LANGUAGE TEACHERS USING TECHNOLOGY: REASONS AND BELIEFS

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Tiivistelmä

Maisterintutkielmani tutkii suomalaisten kieltenopettajien opetusteknologian käytön syitä, ja näiden suhdetta opetusteknologiaan uskomusten ja asenteiden kautta. Tutkielman taustalla on havainto opetusteknologian yleisyydestä ja pohdinta siihen liittyvästä opettajien pedagogisesta ajattelusta. Tutkimus on luonteeltaan laadullinen, ja sen aineisto kerättiin puolistrukturoituina teemahaastatteluina. Aineisto analysoitiin teema-analyysin keinoin. Tutkimukseen osallistui kolme peruskoulun kielenopettajaa erilaisista taustoista.

Tutkimuksen tulokset viittaavat siihen, että kieltenopettajien teknologian käytön taustalla on monenlaisia syitä ja monimutkaisia, ristiriitaisiakin pedagogisia ajatusprosesseja. Tutkimukseen osallistuneille oli yhteistä teknologian käyttö sen monipuolisuuden vuoksi, mutta myös sen opettajan työmäärään positiivisesti vaikuttavien tekijöiden takia. Opettajat kokivat teknologian erottamattomaksi osaksi opettamiensa nuorten maailmaa, joka itsessäänkin riitti syyksi integroida teknologiaa opetukseen. Kaikki teknologian käyttöön vaikuttavat tekijät eivät ole opettajien hallinnassa, sillä heitä ohjaa osaltaan koulun resurssit, mutta myös mahdolliset koulun- tai kaupunginlaajuiset teknologian käyttöön liittyvät linjaukset. Teknologiaan suhtauduttiin pääosin kriittisesti, eli sen pedagogista tarkoituksenmukaisuutta pohtien, mutta teknologiataitojen opetukseen liittyvässä pohdinnassa oli myös paikoin epävarmuutta.

Tulosten perusteella opetussuunnitelma on tärkeä yhteinen opetusteknologian käytön ohjaaja, mutta yksilön tasolla erityisesti opettajan omat digitaidot vaikuttavat sekä teknologian käyttöön että asenteisiin sitä kohtaan. Tarkemmat linjaukset opetussuunnitelmassa voisivat selkiyttää teknologian roolia opetuksessa. Tulosten pohjalta voidaan kuitenkin todeta, että aihe kaipaa jatkotutkimusta. Tutkielma voi toimia hyvänä pohjana tällaisille tutkimuksille, sillä se valottaa opettajien teknologiasuhdetta tavalla, jota ei ole tutkittu aikaisemmin.

Asiasanat Language teachers, technology, beliefs, ICT, thematic analysis
Säilytyspaikka Jyväskylän yliopisto
Muita tietoja

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1 INTRODUCTION

Neil Postman … wrote in the End of Education (1995) that being against technology makes no more sense than being against food. But critically thinking about food — what we eat, when we eat, what portions we consume, and knowing when to push ourselves away from the table — is crucial for individual and societal well-being. 1

Technology is often central in dystopian fiction. In the direst of imagined futures, humanity loses control over its creations, and technology, be it self-aware or all-consuming, threatens humanity with extinction. In other, perhaps less scary scenarios, humanity is alive and well, but technology seems to have a sort of an indirect authority over people; Think *Blade Runner* and cyberpunk as a genre, or the film *Ex Machina*. Technology can seep into our lives, permeate it to a point where one questions their own humanity, without us really noticing — which, I would interpret, is implied by the existence of these fictional worlds since I would personally object to any development leading to a future described above rather harshly.

This thesis aims to deal with reality, however. Technology is already so integrated into our lives that one barely pays attention to it. Young people are stereotypically described as digital natives, who supposedly are naturally proficient with technology, both devices and software. The mere existence of such a label implies that there are people who do not share this natural proficiency with their younger counterparts, and that the world these so-called digital natives inhabit is different enough from the world of the past to have its own native population, equipped with special skills by their environment. From this perspective, digitalisation, defined as "the adoption or increase in use of digital or computer technology" (Brennen & Kreiss 2016), seems a major change.

In the Finnish education system, the general rate of development of digitalisation has been moderate. The Ministry of Education and Culture reports that the development of digitalisation in education in Finland has been "slow but positive" across the board, but that students finishing basic education may not always have the

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1 Clough, Olson & Niedehausen 2013: 2

digital skills required for upper secondary level (Opetushallitus 2021: 33), now mandatory for every student. According to The Trade Union of Education in Finland, OAJ for short (2016: 8), teachers view digitalisation generally positively, and most believe that technology creates more benefits than harm. This is also reflected in the growing technological proficiency among teachers, though as many as one in two still feel their skills are inadequate to properly implement the curriculum in the classroom (Opetushallitus 2021: 35-36).

The subject of research in the present study stems from my own experiences as a teacher, and the observation that I would often prepare various technology-integrating segments for my students simply because I felt obliged to do so, because that is just how it is done. Everyone else did so, after all. This discovery led to another observation. Technology employed in teaching could be roughly divided into two ways: Technologies that serve primarily the teacher by reducing or streamlining their workload (digital exams are an example of this), and technologies that serve primarily the students, or perhaps more accurately their learning. The latter category is very broad, but could for example include smartboards and other presentation technology, and learning games, such as Kahoot!. This categorisation may seem obvious, but more questions emerged. Do teachers make conscious, pedagogically driven decisions concerning the use of technology in their teaching? Does their use of technology primarily benefit themselves, or the students? What do they believe technology is good for anyway?

Based on my personal experience it may be plausible that the presence of technology in the classroom is enough to guide teachers to integrate it in their teaching practises – in some classrooms smartboards have been installed directly on top of the traditional blackboards, clearly replacing them as the intended medium of presentation. According to OAJ (2016: 21), the equipment of the teacher is directly correlated with the use of technology in the classroom – those who have the equipment, tend to integrate technology to their teaching more – though study results from 2010 indicate that even though teachers have educational technology at their disposal, without a tangible pedagogical model the technology alone cannot enrich teaching (Norrena, Kankaanranta & Nieminen 2010: 97). Since the curriculum directs the use of technology to be meaningful (Opetushallitus 2016: 31), it is worth exploring what sort of teacher thought processes guide the use of educational technology and what sort of beliefs teachers hold about the digital tools at their disposal. It should be noted that the presence of technology in curricula (more on which in Chapter 2.1.) does not automatically translate to the practical, educational use of technology in any specific way due to the role of the teacher as the implementor of the curriculum, hence the subject of study.

The aim of this thesis is to examine why teachers use technology in their teaching, and to examine teacher beliefs concerning technology in education. Research exists on both reasons behind technology use (e.g., Lam 2000) and teacher beliefs about technology (e.g., Ertmer, et al 2012: 423-435, Ifinedo, Rikala, & Hämäläinen 2020), though not in the context of foreign language teaching in Finland specifically. Additionally, the question *why* in the context of the teacher separates this study in a fundamental way from previous research – educational technology is a popular subject of study, but prior studies seem to focus on the *how, when,* and *what* (e.g., Kankaanranta, et al. 2010: 47-76, Järvelä et al. 2011: 41-54) instead of examining underlying, teacher-level reasons for technology use.

