Digital directions: Curricular goals relating to
digital literacy and digital competences in the
Gymnasium (stx) in Denmark.

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Abstract
Digital literacy and digital competences are increasingly being formulated as important educational goals. In that
regard, the precision, clarity and topicality of curricular guidelines relating to these concepts become vital, and this
calls for research that investigates how digital literacy and digital competences are represented in curricular docu-
ments. This study makes a contribution to knowledge in this field by investigating the general curriculum for the
Gymnasium in Denmark, with a specific focus on differences between the subjects. The article provides a qualitative
analysis of 150 paragraphs containing between 4 and 175 words. The findings suggest that aspects relating to digital
literacy and digital competences are broadly covered, but also that the different curricula formulate and organize these
in very different ways. The article furthermore identifies a clear division of labour between the subjects, where the
subjects within the educational field of Natural Science and Technology especially focus on ICT as a neutral learning
tool and on ICT-operational competences. The challenges relating to these findings are discussed.

Keywords
digital literacy, digital competences, Upper Secondary School, curriculum

Children and young people increasingly engage with different kinds of media and digital
technologies, both inside and outside school (Abreu & Yildiz, 2016; Buckingham, 2006;
Mills, 2019). Several researchers suggest that this pertinent digital culture calls for vigorous
pedagogical responses, which empower young people to be citizens in a digital world (e.g.
Abreu & Yildiz, 2016; Buckingham, 2009; Erstad, 2005; Schaffer, 2008). As a consequence,
digital literacy and digital competences are increasingly being formulated as important edu-
cational goals (e.g. Abreu & Yildiz, 2016; Drenoyianni, Stergioulias & Dagiene, 2008; Lanks-
hear & Knobel, 2015; Pangrazio, 2016). If we, in that regard, understand the curriculum
as a fundamental guide for teachers’ work, then curricular documents and guidelines may
be considered an important tool for the realization of digital literacy in education (Aesert,
Vanderlinde, Tondeur & van Braak, 2013; Hanell, 2018). Precision, clarity and topicality of
curricular guidelines relating to these concepts then become vital. These issues appeal for
research that critically explores how digital literacy and digital competences are represented
in curricular documents.
Several scholars have defined the concepts of digital literacy and digital competences and suggested how to formalize them on a curricular level (e.g. Berge, 2017; Buckingham, 2006; Drenoyianni et al., 2008; Hinrichsen & Cooms, 2013; Martin, 2006; Martin & Grudzieki, 2006). However, only a few studies have looked into the way these concepts are actually represented in curricular documents in the Nordic countries (Aesert et al., 2013; Sundin, 2015; Sefton-Green, Nixon & Erstad, 2009; Instefjord & Munthe, 2016). This article contributes to this scarce research field by investigating the general curriculum for one Danish Upper Secondary School Programme, the Gymnasium (abbreviated to “stx”).

There are good reasons for looking into this particular case. In 2016, the Danish Government launched a reform of all the Danish Upper Secondary School Programmes, including stx. This reform comprised a distinct focus on digital literacy and digital competences in order to more deliberately prepare the pupils for a “future digital society” (Government, 2016, p. 40). It was decided that the pupil should learn “to seek information and conduct source criticism and make independent, digital productions and learn how to be part of digital communities, just like they should learn to reflect upon selections and deselections of digital tools in different contexts” (Government, 2016, p. 21). Each specific subject area in stx was commissioned to translate and adapt this direction into their curriculum. In the Terms of Reference (Ministry of Children & Education, 2016) for this work, digital competences as well as digital literacy were described in more detail, and it was laid down that these elements should be reflected in the content, the methods and the forms of assessment of the different subjects. This article explores the results of this work and asks how aspects of digital literacy and digital competences are represented in the curricular texts for the different subjects in stx in Denmark. The article identifies the main differences in the components and the underlying assumptions that underpin the curricular formulations. It investigates and discusses the coherence and organization of themes across the curricula and addresses the potentials, challenges and implications that emerge. We have chosen to include all subjects to detect key features in and between the general curriculum and identify general points of attention that need to be addressed on a political level.

