original language into English, and identifying similarities and differences in how the future was projected in different cases. Finally, we determined the four temporal topologies for the future school: (a) calculated futures based on future projections with numbers; (b) unpredictable futures based on future projections contrasting learning with adaptivity; (c) technology-determined futures; and (d) personalised futures based on child well-being.

Temporal topologies of the future school reports

Calculated futures: projecting the progress of the future school with numbers

Since the birth of modern statistics, attempts have been made to use numbers to communicate about future probabilities and possibilities. Numbers are an important form of complexity reduction for both the education system and the political system. In school education, numbers and alphabetical grades are used for communicating on student performance in relation to other students (Vanderstraeten, 2002: 248). As a subsystem that makes collectively binding decisions about the distribution of public resources and the organisation of welfare goods, welfare state politics often uses numbers to convince the public about the welfare progression. The key ratios are different in the different administrative sectors. In the domain of education politics, state organisations have started using national and international learning statistics to communicate the *performance* of school education for the economic and political system. Although the assessment policy has been criticised for measuring something that no one teaches (Labaree, 2014), international large-scale assessments, such as the Programme for International Student Assessment (PISA), are currently considered important indicators of social fairness and the state's economic competitiveness (Hansen et al., 2020; Sivesind, 2019; Waldow and Steiner-Khamsi, 2019).

In the future school reports examined in this study, we observed various ways in which numbers had been used to communicate about the future and future school. First, in the Finnish (OKM, 2015), Danish (Skolestyrelsen, 2010b) and Norwegian (NOU, 2014: 42–52) reports, issues related to the future school and society are framed by the development of national learning outcomes, measured through both national testing and large-scale, international assessments, such as PISA. All of the reports outline a set of solutions for improving student performance in the future. Whereas the Finnish report recommends more assessment and supportive actions, such as positive discrimination, to reverse the trend of declining and diverging learning outcomes, the Norwegian reports consider content renewal formulated within the national curricula as a solution for improving student performance (NOU, 2014: 10; 2015: 61). The Danish reports follow up their political assignment by proposing a list of actions to make Denmark a top-five PISA country by 2020. For example, report B notes that learning goals should be clearer (Skolestyrelsen, 2010b: 57) and schools should be made accountable for achieving these goals by making the assessment results available to the public (Skolestyrelsen, 2010b: 89–92). All of the reports regard teacher education as a key solution for improving student performance and the accuracy of assessments, as well as reducing social segregation (NOU, 2015: 98; OKM, 2015: 98; Skolestyrelsen, 2010b: 23).

Second, numbers are used to indicate the efficiency and productivity of schooling. As the Danish report B argues, outcomes do not measure performance in relation to the resources used (Skolestyrelsen, 2010b: 19). In fact, the political mandate for the Danish task force was to ensure 'more value for money' (Skolestyrelsen, 2010b: 8, our translation). Whereas the Finnish report suggests the need for sufficient resources, the Danish report B suggests more efficient cost management by allowing schools to hire non-teacher educated staff and removing class size limits. Larger schools are recommended to ensure that teachers teach within their primary discipline for the most part (Skolestyrelsen, 2010b: 110, 138). The Danish and Finnish reports emphasise the link between learning goals and long-term global economic growth. Based on earlier observations (Hanushek and Wössmann, 2008; OECD, 2010), both the Finnish and Danish reports argue that gross domestic product (GDP) in the member countries of the OECD would grow by 600% or US\$260 billion by 2090 if all OECD countries succeeded in raising their learning outcomes to the level that Finland reached in 2006 (OKM, 2015: 50–57; Skolestyrelsen, 2010b: 50).

Third, on a related point, the reports represent how teachers' actions and students' attitudes correlate with learning outcomes, which subsequently leads to observed solutions for achieving better results in the future. Whereas the Danish reports emphasise teachers' actions and the number of hours teachers spend teaching and children spend learning, the Finnish report focuses more on linking the correlations between learning outcomes and students' attitudes (OKM, 2015: 36–39). Interestingly, the reports of both countries also discuss child well-being and learning outcomes but in a different manner: child well-being is viewed in the Danish report B as a key to achieving better learning outcomes (Skolestyrelsen, 2010b: 66), whereas in the Finnish report, testing is considered to cause stress, anxiety and demotivation among students (OKM, 2015: 69–72).