The theoretical framework of this study is split in two. The first segment explores the meaning of technology on its own and in educational settings, and the second segment concentrates on teacher beliefs and a teacher's relationship with technology. The study is qualitative in nature, with the data having been collected via semi-structured interviews, and subsequently subjected to thematic analysis, presented in Chapter 5. Chapter 6 then gathers the findings and relates them to the research questions more directly.

2 TECHNOLOGY AND EDUCATION

This chapter discusses how technology is present in the Finnish National Core Curriculum, what educational technology actually is, and explore the presence of technology in an educational setting in the Finnish context. The chapter begins by examining the relation between ICT (Information and Communications Technology) and curricula in Finland, then moves on to discuss technology as a term, and finally takes a look at the level of technology integration in Finnish schools.

2.1 ICT and curricula

The Finnish curricula are structured on multiple levels of educational organisation, with the National Core Curricula (NCC for short) directing municipal curricula, which in turn direct school-specific curricula. Since the NCC is indirectly applied in every school, it will be used as a frame of reference when discussing curricula and technology.

In the NCC, ICT proficiency is discussed in a dedicated section, as one of the transversal competencies students are expected to learn. These transversal competencies include thematic areas such as *Thinking and learning to learn, Cultural competency, interaction and expression,* and *Working life skills and entrepreneurship*, and aim to support the students' growth as human beings and individuals, and expedite their knowledge needed to participate in a sustainable lifestyle and a democratic society and are present in subject-specific curricula (Opetushallitus 2016: 20). Within this framework the development of ICT proficiency is divided into four areas: 1) practical skills, 2) responsible, safe & ergonomic use, 3) data management, and creative and research uses, and 4) interaction and networking (Opetushallitus 2016: 23).

The NCC regards ICT proficiency as an essential skill for each citizen (Opetushallitus 2016: 23), important enough to be heavily featured in the education of the nation's youth, or in other words, future citizens. In the NCC, the role of ICT itself is twofold: it is both "an instrument and a target of learning" (ibid.), but since there are no compulsory classes dedicated to learning ICT skills, fulfilling the goals the curriculum sets fall on class- and subject teachers not necessarily trained as ICT pedagogues, meaning students learn ICT skills through use rather than coordinated instruction.

Technology is also present in some other transversal competencies: in *Self-care and life skills* students are guided towards a healthy and responsible relationship with technology, as well as awareness of its influence on the surrounding world (Opetushallitus 2016: 22). It is explicitly stated that students need both basic information about technology, and guidance in its proper use – the curriculum does not stop at achieving working skills but aims to help the students to develop a deeper, analytical relationship with technology (ibid.). In *Multiliteracy* "the students will have to be able to use their [multiliteracy] skills in both traditional environments, as well as technology-employing multimedia environments" (ibid.).

In the context of teaching, NCC guides the teacher to use ICT to enhance interaction, and the multisensory and multimodality nature of learning [2] (Opetushallitus 2016: 27), and to use it to "strengthen student participation and skills of communal working and support individual paths of learning" by using ICT as an "essential part of diverse learning environments" (Opetushallitus 2016: 29). In the subject-specific context of foreign languages, the NCC views technology as "a natural opportunity among others to realise language teaching with authentic situations and the students' communication needs" throughout the entire basic education track (Opetushallitus 2016). Additionally, the students are encouraged to use ICT in language learning generally, though there are some differences depending on the syllabus. For example B1-Swedish for grades 3-6 aims to "guide the student to practise their communicative skills in a permissive environment, and also by using information- and communications technology" (Opetushallitus 2016: 205), while A-Swedish, a more advanced syllabus for the same grades aims to "guide the student to take responsibility for their language learning and encourage the student to develop their language proficiency open-mindedly, and also by using information- and communications technology" (Opetushallitus 2016: 198). Interestingly, the spread of the English language on "e.g. on the internet" gets a special mention in the English syllabus (Opetushallitus 2016: 220).

Despite the lack of dedicated ICT classes throughout the educational track, students who enter upper secondary school after basic education are expected to not

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[2] Translated to English by the present author.

only have built a digital portfolio displaying their language skills by the end of upper secondary school, but also have completed their matriculation examination digitally.

2.2   Discussing educational technology

As a term *technology* can be difficult to define. According to Oliver (2016: 53), "there is no single dominating account of technology to which the field as a whole ought to orient, since each alternative has its own distinctive focus and, with that, its critics", meaning technology is bound by the context, in this case education, and more specifically teaching — though, reflecting the terminology concerning technology in general, the technological terminology in educational contexts is rather unstable as well (Kilpiö 2008: 5).

In 2004, AECT (2004: 3) defined the concept of educational technology as "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources." This definition is very broad, covering just about everything technology-related in the classroom, as long as it is meant to facilitate learning. It leaves little room for uncertainty about whether something is education technology or not, and as such is a good foundation for this study, even if it is on the older side.

Since technology is somewhat ambiguous terminologically, and can technically refer to any tools we use, it should be noted that in everyday language the word itself mostly evokes mental images of electronic devices and machinery. Because this study is not particularly interested in books and blackboards, ICT, Information and Communications Technology, encompasses what the present study is about to explore quite nicely. ICT is also used in Finnish official documents, such as the curricula, and as such is also contextually more suitable for this study. Additionally, it should be noted that the terms technology and ICT are sometimes interchangeable in educational contexts, with the former used more in the USA and the latter in Europe (Kilpiö 2008: 5).

All technology is not equal, though. Mishra and Koehler (2006: 1023) cite Bruce & Hogan (1998) on the concept of transparent technologies — technologies that are so commonplace "they are not even regarded as technologies". In the classroom, examples of transparent technology could include the blackboard, textbooks, overhead projectors, and DVD-players. At the time of writing this thesis, Misha & Koehler's aforementioned paper is 15 years old, so even though they assert that computers and other digital technologies are "new and not yet a part of the mainstream" (Mishra & Koehler 2006: 1023), that has certainly changed. Personal computers have been around long enough to be considered transparent (though in the

classroom the computer remains mostly the tool of the teacher specifically), but smart phones (and their use in teaching), cloud services and digital textbooks, and to some extent, other digital learning materials, are still relatively new in the classroom.

As far as the computer is concerned, for the purposes of this study it is more important what it is being used for than whether a computer is present or not. There is a term strictly for learning languages with the help of a computer, Computer Assisted Language Learning, or CALL for short, as well. CALL originated as teacher-independent computer-based repetitive tasks with positive or negative feedback for the learner, much in the vein of behaviourist pedagogy (Davies, Otto & Rüschoff 2012: 21), though has since evolved to enable "collaborative knowledge construction" with the help of the internet (Davies, Otto & Rüschoff 2012: 33). Educational technology has evolved not to be limited to the computer though, and perhaps a more fitting umbrella term for examining educational instruction aided by technological means could be classroom technology integration— a very broad term used to refer to the use of technology in educational situations.

Educational technology as ICT is more diverse than purely computer-based learning since other aspects of technology are involved as well (Rushby & Surry 2016: 8). It could be interpreted as emphasizing that the computer is not the focus of classroom technology integration, but a medium for it —as mentioned above, the real focus are the possibilities the computer enables, for example presentation and communication technology, the internet as a source of authentic learning materials, and course management systems. In this sense, combined with the concept of classroom technology integration, understanding educational technology as ICT use in teaching fits the scope of this study.