Digital literacy in education
Reviews and conceptual overviews suggest that the concept of digital literacy has many conflicting and diverse understandings (Tamborg et al, 2018; Koltay, 2011; Spante et al., 2018). Among the different terminologies are digital literacy, digital competences, media literacy and information literacy. Each term involves a specific position in relation to the issue of which requirements and efforts the schooling system should include in order to qualify the pupils for digital societal conditions. However, several academics also identify two major ideological positions in the field. Hinrichsen & Cooms (2013) suggest that, across the very different terminologies, there is “a consistent tension between perceptions of technology as either neutral or culturally situated, along with the implications each view has for policy, practice and curriculum” (p. 2). This tension is also identified by Spante et al. (2018), who conclude that the general evolution in the use of these concepts in higher education research is characterized by a shift from an instrumental and operational perspective to one more cognitive, critical and responsible. In an analysis of contemporary paradigms within digital literacy, Nawaz and Kundi (2010) suggest that ICT is considered as “either simply a tool (neutral) like any other technology or more than a tool, which can change the people way of life by transforming the educational culture” (p. 22). Aesert et al. (2013) find that digital literacy is defined in different and sometimes diverging ways, and that the different concep-
tualizations also involve “different semantic meanings, ranging from the use of basic ICT skills to complex problem-solving abilities” (p. 143). Finally, Buckingham (2006) argues that we need to understand media and digital technologies as more than instruments and tools for learning, and he suggests that “education about the media should be seen as an indispensable prerequisite for education with or through the media” (p. 263). In our analysis, we will explore how the different curricula place themselves on this continuum between these two general positions in the field.

Curricula as texts
Political institutions worldwide use curricula as an instrument to endorse societal changes (Nwaji, 2011; Gran, Petterson & Mølstad, 2019). A curriculum contains information about what content, activities and assessment types a specific course or educational programme should use (Johansen & Afdal, 2018; Aesert et al., 2013). Our perspective is inspired by Bernstein (1990; 2000), who understands a curriculum as a product of a complex recontextualization process. With his theory of the Pedagogic Device, Bernstein attempts to describe the principles that underlie the transformation of knowledge in the educational system, including the processes by which knowledge is converted into, for example, curricula (Bernstein, 1999, 2000). In this process, knowledge, arising from what Bernstein terms the field of production of discourse, is selected, modified and transformed (recontextualized) on the one hand by official recontextualization agents, including – in this context – agents from the Ministry of Children and Education, and on the other by pedagogical recontextualization agents, for example teachers and educational researchers. This means that the original discourse undertakes an ideological transformation (Bernstein 1999, 2000). Thus, curricula are social constructions that must be seen as a product of a process and thereby as complex texts that involve values and ideas about what skills, knowledge and competences pupils should acquire in order to prepare them for future employment and citizenship.

Context and background
Upper Secondary School in Denmark consists of four different educational programmes. In this article we focus on the Gymnasium (stx). About 60 per cent of a year group apply each year for stx (Ministry of Children & Education, 2017), and thus it is the most popular Upper Secondary School Programme among young people in Denmark. The main aims and objectives of this education are formulated in an overall national consolidation act. To operationalize this, there is a specific curriculum for each subject.

The reform
In connection with the development of the new curricula for stx in 2016, work groups for each subject were appointed. These work groups consisted of a number of pedagogic recontextualization agents, agents from the recruitment area and other relevant stakeholders. Each group was led by an official recontextualization agent, who was a subject advisor employed by the Ministry. The work groups were responsible for developing the curricular text for their specific subject with a starting point in two documents arising from official recontextualization agents: (i) the Political Agreement (Government, 2016) and especially (ii) the Terms of Reference (Ministry of Children & Education, 2016). In the process the subjects were officially gathered by the Ministry of Children and Education into six main edu-
cational fields: Technology and Science, Languages, Humanities, Arts, Maths, Economy and Social Science. We follow this subdivision in educational fields in our analysis. See Table 2 for an overview.