An unpredictable future: projecting the future school by contrasting learning with adaptivity

Another notable future concern in the reports is the question of the skills required in the future society and working life. The speed of societal change in modern society has challenged the idea that the knowledge required in the future could be identified and learned in the present moment. Whereas school subjects were previously seen as the core of school education, one now speaks of school education as the learning of skills and as preparation for future learning. On the one hand, by shifting the focus away from content to endless adaptation, the education system has lost its fundamental 'canonical' security. On the other hand, learning to learn symbolises the autonomy of the education system in relation to content such as school subjects (Luhmann, 2002: 194).

The demands for adaptivity are highlighted in the analysed documents, especially in the Norwegian future school reports, which focus on what students will need to learn at school from a 20- to 30-year future perspective (NOU, 2014, 2015). The challenges outlined in the Norwegian reports are centred on the trends described in both international and national policy contexts, such as 'rapidly changing communication and media technologies, challenges related to sustainable development, demographic changes, both locally and globally, with ethnic, cultural and religious diversity, urbanisation, growth in consumption and a knowledge-based and internationalised working life' (NOU, 2015: 8). The idea that the future society will be fundamentally different from the world we are currently living in is also presented in the Finnish report, in which education is presented as a key to the future. Unlike the Norwegian reports, which raise questions about future global challenges, the introduction to the Finnish report takes a rather survivalist and competitive stance. Whereas the report cites Finland as a global forerunner in education, it states that changes in the economy and in working life will require the current school to change: 'In the world of creative destruction, where the life cycle of innovations and business products is getting shorter and

shorter, one has to be ready to invent something new to increase one's chances of survival' (OKM, 2015: 17–18, our translation). The school must therefore be reinvented on a continuous basis.

The problem of the open future also calls for open solutions. One solution is to shift the focus away from subject-based teaching to competence-based teaching and learning. The Norwegian committee argues that competence is a crucial starting point for renewing school subjects and for re-designing curricula for the future. A particular recommendation is to replace the so-called subject-specific areas, which have traditionally comprised school subjects structured through age-based stages, specified by the curriculum, with four competence domains (NOU, 2015: 18): (a) subject-specific competence; (b) competence in learning; (c) competence in communicating, interacting and participating; and (d) competence in exploring and creating. The building blocks of subject-specific competence include self-regulatory skills (such as metacognition), work-orientated skills (such as digital skills), creativity and innovation, as well as the ability to think in a critical manner and resolve problems, both practically and theoretically. By constructing competences in reference to school subjects, subject-specific competence does not replace the subjects but makes it possible to claim that there is something more relevant to be learned than the set school subjects.

The concept of competence introduced in the Norwegian report also changes the future requirements for teaching and assessing students. It states that all aspects of student learning must be among the objectives that will guide their day-to-day activities at school. Standards such as engagement in and attitudes towards the subjects and one's own learning of the subjects, persistence, expectations about one's own mastery of the subjects, the ability to plan, perform and evaluate one's own learning processes, and the ability to communicate and interact with others are included. Deep learning and a focus on progression are keys to helping students master such skills (NOU, 2015: 87–96). Similarly, the Danish reports address competences related to students' *versatile development*, which is understood as the desire to learn more and involves curiosity, managing emotions, creativity and innovation. Versatile development also includes the opportunity to learn in different ways and in collaboration with others (Skolestyrelsen, 2010b: 77). Rather than 'competence', the Finnish report (OKM, 2015: 212) uses the term *future key skills* to refer to various skills, such as emotional skills, communication skills, problem-solving skills, learning to learn skills, and an entrepreneurial attitude. Interestingly, the Finnish, Danish and Norwegian reports refer to competencies also as important dimensions of the capability of a teacher or school leader to professionally operate within the local school. Whereas competence as a learning goal points to the future, competence as a professional's ability often underlines what is currently missing. Often, the problem concerns the present level of competence among teachers and leaders, and the solution lies in another kind of teacher education (Skolestyrelsen, 2010b: 23–36; see also OKM, 2015: 94–105).