This is likely how teachers in the field view technology as well, since, as mentioned above, the term ICT (TVT, or tieto- ja viestintäteknologia) specifically is mentioned in the Finnish Core Curriculum (Opetushallitus 2016) as a basic skill each citizen should possess, as well as in the context of teaching quite a few times. Individual understandings of the meaning of technology most likely vary, though. Finally, considering the above, in the present study ICT is referred to both as 'ICT' and 'technology' for the sake of readability.

2.3   Classroom technology integration in Finland

Although educational technologies extend outside the physical classroom (learning management systems such as Google Classroom can be used to reach the students outside the physical classroom, for example), classroom technology integration is a central concept. The term is broadly used to refer to classroom teaching that

incorporates a technology or technologies in different ways. Even though technology, as discussed above, could technically refer to *any* of the tools we use, electronic or not, in this case technology is referring to ICT.

According to the Finnish National Agency for Education (EDUFI), some 80% of teachers agree that they have been supplied proper ICT-equipment by their schools (Opetushallitus 2021: 36), though the number of devices (computers and tablets) is estimated at a national average ratio of about one to four, or one device for every four students (Opetushallitus 2021: 43). The quality and number of the devices varies — there are schools with enough resources to equip every student with a personal device (Opetushallitus 2021: 43), which would imply that schools with resources below the national average also exist. With this, it is safe to say that at the very least most schools in Finland have integrated technology in their educational practices.

According to survey results gathered by the Finnish National Agency for Education (Opetushallitus, 2021: 35), in 2020, about 80% of teachers reported using ICT in most of their lessons, about 75% reported being proficient with digital learning environments, and almost 90% reported being proficient in using digital learning materials in their teaching. However, about 55% of teachers felt that their ICT-skills were sufficient compared to the goals set in the curriculum, and only 50% would describe their curriculum-based use of ICT as fluent. These numbers indicate a dichotomy in the use of ICT of teachers: The respondents simultaneously find their ICT skills relevant for day-to-day teaching sufficient, but do not feel they are proficient enough to fully implement the curriculum. Nonetheless, the metrics mentioned above all show an increasing trend from 2017 onwards.

Because Finnish teachers enjoy high pedagogical autonomy, the integration of technology in teaching may vary from classroom to classroom. In the curriculum, as discussed in Chapter 2.1, the use of ICT is meant to be pedagogically "appropriate", as in to serve a thought-out purpose and not be random. This, though, is subjective for each teacher, and is influenced by the teacher's beliefs about technology (discussed in more detail in Chapter 3.2) along with the influence of the environment (Kyllönen 2020: 26). Technology is therefore integrated into the classroom on varying bases of reasoning; In the absence of definitive guidelines, teachers make their own decisions on how much and in what way technology is present their students' learning.

Finally, Kyllönen (2020: 27) cites Cuban (1998) and Hadley & Sheingold (1993) among others and notes that even though the level of technology integration, in terms of the availability of the technology, is rising, its use is often limited to the replacement of "previous, teacher-centred methods of demonstration, representation, and instruction" (Kyllönen 2020: 27), instead of the student-centred, future-oriented learning goals. In other words, technology integration in classrooms can remain relatively surface-level if technology is used primarily as a medium of teaching,

instead of a medium of learning. This can serve as an example of how the teacher influences the level of technology integration in their classroom (i.e., insufficient ICT proficiency can reflect as its limited use) and is discussed more in-depth in the following chapter.

3   TEACHER BELIEFS AND TECHNOLOGY

As mentioned in Chapter 1, the teacher has a critical role to play in implementing the curriculum, and with it, educational technology in the classroom. Thus, teachers, learning, and technology form the second half of the theoretical backbone for this study and are explored in the present chapter. The relation between the conception of learning (as present in the NCC) and technology is discussed first, after which we concentrate on the teacher and their disposition towards technology by exploring teacher beliefs and barriers to technology integration.

3.1   Learning and technology

The conception of learning present in the National Core Curriculum seems to fit in the frameworks of (socio)constructivist and humanistic learning theories, as described by Kauppila (2007): The student is seen as an active agent, who actively participates in their learning, and will learn skills that benefit and support them as lifelong learners. The students learn in cooperation with other students as well as "teachers and other adults", and learning happens both communally and individually, via "doing, thinking, planning, researching, and assessing these processes from diverse angles (Opetushallitus 2016: 17). The students are also encouraged to develop meta-level skills related to their own learning, for example to recognise their own learning habits and understand large, interconnected bodies of knowledge that lead to deeper understanding of the subject. Ertmer and Newby (2016: 67-68) and Kyllönen (2020, 25) relate constructivism to classroom technology integration by presenting technology as a "tool *for* learning" instead of a tool to learn "*about* or *from*" – the teacher provides the students with the tools and materials they need to best facilitate their learning, technological solutions included.

In the NCC, technology is often seen as an enhancer of collaboration and communication, and quite vaguely as an enhancer of the learning experience. The modern languages classroom places an emphasis on collaborative learning and emphasizes interaction between the teacher and the students. (Opetushallitus 2016). As mentioned in the previous chapter, the way technology integration is present in the NCC is rather vague. Leaving the teacher with the freedom (but also the responsibility) to implement the curriculum as they see fit is a particular feature of the Finnish education system and allows for teacher-specific pedagogical orientations.

Blake (2008: 11) notes how technology is "theoretically and methodologically neutral" — it is not inherently tied to any specific method of teaching or learning, and thus does not steer the teaching to any particular direction. Instead, the teacher has full control over their use of technology, and by extension, whether that use is successful or not from a learning standpoint. Blake *(2008: 11)* goes on to argue how the use of learning technology reflects a teacher's beliefs about second language acquisition, and how technology in itself cannot enhance the learning experience of the students. That can only be achieved by a teacher who knows how to implement technology appropriately for the situation. In parallel with Blake, Beauchamp (2017: 17-18) argues that ICT is not capable of miracles — the critical component is how it is employed by the teacher.

How is technology integrated successfully? According to Järvelä et al. (2011: 42), integrating technology into teaching should not mean the mere digitalisation of previously used teaching methods, but the supporting of the students in a way that "results in understanding and profound learning." Indeed, according to Cox et al. (2003: 4, as cited by Beauchamp 2017: 18), "many studies show that insufficient understanding of the scope of an ICT resource leads to inappropriate or superficial uses in the curriculum". This would imply that the more experienced with technology a teacher is, the better results they will achieve. However, experience with technology may not directly correlate with good learning outcomes since the pedagogy employed by the teacher is in critical position as explained above. For good learning, good teaching is required.

3.2 Teacher beliefs about technology

Our everyday lives are coloured by a set of beliefs we hold about the surrounding world, and decisions and choices we make are inevitably affected by what we believe. According to Kalaja et al. (2016: 10), a belief can be defined as an instance in which a person reflects an event against their own, prior experiences of the same event —

beliefs are essentially personal perspectives based on an individual's experiences of the world. Interestingly, a belief does not necessarily have to relate to the first-hand experience of the individual but can stem from their peers' experiences as well, and beliefs are not static, but can evolve, change, and depend on the context or be mutually conflicting (Kalaja et al. 2016: 10). Pajares (1992: 316, in Borg 2006: 25) highlights the relation between a belief and the subject of the belief: A belief is "an individual's judgement of the truth or falsity of a proposition". Beliefs are therefore the subjective views of an individual or a group on a given topic and seem to be defined by their elusive nature. Barcelos (2003: 8) connects several notions of how beliefs are formed in interaction with one's environment to conclude that beliefs reflect the world view of the believer, shaped by their environment. In psychology, the influence of other people on one's beliefs is called conformity – one tends to shift their beliefs to reflect those of their social circle (Banich & Compton 2018).