The guiding documents
The Political Agreement (Government, 2016) and the Terms of Reference (Ministry of Children & Education, 2016) were central texts in the reform. The Political Agreement presents the idea that the Danish society needs qualified young people, and it is emphasized that there is a need to enhance a broad spectre of competences, including digital competences. Besides highlighting digital competences as important, the Political Agreement also contains a chapter on “strengthened digitalization of teaching” (the Government, 2016, p. 9). This chapter emphasizes digital technology as an important means to support learning, among other things by strengthening the awareness around learning goals and by increasing the quality of teachers’ supervision.

The Terms of Reference consists of a description of the framework for the working groups and of excerpts from other texts, including the proposal for the Official Consolidation Act for the Youth Education Area, the former curriculum and the Political Agreement. A central point is that the new curricula should “take as their starting-point the existing curricula’s content, goals and structure which were developed in connection with the reform in 2005” (Ministry of Children & Education, 2016, p. 1), thus following this structure (Table 1).

Table 1 The structure that should be followed in the curricula (Ministry of Children & Education, 2016, p. 6). Translated into English on the right side.

| 1. Identitet og formål        | 1. Identity and purpose |
|-------------------------------|-------------------------|
| 1.1. Identitet                | 1.1. Identity           |
| 1.2. Formål                   | 1.2. Purpose            |
| 2. Fagligt indhold og faglige mål | 2. Educational content and professional goals |
| 2.1. Faglige mål              | 2.1. Professional goals |
| 2.2. Kernestof                | 2.2. Core content       |
| 2.3. Supplerende stof         | 2.3. Supplementing elements |
| 3. Tilretteleggeelse          | 3. Planning             |
| 3.1. Didaktiske principper   | 3.1. Didactical principles|
| 3.2. Arbejdsformer, herunder skriftligt arbejde | 3.2. Work forms |
| 3.3. IT                       | 3.3. ICT                |
| 3.4. Samspil med andre fag    | 3.4. Interaction with other subjects |
| 4. Evaluering                | 4. Evaluation           |
| 4.1. Løbende evaluering      | 4.1. Formative evaluation|
| 4.2. Prøveformer              | 4.2. Evaluation forms   |
| 4.3. Bedømmelseskriterier    | 4.3. Evaluation criteria |

1. This division in different main field is described in an internal document from the Department circulated to the participants. We have been allowed to refer to it in this article. There was also a sixth field: Cross-disciplinary subjects.
The document provides, among other things, in Appendix 2, a definition of digital competences in learning situations, and a division of digital competences into four main competences:

*Information competences*, defined as “taking a critical approach to information on the Internet and finding, using and referring to information from the Internet” (Ministry of Children & Education, 2016, p. 23).

*ICT-operational competences*, defined as “finding, selecting and using fundamental functions in different types of programmes” (Ministry of Children & Education, 2016, p. 23).

*Participation competences*, defined as “practising good web ethics and etiquette, relating to social media and its use in a responsible and reflective way, regulating the use of digital media in personal processes in an appropriate way and protecting personal data and identity” (Ministry of Children & Education, 2016, p. 23).

*Productive competences*, defined as being able to “take part in and in a creative and innovative way contribute to communicative digital productions in professional connections, including respectful and responsible remediation” (Ministry of Children & Education, 2016, p. 23).

In the analysis we investigate how the different curricula relate to these four competences.

**Method**

**Empirical basis**

The analysis is based on the curricular texts for the 27 different subjects that are offered in stx (Ministry of Children & Education, 2017). Each subject may have up to three curricular documents based on their different levels. A total of 50 curricula were included in this study. The specific paragraphs from the curricular documents that were included were differentiated in three phases. Firstly, we did an initial reading of the documents in order to get an overview of the data. Then we conducted a search on the words “digital”, “media” and “technology” and highlighted all the paragraphs that encompassed these words. Thirdly, we went through all these paragraphs and those which related to digital literacy and digital competences were highlighted. On that basis, 150 paragraphs containing between four and 175 words were included. Table 2 provide an overview of the six educational fields, the subjects they include, the teaching levels of each subject and the location of the included paragraphs.