A predetermined future: technology as a vehicle for the future school and society

Above, we have presented two temporal topologies that explicitly link the past to the future by projecting the future either as a calculable variant of the past or as the unknown continuum of the randomly moving past. Next, we adopt another stance towards future projections and illustrate how such projections do not necessarily make any claim about the nature of the future, but merely suggest how moving from the present to the future should be carried out. One way of achieving this transition according to the future school reports is by employing new technology. However, expectations towards the use of new technology and how digitalisation will resolve present and future problems differ.

First, some reports argue that new learning technology will develop education along with the rapidly changing communication and media technologies in the rest of society (NOU, 2015: 10, 22; OKM, 2015: 18). There seems to be unanimous certainty that technological innovation will modernise education into a more innovative and flexible enterprise. This certainty emanates from

the visions and scenarios of future labour markets, where the workforce will need to continuously adapt to evolving demands within a highly digitised society (NOU, 2015: 23; OKM, 2015: 19). The Finnish report even argues for the ‘technological imperative’ by suggesting that schools should be transformed into test laboratories for the latest technology (OKM, 2015: 18). This would require more flexibility with new partnerships between schools and the technology industry, such as Finnish game development companies Rovio and Supercell. This could also benefit the export of education (OKM, 2015: 18, 80).

Second, the reports consider that technology will upgrade school pedagogy into new forms of learning designs. In one of the Norwegian reports (NOU, 2015: 24–26), both technological development and digitalisation are expected to change the content and methods in specific disciplines, such as mathematics, science and technology, language, and social and ethical subjects, as well as in practical and aesthetic fields. The Norwegian committee considered digital competence to be key in developing future citizens who can communicate in new ways, whereby students learn to participate with their own voice in public in a civilised manner, digitally or otherwise (NOU, 2015: 50). According to the report, digital media have ‘led to new communication cultures, genres and complex forms of expression which the pupils must be able to understand and use’ (NOU, 2015: 28). The report also pays attention to the risks of not learning at deep levels owing to the information overload caused by access to digital media, which entails a pedagogical problem in the school environment. Thus, students should learn to think critically and to evaluate sources (NOU, 2015: 33) in the school environment, where digital tools can help to assess the quality of their achievements (NOU, 2015: 81). The rapid growth in new technology is also associated with a societal risk, where individuals must take responsibility for their own security, such as learning to protect one’s own digitally stored information (NOU, 2015: 26). The lack of information communication technology (ICT) usage at the school level is considered to pose a serious threat to students’ socio-economic equality (OKM, 2015: 32).

Third, new technology should be deployed according to the assumption that technology has a game-changing nature for the future of learning and teaching. ICT is regarded as a way to solve the motivation problem among older students (Skolestyrelsen, 2010b: 129). It will enrich teaching by targeting pedagogical actions, and will help students to build a more coherent understanding of the world (OKM, 2015: 80). In the future, robots and holograms will be able to operate as teachers, and the Internet of Things combined with the technical interfaces between human and virtual worlds will open up a completely new world of learning (OKM, 2015: 18, 79). Meanwhile, adequate and up-to-date ICT skills must be taught to all teachers by developing teacher education and in-service training. One area in this regard is learning analytics, developed as a formative strategy to enhance students’ learning. Using digital tools, learning analytics will collect data about students’ development over time, continuously generating a new basis for teaching (NOU, 2015: 81).

A personalised future: child well-being in the future school and society

As a political self-description that seeks legitimacy by promising inclusion (Luhmann, 1990a), education politics in the welfare state must deal with the risk of exclusion. As already mentioned in the first analysis section, the risks related to exclusion are partly dealt with by observing the differences in learning statistics. However, focusing solely on child learning performance does not eliminate the risk of exclusion. As Luhmann (1995: 207) points out, school education simultaneously motivates and discourages. This raises concerns about whether child ill-being and demotivation to learn at school might be related to the continuous assessment and schooling itself. To deal with the unintended consequences of schooling, the reports address the future in a personalised form by discussing the well-being of children in the future school.

In the Finnish report (OKM, 2015), child well-being is broadly observed in terms of learning attitudes as well as mental and physical health. The report criticises the present school as a hierarchical and closed space where students' relations to adults and other students are somewhat fixed. In addition, the current school system is too performance-oriented, leading to cases of burnout and negative attitudes among students towards schooling and learning alike. What the report suggests is schools that are more open, the participation of students, more student-centred teaching, and a new evaluation culture focusing more on actions and less on people. New technology could enable learning experiences to be more individually tailored and thus more enjoyable. The report also emphasises the importance of school-day planning: school days should not be tightly scheduled and activities should be versatile. Students should be able to independently organise different learning activities, and schools should support social participation and making friends. In addition, schools are encouraged to include physical activities during the day (OKM, 2015: 67–75).