Beliefs are simultaneously fluid enough to be able to change, but rigid enough to permit conflict with each other. On a semantic level, beliefs are also quite paradoxical: "the verb *to believe* expresses both doubt and assurance" (Izard & Smith 1982, in Barcelos 2006: 174). Based on these defining elements, in this study beliefs are treated as a person's subjective disposition towards something in a certain context, for example a teacher's disposition towards the value educational technology in a certain learning task. This disposition can be affected by many elements, such as external influence, like one's social environment, or one's prior experiences.

Ertmer & Newby (2016: 59) cite Kagan (1992), Pajares (1992), and Fives & Buehl (2012), and argue that underlying beliefs and personal theories can outweigh knowledge in defining learning problems and organizing instructional tasks, and that in teachers this realises as pedagogical practice congruent with beliefs about teaching and learning. Basturkmen (2012: 291), however, asserts that on closer inspection, the relation between beliefs and action is not as direct as it seems: while beliefs seem to impact practice, contextual obstacles can hinder the practical application of teacher beliefs. Borg (2011: 370-371) writes that "beliefs provide a basis for action" – whether that basis makes it into practice seems to depend on contextual elements: According to Basturkmen (2012:291), teachers would often report external factors hindering the implementation of their beliefs, something that could be countered with experience and planning.

In addition to instructional decisions, beliefs can also affect how a teacher perceives the value of technology, as there is indication that teacher beliefs about the value of technology are linked with their use of technology — those who believe it to be an effective tool in teaching, tend to use it more (Ertmer & Newby 2016: 60) and be more adept at overcoming external barriers to further technology integration (Vongkulluksn 2018: 71). There is also some evidence that the underlying beliefs

teachers hold about teaching and learning and about the role of technology in the classroom are one of the primary reasons technology integration can remain shallow (Ertmer & Ottenbreit-Leftwich 2012: 177)[3].

3.3 Barriers to technology integration

When exploring classroom technology integration, a concept that surfaces often is *barriers to technology integration* (Ertmer et al. 2012). Barriers to technology integration represent the elements that can disrupt the successful integration of technology in teaching, and can be divided into two types: First-order barriers, which are external to the teacher, and include e.g. availability of technology and tech support at school, and second-order barriers, which are internal to the teacher, and include e.g. perceived value of technology, and beliefs of how learning happens (Ertmer et al. 2012: 423).

Prior to technology being widely available, first-order barriers, i.e., resources, were a leading issue with technology integration (Hew & Brush 2007, cited in Ertmer et al. 2012: 424). As mentioned in 2.2, the technological resources in Finnish schools are mostly sufficient, so it is unlikely that 1st order barriers to technology integration are as prevalent as in the past. It is possible that the more prevalent 1st order barriers have moved from simple lack of devices to other aspects of the infrastructure, such as tech support or internet connectivity. According to Kyllönen (2020: 27), who cites Becker (1994) and Hadley & Sheingold (1993), it has been observed that an increase in the number of devices does not necessarily result in technology use that correlates with the curriculum. This observation implies that the 2nd order barriers are indeed more prevalent – even though the technology is available, it does not automatically translate to successful pedagogy.

Second-order barriers are subjective by nature, and include a wide variety of internal elements. As mentioned in Chapter 2.3., technology integration in the classroom is highly dependent on the teacher, and more specifically their relationship with technology, and even though teachers in a certain school might face the same 1st order barriers, their personal relationships with technology are likely quite different. There is a lot to unpack, since the differences can begin from something as mundane as ICT proficiency but also touch on rather abstract notions of the role of technology in the future of the students, for example. As such, beliefs, discussed in the previous

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[3] Even though Ertmer & Ottenbreit-Leftwich relate to Jonassen's (1996, as cited by Ertmer & Otterbreit-Leftwich 2012: 177) ideas about "authentic, student-centered practices", the general idea of beliefs influencing technology integration should be generalizable.

section, play an important part here – the scope of their influence on teaching is very wide.

Teacher beliefs about technology can indeed become 2nd order barriers – if one, in an extreme case, does not believe technology is at all applicable in teaching, the use of technology is obstructed. According to Kyllönen (2020: 27), 2nd order barriers can stall the integration of technology into constructive learning. Together with the aforementioned obstruction of technology integration altogether, failing to integrate technology to the constructivist model of learning would essentially mean that the curriculum, in which both of these are present, is not carried out as intended. The teacher's beliefs concerning technology can be reflected in their pedagogy as 2nd order barriers, and as an opposing force to integration, these barriers can reveal insights into how the teacher views technology. In addition to beliefs about technology and ICT proficiency, 2nd order barriers can include attitudes toward technology, personal, ingrained practices, and levels of readiness for change (Ertmer 2015: 7-8).

4 THE PRESENT STUDY

4.1 Aims and research questions

This study aims to gather information about the perceived role of (information and communications) technology in language teaching by Finnish foreign language teachers, and about reasons behind Finnish foreign language teachers' use of technology in their teaching. Being a master's thesis, the scope of the study is quite limited and instead of aiming to produce widely generalisable results, the purpose of the study is to identify general areas in the teachers' technology-related beliefs and perceptions, and for reasons for technology use in the Finnish language education context. The study aims to provide answers to the following research questions:

1. How do language teachers see the role of technology in language teaching?

2. Why do language teachers use technology in their teaching?

4.2 Participants

The focus group of this study is quite broadly language teachers in Finnish basic education. Instead of a language-specific group such as English teachers, this larger focus group was chosen for two reasons: There were no grounds to suspect that teachers of different languages would treat technology differently or use it for different reasons significant enough to pose limitations for the study (not to mention that a very large portion, if not a majority of language teachers teach multiple

languages), and because not limiting the study to a specific subject made the execution of the study more feasible.

The focus group included three teachers: April, teacher in her 50's, May, a teacher in her 30's, and June, a teacher in her 40's. All participants were women[4], April and May taught three languages and had been teaching in the field for about a decade, while June only taught one and had two decades worth of experience. All three taught grades 7-9 of basic education, with one teaching grades 1-6 as well. All reported not having had any training in educational technology included in their pre-service studies, but all had attended related additional training after graduation. The post-graduation training April and June had received included instruction on specific platforms and devices, while the training May had attended was aimed towards ICT tutors, and later it turned out May was in fact one of the ICT support personnel in their school.

4.3 Data collection

The data itself were gathered via semi-structured interviews. Prior to the interviews, the participants were asked to fill in a background questionnaire, mapping their professional backgrounds and what sort of training had they received in educational technology. The purpose of the questionnaire was two-fold. On the one hand, it enabled the interviewer to pose certain questions without prompting the interviewees to explain their background, minimising the possibility of going on personal-information-revealing tangents, and thus minimising the need for anonymisation at the transcribing phase. On the other hand, the background questionnaire provided some information, such as age and the amount of in-service training in educational technology, relevant at the analysis phase. The questionnaire also included a consent form, in which all three interviewees formally agreed to participate in the present study.