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2. The three cross-disciplinary subjects are not included.
3. Furthermore, two language subjects include two variations on level A (beginners or continuers).
Table 2 Overview of the subjects in the Gymnasium in Denmark: The subjects are divided into groups according to the educational field in which they are placed by the Ministry of Children and Education.

| Educational field | Subjects       | Levels | Status                        | Paragraphs that include digital aspects |
|-------------------|----------------|--------|-------------------------------|----------------------------------------|
| Technology and Science | Biology       | A      | Optional**                    | § 2.1. Professional goals (A & B & C)  |
|                    |                | B      | Part of study programme       | § 3.3. ICT (A & B & C)                 |
|                    |                | C      | Part of study programme       | § 4.3. Evaluation criteria (A)         |
|                    | Biotechnologi  | A      | Part of study programme       | § 1.2. Purpose                        |
|                    |                |        |                               | § 2.1. Professional goals             |
|                    |                |        |                               | § 3.2. Work forms                     |
|                    |                |        |                               | § 3.3. ICT                            |
| Physics            |                 | C      | Compulsory on level C         | § 4.3. Evaluation criteria             |
|                    |                |        | Part of study programme       |                                        |
|                    | Geo Science    | A      | Part of study programme       | § 2.1. Professional goals (A, B & C)  |
|                    |                |        |                               | § 2.2. Core content                   |
|                    |                |        |                               | § 3.3. ICT                            |
| Chemistry          |                 | A      | Optional**                    | § 2.1. Professional goals (A, B & C)  |
|                    |                | B      | Part of study programme       | § 3.2. Work forms                     |
|                    |                | C      | Part of study programme       | § 3.3. ICT                            |
| Informatics        |                 | C      | Optional**                    | § 4.3. Evaluation criteria             |
| Physical Geography | B               | C      | Optional**                    |                                        |
| Math               |                 | A      | Compulsory on level B         | § 1.1. Identity (A & B & C)            |
|                    |                | B      |                               | § 1.2. Purpose (B)                    |
|                    |                | C      |                               | § 2.1. Professional goals (B & C)     |
|                    | English        | A      | Compulsory on level B         | § 2.2. Core content (B & C)            |
|                    |                | B      | Part of study programme       | § 3.3. ICT                            |
| French             |                 | A beg  | Optional***                   | § 1.2. Purpose (A, Ac & B)            |
|                    |                | A cont | Part of study programme       | § 2.1. Professional goals (Ab, Ac & B)|
| Greek              |                 | A      | Part of study programme       | § 3.3. ICT                            |
| Italian            |                 | A      | Optional***                   | § 3.2. Work forms                     |
|                    |                |        |                               | § 3.3. ICT                            |
| Educational field          | Subjects         | Levels | Status                      | Paragraphs that include digital aspects                                                                 |
|---------------------------|------------------|--------|-----------------------------|---------------------------------------------------------------------------------------------------------|
| Latin                     | A B              | Part of study programme on level A | § 3.2. Work forms (A & B) § 3.3. ICT (A & B)                                                          |
| Spanish                   | A                | Optional*** Part of study programme | § 1.2. Purpose § 2.2. Core content § 3.3. ICT                                                            |
| German                    | A beg A cont B   | Optional*** Part of study programme on level A & B | § 1.2. Purpose (Ab, Ac & B) § 2.1. Professional goals (Ab, Ac & B) § 3.3. ICT (Ab, Ac & B) |
| Russian                   | A                | Optional*** | § 1.2. Purpose § 2.2. Core content § 3.3. ICT                                                            |
| **Artistic subjects**     | Visual Arts B C  | Optional* | § 1.2. Purpose (B &C) § 2.1. Professional goals (B & C) § 2.2. Core content (B & C) § 3.3. ICT (B & C) |
| Design and Architecture C | Optional*        | § 3.3. ICT                                                                                              |
| Drama                     | B C              | Optional* | § 3.2. Work forms (B & C) § 3.3. ICT (B & C) § 4.2. Evaluation form (B&C)                               |
| Physical Education C      | Compulsory       | § 2.2. Core content § 3.3. ICT                                                                         |
| Media Subject B C         | Optional*        | § 1.1. Identity (B & C) § 1.2. Purpose (B & C) § 2.1. Professional goals (B & C) § 2.2. Core content (B & C) § 3.2. Work forms (B & C) § 3.3. ICT (B & C) |
| Music                     | A B C            | Optional* Part of study programme on level A | § 2.1. Professional goals (A) § 2.2. Core content (C) § 3.3. ICT (A & B & C)                           |
| **Humanities**            | Danish A         | Compulsory | § 1.1. Identity § 1.2. Purpose § 2.1. Professional goals § 2.2. Core content § 3.3. ICT                |
| History                   | A                | Compulsory | § 2.2. Core content § 3.3. ICT                                                                         |
| Religion                  | C                | Compulsory | § 3.3. ICT                                                                                              |
| Classical Studies C       | Compulsory       | § 3.3. ICT                                                                                              |
| **Economy and Social Science** | Social Science A B C | Compulsory on level C Part of study programme on level A & B | § 2.1. Professional goals (A & B & C) § 2.2. Core content (A & B) § 3.3. ICT (A & B & C) |