Student well-being is also mentioned as a concern in the Danish report B. However, unlike in the Finnish report, well-being is not at odds with being performance-oriented. Instead, well-being is observed as a prerequisite for the development of social and academic competence and as a predictor of the completion of continued education at the upper secondary level (Skolestyrelsen, 2010b: 67). In this sense, the personalised form of the future is used to link well-being with one's educational career. The main issues relating to student well-being are that well-being is not clearly defined and no national accountability instrument for measuring well-being exists (Skolestyrelsen, 2010b: 82).

In the Norwegian reports, well-being is conceptualised as being 'happy with life', which also corresponds to societal expectations about future concerns – 'to master life challenges' in general (NOU, 2015: 12, 52). From an adult's perspective, the aim is to prepare students to take responsibility for their own lives. A radical suggestion within the Norwegian context is to develop this field of knowledge into a practical/aesthetic subject. In addition to general knowledge about physical health, topics such as mental health, lifestyle, personal finances and consumption are suggested as appropriate learning areas within the subject of well-being. To supplement the generalised knowledge taught in schools, the subject is promoted as personalised, as it is expected to help each student to become self-confident.

Conclusions

In this study, we have applied Luhmann's system-theoretical conceptions of social time, second-order observation and steering to observe how Nordic future school reports project the future and the future school. In the analysed documents, we identified four temporal topologies according to which the future school was discussed. The first temporal topology, the future school as a function of measurable performance, presents the problem of the future school in the light of graphs and measurable correlations between inputs and outputs. Presenting the future only in the light of the present statistically calculated futures could be described as a form of de-futurisation and steering by decreasing the number of options in terms of how the future can be observed (Luhmann, 1976). However, to cope with a future that is different from what we can imagine at present, the analysed reports also introduce unpredictable futures, highlighting the importance of adaptivity. This second temporal topology focuses on the readiness to reconsider previously known facts and concepts and their relationships in new contexts, as well as on the ability to transfer behavioural and cognitive patterns from one context to another in a creative way (see Barnett, 2012). In addition, the reports also attempt to link measurable learning outcomes to an open future by creating numerical scales for cognitive adaptivity (OKM, 2015: 38–39), as well as by linking learning outcomes to the concept of competence (NOU, 2014: 52). As a form of futurisation (Luhmann, 1976), this topology makes it possible to call on the educational administration and professionals to rethink school

education in the next society without describing the content of reforms. By deferring to educational practitioners in content selection, this approach may very well have some steering effects on educational organisations; nonetheless, it may also lead to unexpected problems due to the selection of programmatic actions that become purposive in character (see Sivesind et al., 2016).

The future school is also described in the analysed reports through explicit statements about the instruments that will take us into the future. Based on our analyses, we argue that technological development constitutes the third temporal topology for projecting the future school. The technology here is presented not so much as a goal but as a vehicle for both expected and unknown futures. Technology is thus used for futurisation by presenting both present and future problems as something that future technologies will sooner or later resolve (Luhmann, 2012: 322, 1997b: 362). However, by relying on future technologies, society often makes itself dependent on technology ‘in a manner not rationally planned’ (Luhmann, 2012: 315–316). Even though the economics would benefit from the promotion of technology in schools, learning technology also poses new risks related, for example, to student and individual privacy in a democratic society.

The future school is thus not only a question of improving performance, adapting to change and relying on technological development, but also about paying attention to individually experienced education and its possible effect on the future society. The fourth temporal topology, a personalised future, focuses on the future of child well-being in the future school and society. This topology, utilising both futurisation and de-futurisation (Luhmann, 1976), largely concerns dealing with the risks related to the self-fulfilling prophecies of calculated futures. On the one hand, the reports suggest that well-being is important for the future career of a student. On the other hand, well-being is considered a value in itself: something that should not be jeopardised in the name of external expectations. Even so, the intentional indifference towards learning differences might easily lead to indifference towards equality problems as well as ‘relevant difficulties in preserving the structures of education’ (Baraldi and Corsi, 2016: 117).