Each participant was interviewed once, via an online video-conferencing application – this was mostly for the sake of convenience, but also because of the lingering COVID-19 pandemic. The interviewing method, in this paper referred to as the semi-structured interview, was based on the 'thematic interview' (*teemahaastattelu* in Finnish*)* introduced in Hirsjärvi & Hurme (2000: 47), a type of semi-structured interview that is based on a set of thematic areas instead of a set of actual questions. The semi-structured interview was chosen as the data gathering method because the

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[4] A majority of teachers in Finland are women. To illustrate this, over three fourths of OAJ's members are female, categorized based on an indication present in Finnish social security numbers (OAJ 2022).

interviews will not be compared with each other but analysed as a whole, and due to its flexible nature: Since there was no rigid list of questions but a set of thematic areas, it was possible to guide the discussion towards themes and topics that emerged during the interviews. As the terminology related to this study – as explained above – is somewhat ambiguous, it was important to retain the ability to negotiate meaning during the interview – this would not have been possible with a questionnaire. Since the purpose of the interviews was to give a more refined idea of a teacher's subjective perception of technology, the interviews did not need to be strictly structured. Finally, I rationalised that since a questionnaire would most likely not reach more than a couple of dozen people at best – too few to produce properly generalisable results – the study, exploring partially untreaded ground, would benefit more from a sample that is smaller in size, but which could produce deeper data (Anderson & Burns 1989: 120). This is a particular strength of the semi-structured interview: it can produce unexpected data (Cohen, Manion & Morrison 2000, cited in Borg 2009: 203) that can take the interview or even the entire study in a new, previously unseen direction.

According to Hirsjärvi & Hurme (2000: 66), in preparation for a semi-structured interview, instead of a detailed set of questions the interviewer should prepare a list of thematic areas, based on the background theory of the study. Having a framework to operate in both guides the interviewer through the interview in a relatively organised manner and keeps the interviews thematically similar; If an interview strays too far from the research questions of the study, it would be less useful for the purposes of thematic analysis and identifying key questions. Hence, and for the reasons explained above, the interviews were structured around a set of loosely interconnected thematic areas derived from the research questions and the theoretical framework. The thematic areas were formed into a flowchart (Figure 1), which was followed in all the interviews. The flowchart allows flexible navigation of the topics, and thus no interview followed the exact same pattern. The thematic areas, in no particular order, were:

1. (The influence of) the community; the school, colleagues, students.
2. The curriculum and its relation to the interviewee's use of technology
3. Barriers to the use of technology
    a. 1st order barriers
    b. 2nd order barriers
4. Beliefs concerning educational technology

These specific thematic areas were chosen because combined they include multiple perspectives into the relationship between the teacher and educational technology. The (interviewee's perspective on the) community ties the teacher's

experiences contextually to their workplace, and the curriculum acts as an overarching contextual theme that all the participants share. The inclusion of the barriers to the use of technology could reveal disposition towards and beliefs about technology (Kyllönen 2020: 28), e.g., what is perceived as a barrier; do the interviewees share the same experiences? It also sought a reversed approach to Research Question 2: Identified barriers could be interpreted as reasons to use *some other* technology instead or as reasons to not use a technology, which in fact are also reasons behind the use of technology. Beliefs concerning technology use was an interconnecting theme, connecting a number of areas in the flowchart.
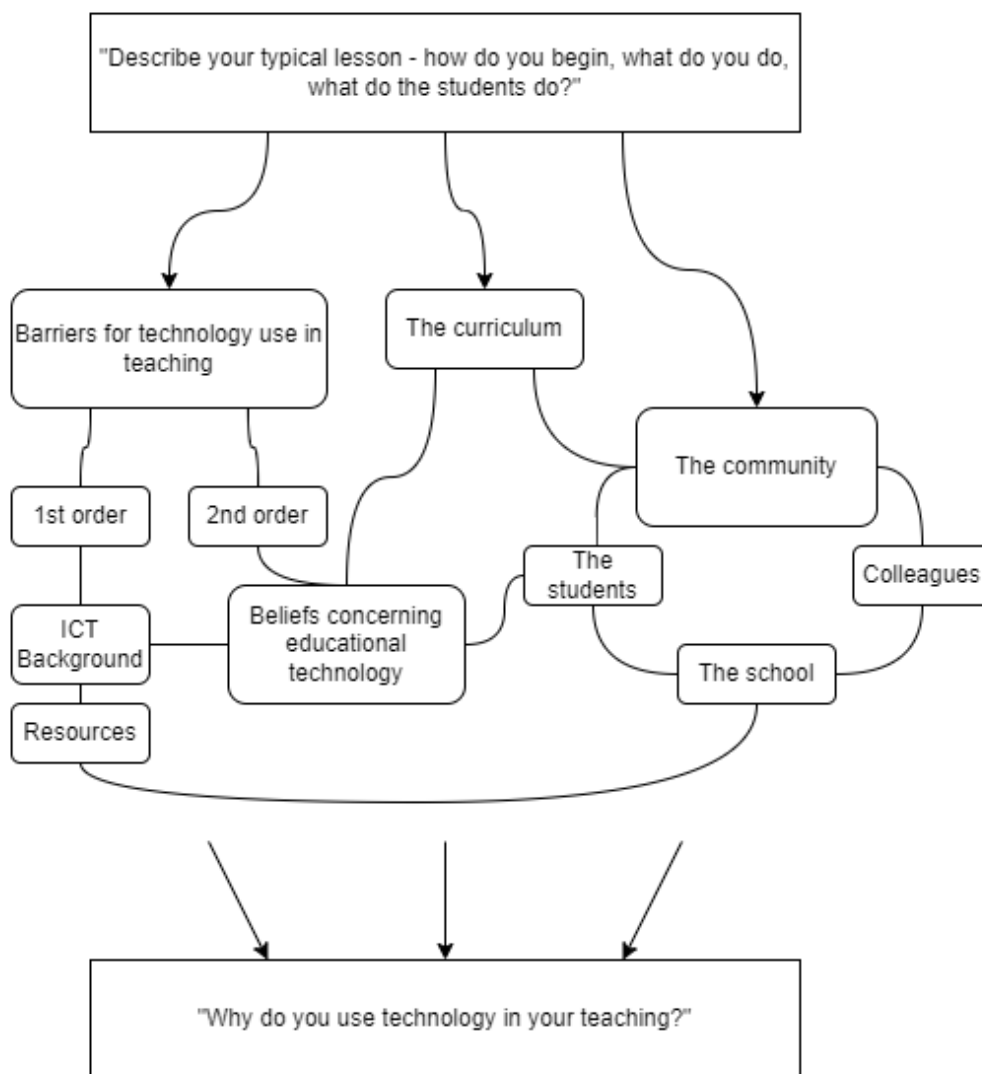

Figure 1 Interview flowchart

To reach both implicit and explicit answers to my research questions, each interview began with a prompt to describe a typical lesson (interestingly, all

participants described a lesson they had just taught earlier in the day) and ended with a direct question "Why do you use technology in your teaching?". This direct question was presented only at the end of the interview, because if asked earlier, the answer the interviewee formulates could influence their subsequent comments; In Vygotskian thinking, speech is seen as a shaper of ideas and a constructor of knowledge — when one talks about their beliefs *(e.g. technology)*, they are constructing them at the same time (Alanen 2003: 58), and it did indeed turn out, that when asked the above mentioned concluding question the interviewees more or less repeated the same points they had already brought up earlier in the interview. The interviews were then transcribed and subjected to thematic content analysis. Since the interviews cannot be compared directly with each other and together form a singular set of data, thematic analysis was chosen to identify themes arising in the data.