* The pupils are obliged to choose one of these 5 subjects on level C.

** The pupils are obliged to choose one of these 4 subjects on level C.

*** The pupils are obliged to follow one of these languages on level B (beginners in French or German) otherwise on level A.
Analytical strategy
All the paragraphs were analysed using a qualitative approach. We drew on thematic analysis in order to identify interesting patterns and themes in the data (McGuire & Delahunt, 2017). As a starting point, we conducted a relatively open coding of the data, where interesting patterns were noted and clustered. During this process, it became clear that all the curricula had aspects of digital literacy and digital competences, but that there were major differences between the six educational fields. This encouraged us to do a second reading where we mapped the main patterns within and between the educational fields. In this second reading, we were guided by Johansen and Afdal (2018)’s components of curriculum structure and the political guidelines for the groups (Ministry of Children & Education, 2016). The findings are organized as a descriptive, comparative text which addresses patterns within one main educational field at a time.4 In the discussion we conduct a cross-curricular analysis and critically discuss the implications of our findings. We have translated the excerpts from the curricular documents using a professional proofreader.

Findings
Technology and Science
Technology and Science covers six subjects and 14 curricula. The main terms used for ICT in these curricula are “digital tools” (e.g. Biology A), “digital resources” (e.g. Physics B) and “ICT tools” (e.g. Geo Science A). Attention is first and foremost drawn towards ICT as a tool to support the pupils’ learning processes as well as their ability to use ICT and digital resources. Seven curricula explicitly express at least one professional goal related to ICT, for example suggesting that the pupils should be able to “use relevant digital tools” (e.g. Chemistry AC). Additionally, in these curricula there is a recurring focus on ICT as a tool for “communication” (e.g. Biology AB) or “collaborative writing processes” (e.g. Biotechnology A). In short, this suggests an instrumental position where ICT is considered as a neutral and practical tool, which renders possible the teaching of the content of the subject. None of the curricula use the words digital literacy or digital competences, and the main focus is on ICT-operational competences.

One subject that differs from this general picture is Informatics.5 In §2.1, this curriculum involves treatment of and interaction with digital data, including “programming” and “developing ICT systems”. Thus, the main focus is, in general, on understanding and producing ICT systems. It is stated that “digital literacy is a natural part of this”. The content of the curriculum does not incorporate any considerations on the more critical and reflective aspects of digital literacy and the main focus in this curriculum seems to be on ICT-productive competences.