Besides the construction of the temporal order, our study aimed at comparing the context-dependent *topoi* of future projections. When comparing the reports, we noticed that in the Danish reports from 2010, the future school is mainly discussed in terms of calculated futures. The main goal in the reports is to elevate Denmark into the top-five PISA countries within 10 years without increasing costs. The reports include no vision of what imaginable but not yet real problems might arise, and what new or different competencies might become relevant or necessary. In the Norwegian future school reports from 2014 and 2015, the temporal starting point for observation is 20–30 years in the future. In terms of temporal topologies, the Norwegian reports emphasise the unpredictability of the future. The Finnish report includes a mixture of all temporal topologies, which is not surprising considering that over 40 experts participated in writing the report.

One should not try to explain these contextual differences simply by referring to geopolitical constructs such as countries. The differences also reflect the fact that the reports were written at different times. The Danish reports were published in 2010, which was also the peak time for the political discussion around PISA. The Norwegian report, published in 2015, was written at the time when the government was preparing for the curriculum reform. Regardless of the reasons for the differences, the reports could be described as different future constellations. The case specificity of future constellations does not imply that the temporal topologies are local – on the contrary. What we suggest instead is that the temporal topologies of this study reflect wider universal ideas on how schooling should contribute to society and its changes. Although comparative researchers – ourselves included – often attempt to understand education policies as globally and linearly moving ideas, we should also pay attention to the autopoiesis of political structures – and especially to organisational communication related to planning around education. Instead of approaching education politics as a monolithic system that is force-feeding education with one particular policy

future, focusing on the organisational communication level reveals how politics is managing expectations by communicating on multiple policy futures simultaneously.

Despite the contextually different future orientations, the reports share a progressive function with regard to political communication. The future school reports provide a forum for managing divergent expectations as united 'national will' by partitioning different ideas on the future school into different report chapters (OKM, 2015) or into different reports (NOU, 2014, 2015). Future school reports can thus be partly described as the *orchestration of potentiality* (Andersen and Pors, 2016), shifting the focus from present problems to future possibilities by consulting a range of stakeholders. However, the reports not only operate through futurisation (Luhmann, 1976) or by referring to the endlessness of education (Corsi, 2020). Calculative logic concerning future educational possibilities and emergencies, as well as demands to refrain from too high expectations in the name of child well-being, de-futurise the expectations by referring to seized futures. The reports also provide an instrument for combining the expectations related to performativity and technology with ideas of social equality and creativity. They are territorial self-observations that link particular Nordic welfare values with the global knowledge economy. In addition, by discussing child well-being as a value in itself, they provide a way to remain distinct from authoritarian education cultures (Takayama, 2018).

In addition to the use of text, the reports draw together different temporal topologies through images. For example, all of the reports include many pictures of individual children smiling and looking happy while working with a computer (NOU, 2015: 15; OKM, 2015: i; Skolestyrelsen, 2010a: 25). In the pamphlets on future schools, students and computers have been brought to the forefront and teachers have faded into the background. When discussing problems and what the schools lack, however, the reports seem to point to teachers, teacher education and in-service training. The imbalance between global educational ideals, such as individualism, technological progress and self-guiding students, and contextual political problem-pointing comes at a price. If some element of an education system, such as teacher education, is expected to function as the master key for change, such an element is also very likely to become overloaded with multiple and contradictory expectations. For example, in Finnish and Norwegian teacher education, various and constantly changing reforms tend to override each other, and teacher education reforms seldom accomplish their intended goals (Afdal, 2013; Hansen, 2016).

Even so, future projections can be used both to narrow down and to open up the number of available futures. Instead of trying to guess which future scenario will eventually overthrow other possible futures, it could be more fruitful to observe future projections as a contemporary way to manage co-existing expectations, both established and emerging. For the comparatist, this requires the sensitivity to detect and elaborate on the different social distinctions through which the past, present and potential futures become socially constructed. For the purposes of observing these often self-evident yet unrecognised distinctions, Niklas Luhmann's systems theory offers a well-calibrated and concept-rich toolkit.

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Note

1. As a scientific concept, topology has been adapted from mathematics to social studies to indicate the features and forms of time–space (see Decuyper and Simons, 2016; Marceau et al., 2001; Marres, 2012; Serres and Latour, 1995: 60).

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