4.4 Analysis

The transcribed interview data was analysed qualitatively, with a focus on thematic analysis, which, according to Braun & Clarke (2006: 79), is "a method for identifying, analysing and reporting patterns (themes) within data". An inductive approach (Hirsjärvi & Hurme 2000: 136, Braun & Clarke 2006: 83) was taken because being data-driven, as in there was no pre-existing list of hypotheses, the aim of the present study was to identify broader thematic areas emergent in the data related to the research questions. The interview transcripts were analysed both on a literal (semantical) level, which focused on the literal meaning of what was said in the interviews, and on an interpretative (latent) level, which sought to interpret the data beyond the literal meaning of the words uttered. The main themes discussed in the study were formed by noticing patterns in the data and clustering them together to form larger thematic areas.

The data were first coded in two sets (one for each research question) of three rounds, each round attempting to dig deeper than the previous. Coding began on the literal level, in which the overt, literal meaning of the interviews data was coded. This round included utterances such as "technology makes my work easier", or "the students love Kahoot!". The second round of coding was more interpretative, and aimed to cover any instances in which the interviewees' utterances could be interpreted to represent an underlying thought or something they did not explicitly say out loud. These interpretations were done conservatively though, to represent the interviewee's position as accurately as possible without distorting the data with unnecessary leaps of logic. As an example, the sentence "the laptop storage is in the same hallway as my classroom, so we make repeated visits there" can be inferred to

mean "convenience affects my use of technology". A third, concluding round of coding was then done, aiming to cover any oversights or missed meaning on the previous rounds. For research question 1, the resulting 27 codes were then clustered, forming four main thematic areas. For research question 2, the process produced 23 codes, boiled down to another four main thematic areas. The thematic areas, and the sub-chapters in Chapter 5 in which they are discussed in are presented in Table 1. It should be noted that there is some overlap between the thematic areas and their respective sub-chapters.

Table 1 Thematic areas

Thematic areas related to Research Question 1	Thematic areas related to Research Question 2	Sub-chapter
The curriculum and the teacher	Curriculum and technology	5.1 Role of the curriculum & change
	Outside influence on the use of technology	5.2 Factors external to the teacher
Beliefs about self and technology	Personal reasons for the use of technology	5.3 Technology and the teacher
Beliefs related to technology in teaching	Pedagogical reasons for the use of technology	5.4. Technology in the classroom
Beliefs about technology and the students		

5 RESULTS

In this chapter, the findings of the study are presented in four parts, progressing in a top-down manner from policy to practice: The analysis begins from the role of the curricula and change, and then moves from factors external to the teacher to the teacher's relationship with technology, and finally to technology in the classroom. There is some overlap between the themes since some of the data could be interpreted in various ways or was otherwise relevant in more than one theme.

The extracts from the interviews present in this chapter are based on the transcribed interview audio. The interview transcriptions are fairly accurate in that they are verbatim, containing all the colloquialisms, stutters, and other artifacts of speech, but do not include breathing sounds or accurately measured pauses. In other words, the transcription process aimed to keep all the content of the interviews relevant for the present study. Microsoft Word's automatic transcription tool was used to expedite the process, the output of which was combed through for any mistakes. Since the interviews were conducted in Finnish, the native language of both the interviewer and all the interviewees, the extracts used in this chapter were translated from the transcriptions. In the translation phase, the aim was to keep the original meaning as accurately as possible, but also to formulate the extracts from the verbatim, often very colloquial speech to more coherent text, which is easier to read. The marking *[…]* in an extract indicates that the respective extract has been formed of either a longer bit of the transcription with non-relevant parts removed, or of two or more temporally unrelated bits of transcription.

5.1 Role of the curriculum & change

This chapter discusses the role of technology in language teaching via the curriculum, as well as the relation between technology education and societal change particularly

related to technology in particular. The curriculum is a suitable starting point for the analysis because, as mentioned in Chapter 4.3, as a nation-wide set of education policy, it is the only thing all three teachers share. While opinions and perspectives on it are expected to differ, the curriculum sets a baseline which all three teachers are expected to operate from – making the exploration of the interviewees' relation to the curriculum not only a thematically appropriate starting point, but also a practical one, as the rest of the analysis can be contextually bound to the curriculum. The second part of this chapter, change, is not as directly related to the work of the teacher as it is to the goals of the curriculum; to determine what knowledge and which skills the citizen of the future needs to be a functioning member of society.

5.1.1   The curriculum

In the Finnish basic education system, there are essentially four levels of curricular planning and execution: The National Core Curriculum for basic education acts as an umbrella curriculum that municipal curricula and finally school-specific curricula are based on. The final piece in this mechanism is the teacher, interpreting and realising the curriculum to actual teaching. Because the three teachers interviewed for this study did not for anonymization purposes disclose the schools they work in, the extent to which their local curricula guide their work is unknown. The curriculum was nonetheless very present in the data, even though the interviewees often echoed its contents without explicit reference to the document itself.

As mentioned in Chapter 2.3., the National Core Curriculum regards ICT proficiency as an essential part of a citizen's skills (Opetushallitus 2016, 23). This idea surfaced several times in the data, especially in how the interviewees saw technology as something that is a part of the students' world, as a mundane, commonplace thing. In Extract 1, April explains how the students have come to expect the use of technology in teaching, and later in Extract 2 agrees that technology is the zeitgeist. In Extract 3, June echoes April in seeing technology as a natural part of the students' world, and notes how the education system should in this regard meet the needs and expectations of the students:

1) April: They [the students] feel and as a matter of fact expect that all these things [technological devices] are present, and in a way in languages teaching the students think of games, digital games, and digital materials as a no-brainer.

2) April: …and I think that ICT is the zeitgeist.

3) June: And also, there's that, that it [technology] is a part of the lives of today's children and adolescents, and school has to keep up with the times.

Both examples indicate how the ideas present in the NCC are also present in April's and June's classrooms, even though the above extracts were not prompted by

asking them about the curriculum – a question which April answered by not recalling what the curriculum specifically says about the use of ICT, but thinking there are no detailed instructions on how exactly should ICT be used to teach a certain thing. She nonetheless agreed that she must adhere to the curricula she's tasked to operate with. In Extract 4, June also displays doubts whether the curriculum was guiding her teaching, or teaching in general, in a satisfying manner. Despite this uncertainty, June saw the use of technology in teaching necessary, as illustrated in Extract 5.

4) June: It's sort of a very noble idea that we're raising this great digital generation or something… Occasionally one thinks that… We might not actually know what to teach them [the students] or how to guide them towards the right things. I mean, in the curriculum it's quite vaguely put, like 'guide the students, the student learns like this', but then again, the how and the what is perhaps dependent on the teacher's own interest, own consideration.

5) June: It's just a different world […] One's own teaching and pedagogy just has to be adapted to that surrounding world, and not cling on stubbornly to what was once taught in the seminar.