4. In the analysis we exclusively make references to the subjects in order to clarify the affiliation of each example. All the curricula are from 2017 and can be found on the webpage for the Ministry of Children and Education (https://www.uvm.dk/gymnasiale-uddannelser/fag-og-laereplaner/laereplaner-2017/stx-laereplaner-2017). 5. This subject was implemented as an optional subject on level C in stx in 2017.
Maths
There is only subject in this educational field, Maths (three curricula). The main term used for ICT is “tool programme”. In §3.3. it is said that the pupils should obtain knowledge about “the mutual dependence between, on the one hand, the potential of these tools to support the development of mathematical understanding and on the other hand, the mastery of maths, which is necessary to develop an insightful and critical use of the very same programmes”. In the curriculum, one concrete professional goal for the use of ICT is stated, namely to “use mathematic tool programmes”. Thus, the main conceptualization of ICT and aspects of digital competences and digital literacy are very similar to the curricula within Technology and Science. In the curricula for Maths, however, this is augmented with a slightly more critical perspective on the use of these tools in educational situations.

Languages
A significant feature of the eight subjects (14 curricula) within the educational field of Languages is that most of them (10 curricula) include the word “digital” in § 1.2., “Purpose”. One example is English A, where it is stated that the pupils should “achieve the ability to understand and use English language in order to keep updated and act in a global and digital world” (English A). This global context is integrated into §3.3. in several curricula, with formulations such as “through the use of ICT, the language is used in authentic contexts and this makes it possible to experience Spanish as a global communication language” (Spanish A). Aside from this global affiliation and perspective on digital societal conditions, ICT seems in these quotes first and foremost to be formulated as a teaching aid that “renders possible” to “use” language in authentic situations. In nine curricula, it is explicitly formulated in §3.3. that ICT should be used “with the overall purpose of supporting the pupils’ learning processes and learning results” (e.g. French A). This double perspective is supported by the terms used in these curricula, where “digital tools” (e.g. Italian A) dominates, but the phrase “digital media” also appears, several times (e.g. English A). Finally, the curricula in this educational field highlight information competences with phrases such as “critical awareness” (e.g. Latin B) and “source criticism” (e.g. Spanish A).

In short, the language subjects seem to emphasize ICT-operational competences. This is expanded with a specific focus on information competences, and partly on participation competences, with the emphasis on the need to learn these subjects in order to be able to act and participate in a digital world.

Arts subjects
This educational field covers 6 subjects and 12 curricula. These curricula primarily use the terms “visual digital means” (e.g. Visual arts B), “digital media” (e.g. Design and Architecture C) and “newer media” (Media Studies B). The main organizing theme in the curricula is a perspective on ICT as a creative partner that broadens the possibilities for creating visual expressions, for creative processes, or for storing and distributing productions. In Media Studies and Music, there is a specific emphasis on ethical issues relating to “remediation” (Music ABC) and “basic copyright issues” (Media Studies B). In Media Studies, which focuses specifically on analysis of all types of media, this is augmented in § 3.3. with a focus on the analysis, judgement and production of motion pictures. Seven of the curricula include the words “digital literacy” and/or “digital competences”. One example is Drama, which emphasizes in §3.3. that the subject “supports the general work with pupils’ digital literacy” (Drama BC). There are no professional goals relating to this, but Drama and Visual Arts uses the word “reflection” and Design and Architecture uses the phrase “responsible
users”. Furthermore, Media Studies states that the subject should develop “the pupils’ critical awareness in their interaction with the possibilities and constraints of the digital culture”. Thus, there is a cultural perspective on media, media use and digital literacy in these curricula, and all of the competence areas are touched upon. However, there seems to be a specific focus on productive competences and the ethical issues associated with these.

The curriculum for Physical Education differs from this picture. In §3.3. for Physical Education it is formulated that “digital tools are used, for example, to collect and process data, write a logbook and search for information”. In the curriculum for Physical Education, therefore, we find the terms “digital tools” and “data collection”. In this regard, this subject is close to the instrumental approach, which characterizes the subjects within Natural Science and Technology.