Interestingly, both June and April felt that because of the commonplace nature of technology and the role it plays in the lives of the students, including it in teaching was required even if they did not have clear instructions on how to achieve this. The NCC indeed focuses more on the *what* and *why* instead of *how* even on a general level, let alone in the context of a single academic subject. May's thoughts on the matter were mostly along the same lines, though her more extensive pondering clearly reflected her background as an ICT trainer of teachers, and perhaps her younger age in comparison to April and June. In Extract 6, May goes a step further than her colleagues, and relates ICT education to the needs of the future:

6) May: I think technology is so… it's obviously a huge part of our lives these days, so it should be somehow noted in primary education that we're educating the worker of the future, who would then possess technological skills.

After being asked whether her use of ICT in the classroom stems from the curriculum, or something else, May repeatedly brought up the desire to prepare the students for the future:

7) May: I know that in their future studies the students will need this low threshold to use technology. New things come up all the time, so from time to time I mix things up a little […] so that they would develop this confidence to move in the digital world, whether it's applications, something done with a laptop, and also these basic working skills, for example surprisingly few students here know what an address bar is, these basic practical terms […] these are the things I want them to grasp when they graduate from basic education.

Even though May frames it as her own perspective, this is very much in line with the NCC (see Chapter 2.3). Similar attitude towards education technology use was present in the other two interviews as well, as seen above: Whether it was because of

the students' expectations or their future or present-day needs, these student-centred reasons to use ICT in their teaching might not stem directly from the curriculum but do nonetheless align with its goals.

Another element from the curriculum present in the data is appropriateness of ICT use, i.e., that there should be a purpose behind the decision instead of just using technology for the sake of using it: "Diverse and appropriate use of ICT enhances the students' possibilities to develop their working and networking skills" (Opetushallitus 2016: 30). April and June both named digital stress and digital strain as something they would rather avoid:

> 8) April: But it [the belief of ICT being zeitgeist] doesn't mean that traditional dice games and other such thing aren't good enough. Like AB-cards in pairs, it doesn't necessarily have to be digital, the students can find it straining, it's good to do things in the old-fashioned way as well.
>
> 9) April: I bet the students experience digital stress as well, so… so it's good to not use the computers every once in a while.
>
> 10) June: Sometimes I think about screen-time, in the sense that it can't always be that [use of ICT].

In Extracts 8, 9, and 10, April's and June's words can be interpreted as them making an informed decision whether to use ICT in a classroom situation based on a sense of balance between different working methods. While neither used the word *appropriateness* (*tarkoituksenmukaisuus* in the NCC) specifically, the intent is similar: to critically reflect when the use of ICT serves a purpose. While their answers carried an implicit meaning of appropriateness, May named it as something she holds valuable; ICT should not be used just for the sake of using it:

> 11) May: We have many lessons where digital tools aren't used at all, it's not like I need to have section in every lesson that utilizes digital tools, but rather whenever it's appropriate. […] I always have the same mantra, that digital tools shouldn't be used for the sake of using digital tools, I try to keep it on board as an appropriate tool.

While all three agreed that it was important to teach their students ICT skills, there was some difference in focus: April and June were inclined to view technology as something the students see as wholly natural (as illustrated in earlier Extracts 1, 3 and 5), while May strived to make her students feel at home using technology. For May it seems clear that the students need instruction in basic ICT competency and that she wants to help them with that (as per Extract 7). However, while in Extract 12 June recognized the same issue with basic digital working skills, instead of explicitly wanting to influence this she wondered if the skills that are so relevant today are even necessary in the future.

> 12) June: Often you'll hear… In the teacher's lounge you'll hear that "oh they can't even attach a file to an email", and in the case of upper comprehensive students it's unfortunately true.

They use their phones for everything, no need to log in to anything, and suddenly when they have an unfamiliar computer in front of them and they should know their email address and how to log in, they're like fish out of water. But then again, is it a skill one needs to have in twenty years?

Therefore, the shared view of these digital natives not necessarily being digitally competent might not always coincide with the perceived ability of providing ICT education. A teacher might use ICT in the classroom because it is an integral part of the world the students presently live in and world the students are going to live in, but this might not translate to actual ICT pedagogy, but merely making the teaching reflect the surrounding world.

5.1.2 Change

In Extract 12, June expressed doubt whether the digital skills taught today are going to be relevant in the future – twenty years is a very long time in terms of technological development; As of the writing of this paper, in the past score of years the development in different facets of ICT (e.g. social media, the smart phone) has very much transformed our society. It is difficult to imagine a similar level of change occurring in the next two decades, though with the recent developments in Artificial Intelligence, the signs can already be seen. In this light, the idea of the school's role in responding to change is quite insightful. In Extract 13, April shares June's concern, though from a different perspective:

13) April: The knowledge the students have is fairly different [...] the nature of knowledge is changing quite a bit, so it's a sort of a downside [of technology] that though the students do learn, they learn this so-called 'digital knowledge', meaning they don't learn the same way the same things as usual, and nobody can know whether this is a good or a bad thing.

June also feels that the school is always a bit behind the curve when it comes to teaching topical skills, and how what gets taught reflects things that are important to the teachers, or at least from their perspective. She also makes the point that when she started her tertiary studies, typewriters were still in use, which have then become obsolete – and how there is no guarantee that the things taught today will remain relevant in the future. While things around it change, June feels that education might lag behind because of some teacher's unwillingness to change; She uses the homogenous culture of the past as an example: In the past one might come home from work and get stuck watching the television – how does it differ from how teenagers today spend long periods of time on their smart devices, something that older people stereotypically frown upon? As illustrated in Extracts 6 and 7, May is also aware of the changing skill requirements for the future citizen, and her approach seems to be preparing the students for the eventual change as well as possible. Extract 14 presents May's answer when asked at the end of the interview why she used technology.

14) May: I want to show the students what they can expect in the future, so... like how we were just talking about confidence, I want technology to be a tool for the students that they hopefully find natural to use. So, when they go looking for jobs, they know that "OK, this I know how to do and that, and I'm ready and able to learn new systems if necessary and I know I got that as well, and I can withstand system errors and I understand how things work"

While this mindset is a driving force behind May's ICT pedagogy, it also reflects the belief that change is inevitable and adaptability is a key skill for her students. Hence, while the perspectives and approaches differ, all three teachers perceive a connection between technology and change and see themselves as parts of it.

As a final note on technology, curriculum, and change, it should be noted that the development of the curriculum (and consequently of the school) is inherently slower than societal change, since it is impossible to respond to change before the change has occurred. This is something May brought up when asked about the relationship between technology and the curriculum: She finds the issue difficult, as the pace of technological change, which creates new things to react to, is rather fast, and the schools cannot keep up with it. She points out that schools can be unequal in terms of technological equipment – because schools have differing technological resources, it is very difficult to create curricula that cover the entire system in an equal manner.

5.2   Factors external to the teacher

Even though the Finnish teacher enjoys relatively high autonomy in their work, there is a degree of direct outside influence as well. In this study, the outside influence recognized in the data has been divided into two categories: the employer's influence on the teacher's work, and the influence technology itself has on its use.

5.2.1   Outside influence

In working life, online environments such as Microsoft Teams are fairly commonplace, with some organisations using widely available services like the aforementioned Teams, and others using platforms made specifically for them – a university's information system designed to meet the needs of students and staff could serve as an example. In Extract 15, May notes how using a learning management system in the classroom can prepare the students for the future in which they are likely to encounter similar systems either in their studies or in working life. This reasoning also ties in with the NCC's goal of equipping future citizens with necessary digital skills.