**Humanities**

Four subjects and four curricula are included in this main area. Here an excerpt from §3.3. in Danish: “The pupils’ work with developing and reflecting upon their own digital identity promotes the possibilities as a fellow citizen to be orientated and act in a modern, democratic, digitised and globally oriented Danish community.” With terms like “digital identity”, “fellow citizen” and “democratic, digitized society”, this curriculum embeds the arguments for working with ICT in a broad cultural frame. The subject includes a professional goal relating to ICT, namely that the pupils should learn to “navigate, choose and relate critically and analytically to information in all media and contribute to digital communities”. Participation competences are therefore clearly highlighted here, and in general, this subject deals with several aspects and competences relating to digital literacy.

Conversely, the remaining three curricula express in § 3.3. that “ICT should be integrated in order to support pupils’ learning” (e.g. Classical studies C). Furthermore, they address information competences, for example in the curriculum for History, where it is stated in §3.3. that pupils should use ICT as a “search tool for information on and investigations”. In this way, the subjects within Humanities are embedded in an understanding of ICT as culturally situated technologies and artefacts that should be approached with curiosity, but even more with critical reflections on the reality that is (re)constructed in them.

**Economy and social science**

There is one subject in this educational field, Social Science (three curricula). The curricula stress first and foremost that ICT may support learning processes. Furthermore, the curricula emphasize that ICT should be used for “sharing knowledge and taking part in debates on societal issues” (e.g. Social Science A) and for “targeted and critical information-search” (e.g. Social Science B). In § 2.2., it appears that the core content of the subject should contain “political formation of public opinion in the media, including behaviour on social media” (Social Science A). Thus, information competences and participation competences are addressed in these curricula. There are no direct formulations that give rise to a critical perspective on aspects of digital literacy or digital competences in these situations, and ICT seems mostly to be regarded as a tool for participation in societal debates as well as a tool to support learning.
Discussion
Our analysis shows that digital aspects are broadly and explicitly represented, and that all the competence areas that are suggested in the Terms of Reference (Ministry of Children & Education, 2016) are included and visible. However, there are three main cross-curricular patterns in the empirical material that call for further discussion.

Firstly, there is a strong discrepancy and heterogeneity in the ways in which digital aspects are formulated and organized in the texts. Some subjects have professional goals relating to digital literacy or digital competence, some include them in the overall purpose of the subject, or the core content, and others only mention them in § 3.3. ICT. This gives a general impression of a coincidental treatment of digital competences and digital literacy on a curricular level. One explanation of this lack of clarity might be that the new curricula were obliged to take as their starting point the existing curricula’s content, goals and structure. §3.3. is particularly interesting. As seen from the different excerpts there is, in §3.3., a prominent variation between descriptions of how ICT should be included by the teacher as a learning tool, descriptions of what the pupil should learn in relation to ICT, and descriptions of how the subject contributes to a more overall vision of “digital literacy”. In the previous curricula, this paragraph represented descriptions of how to integrate ICT as a learning resource in the different subjects (Ministry of Children & Education, 2013). However, in the Terms of Reference (2016), no guidance was given as to how this paragraph should be integrated into the new curriculum. Furthermore, no explanation was given as to where or how the new directions from Appendix 2 on digital literacy and digital competences specifically should be addressed. The very diverse formulations thus potentially reflect some vague directions in the guiding documents from the official recontextualization agents, and it illustrates Bernstein’s point that curricular texts are products of a recontextualization process with many agents and voices. One crucial issue is that this potentially obstructs the possibility of clear navigation in the curricula, the identification of aspects of digital literacy and digital competences involved in the programme and thus the digital literacy gained therefrom. According to Martin and Grudziecki (2006) there are, however, good reasons to be clear about these issues. They suggest that European countries work with a clear and common definition of digital literacy (Martin, 2006; Martin & Grudziecki, 2006), in order to support student mobility, passage into employment and the preparation of young people to be competent practitioners in society (Martin & Grudziecki, 2006).

Secondly, going through the curricular texts, we found a very conspicuous division of labour between the educational fields, both in their conceptualizations of ICT, and also in the distribution of the four competence areas from the Terms of Reference (Ministry of Children & Education, 2016). While the curricula within Maths, Natural Science and Technology and Physical Education mainly conceptualize ICT as a neutral learning tool and focus on ICT-operational competences, the curricula within Humanities perceive media as cultural forms and include several competences. It is possible that this is a deliberate and maybe even logical distribution, and the students will (due to the compulsory subjects, e.g. Danish) come across the four competence areas. However, it is important to question whether such a strict division of labour is desirable. There is clearly a risk that the pupils might inherit the idea that in Physical Education, Maths and Natural Science, different digital tools and systems are merely neutral and practical tools. However, as Erstad (2015) and Buckingham (2006) emphasize, ICT technologies are never transparent or neutral teaching aids. Digital technologies may be considered as complex phenomena, which reconstruct values, relations and discourses (e.g. Lupton, 2014; Roderick, 2016). For example, we have in a previous article (Svendsen & Svendsen, 2020) described how, in Physical Education, digital tools...
bring content into the classroom that potentially prompts pupils to view their bodies and their physical activities in ways that to some degree work against the aims of PE (Svendsen & Svendsen, 2020). Furthermore, as several researchers have suggested (e.g. Bundsgaard, 2017; Erstad, 2015; Ståhl, 2017) it is debatable whether young people actually are “digital natives”, who routinely use and relate critically to digital media and digital tools. Thus, we question whether the pupils are able to decode which competences they meet where, as well as independently transfer these to the rest of their education.

Finally, our analysis has mapped digital directions in the included curricula, and thus revealed “what is there”. But it is also worth questioning what is missing. We find that there is a strong focus on “using”, “selecting”, “judging trustworthiness” and ethical considerations in relation to “participating in digital communities”. There is also a strong focus (especially in the compulsory subjects Danish and Media Studies) on digital identity and media and ICT as cultural artefacts and objects for critical analysis. It is not clear, however, whether this encompasses a more fundamental understanding of the way in which mediatization affects and changes culture and human behaviour on a structural level (as suggested by Hjarvard, 2013). Big data has received widespread publicity in recent years, and it has become a common practice to collect and sell personal digital data to other agencies (Lupton, 2014; Zhang, 2018). This means that using digital online media often entails complex commercial relationships. This could be exemplified by the fact that when using Google, it is necessary to agree to their terms and conditions and privacy policy, but the user is supposed to read 30 pages of complex legal language if he or she is to understand the complexity of this commitment. Issues like these call for increased – or more concrete – descriptions in the curricula of themes such as algorithms, big data, advertising and commercial relationships, protection of personal data and digital traces and – not least – a critical reflection on the way knowledge, society and personal life is changed by the media.

**Conclusion**

This article provides a picture of some important general educational issues relating to formulations of digital literacy and digital competences on a curricular level. We do not know how the different formulations are negotiated in the daily practice of the teacher, but there are good reasons to believe that curricular goals add an unavoidable and compulsory dimension to teachers’ work (Aesert et al., 2013). We base our analysis on Bernstein’s idea that formulations about digital literacy and meaningful content and practices are constructed, limited and regulated within curricular discourses. Our study shows that the formulations relating to digital competences and digital literacy are sometimes imprecise. This means that it might be difficult to navigate in the digital landscape in stx in Denmark. We also found a clear division of labour between the subjects, where the subjects within the field of Natural Science and Technology in particular focused purely on ICT as a neutral learning tool. This article questions this strict division of labour and the potential problems that arise when different “educational rooms subjects” have different rules and approaches and when there are a lack of strong official recontextualization agents to connect them. Bernstein (2000) himself problematized the dominant role of the state in constructing and regulating pedagogic knowledge and identities. However, the present study suggests that our attention should be more closely directed towards the variety, lack of clarity and diverging paradigms that are embedded in curricular texts.
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