15) May: In a way it's a skill they [the students] need in the future, that they'll have to [operate] in a... regardless of which service provider is in question, but in an online environment,

where for example work-related stuff are gathered in the same place, emails and files and stuff, that they understand the importance.

The presence of such online environments is indeed commonplace in teaching as well. In Extracts 16 and 17, June and May describe how they do use an online environment as a learning management system, but not because they prefer their respective platforms to others, but because they are more or less obliged to use them:

16) June: I remember attending Pedanet training, because our city has decided that Pedanet is the best thing in the world, while my opinion on the site is not all that positive.

17) May: It's possible to use both Google Classroom or O365 here, though there's a sort of a policy to use O365 for the sake of consistency... in the city or at least within the school. So, I'd prefer Google Classroom, but just because of this policy we're in O365.

While the National Core Curriculum gives vague guidelines on how technology could be employed and what sort of goals there should be for the students' ICT proficiency, more specific guidelines can emerge on the meso-level. The above examples illustrate how an outside factor, in this case the employer, guides the technology use of the teacher. Interestingly, in the above extracts May herself acts as a living example of the aims of her own pedagogy: In preparing the students for the possibility of having to use an online environment in the future, she herself uses one assigned to her in her teaching. Based on the data, it does not seem likely that there is pedagogical reasoning (besides the possible benefits of every teacher using the same platform) obvious to the teachers behind the policies concerning the online platforms used.

While a policy guides the teacher towards the use of technology, it simultaneously guides the teacher away from technology as well, or in this case, other online environments, as is the case in Extract 17. In this sense, city- or school-level policies can also act as 1st-order barriers to technology integration, which, after the computer became more widespread, have been less of an issue in technology integration in comparison to 2nd-order barriers.

Another employer-related barrier is resourcing. Many digital applications commonly used in teaching are subject to a charge, and teachers unwilling to pay have to rely on free versions of the applications. This usually means advertisements or some sort of limitations in the application's functions. June mentioned *Kahoot!* specifically, referring to using the free version of the application "very annoying at times". In Extract 18, she also mentions how in her opinion the employer should provide funding for these services, and while she did not directly express it, it was implied that she should pay for the service herself if she wanted to use it. It is difficult to say whether teachers in general harbour a mindset in which paying for work-related tools is seen as normal.

18) June: Of course, since I haven't yet paid for the application, I'll have to use free version, which is very annoying at times. [...] So, uh. Perhaps I should just sacrifice the [money]... But on the other hand, I think the employer should fund these [unclear], but they don't.

When subsequently asked whether June found the ICT resources available to her sufficient, she only mentioned the dysfunctional wireless internet network, expressing doubt on whether there will ever (or as long as the building stays the same) an improvement in that area. According to June, the slow wireless network causes issues in using time-based digital games, since the students using the school network would be at a disadvantage compared to students using their own mobile network for example. When faced with the same or similar questions, the other interviewees mentioned almost exclusively hardware-related issues. However, since June mentioned her belief that software-related resources should also be provided by the employer, it should not be too much of a leap to assume there are other teachers who share her views.

It might therefore be that software is simply not viewed similarly to hardware: The interviewees often referred using technology use as "a lightening element", which might reflect specific attitudes towards certain elements of ICT. More specifically, since there is a large number of applications from which to choose from, and some of them are available (at least in part) for free, the software side of ICT might be viewed as optional in terms of resourcing. I.e., the perceived value of a software application might not meet the value of monetary investment in one, prompting teachers to deem them less important than hardware devices.

On the other hand, the reason for the interviewees' focus on hardware might stem from the rather present nature hardware – the applications come and go, but the devices can stay the same for long periods of time. May's primary complaint about resources was in fact about aging hardware, the replacement of which had been delayed by a global deficiency of computer chips at the time. Old or otherwise dysfunctional devices are often frustrating to work with, which might have brought devices specifically to mind instead of software, which is easier to replace if necessary. It is of course also possible that the teachers simply find their software resources sufficient compared to hardware.

Nonetheless, the lack of resourcing by the employer in this area might influence the teacher's decision (or ability) to use certain technologies, making it a factor in pedagogical technology-related decision-making.

5.2.2 Technology based reasons

In a circular manner, the use of technology can influence the user's interest in using that technology – an unintuitive user interface is not very motivating to use, for example. On multiple occasions the teachers interviewed mentioned factors directly

related to the technology they used that were in some way hindering the integration of said technology in teaching. Examples included slow wireless internet that made it difficult to use competitive games in teaching, limiting hardware solutions such as short and impractical cabling, and laptops with too small screens to effectively manage data. One interviewee also lamented how her old age made it sometimes difficult to use the computer for extended periods of time, as it strained her eyesight. As put in Extract 19, 'digital strain' was seen as a limiting factor:

19) April: I know that there can be devices that cause problems [because they are new] for some time, and when that happens, the digital strain is heavy because suddenly you have to remember so many things, so many clicks [on the UI], this and this and that, the power switch and when you stop do this and this. Oh, and before this new smart board there was this awfully complex system with all kinds of switches and buttons…

The interviewees also expressed regret that some otherwise attractive ways of integrating technology, mainly personalised digital materials, to the classroom required quite a bit of preparative effort from the teacher and were therefore left underutilised. The mentioned issues, with the exception of insufficient resourcing, could be categorised as 1st order barriers to technology integration, as presented in Chapter 3.3. Interestingly, a barrier such as digital strain is an inherent part of the technology available today; There is really no way to completely circumvent the strain a monitor has on one's eyes for example.

On the other hand, technology that works, and especially new devices can motivate and excite the teacher to use them more: One interviewee got visibly excited as she talked about a new interactive display, or a smart board, recently installed in her classroom.

5.3   Technology and the teacher

This chapter explores the teachers' personal disposition towards technology, and how it is reflected in their use of technology. The dispositions are roughly divided into two categories: work-related, and personal dispositions. The chapter also explores the interviewees' beliefs about their own technological proficiency and the role of technology in their work.

5.3.1   Work-related reasons

An especially clear cross-cutting theme in all three interviews was the ability of technology to make work easier for the teacher. Technology can reduce the workload of the teacher, expediting tasks that would otherwise take a considerable amount of time and enabling the processing of large amounts of data. In the interview data,

Classroom Management Systems and the way in which they centralize the data (i.e., exams, essays, presentations, etc. in the same place) surfaced in association to data management. Digital exams especially seemed to have been a game-changer for the interviewees. April and May both strongly implied that using digital exams over traditional pen and paper exams lightened their workload, and the specific words used are notable:

> 20) April: But I have to admit that my workload is so absurd that if I held vocabulary exams for all my 256 students, I wouldn't be here but grading them, every evening and well into the night. So, these digital exams help me retain my sanity [laughs].

> 21) May: My workload has decreased by a huge margin by [using digital exams] [...] And there is this psychological effect as well: Instead of 80 bundles of exam papers I can take just a laptop home with me, so the work feels lighter.

Extracts 20 and 21 illustrate how the high workload does not only mean that there is more work to do, but also that the teachers experience mental strain as a result. It is perhaps telling that this particular angle surfaces in the interview data instead of just the workload as rote work to be done; Extract 20 seems to imply that ICT as a helpful tool can even make the workload bearable instead of unbearable. The ever-increasing workload of the Finnish teacher has been a popular subject in various news media in recent times, with OAJ (2021) reporting that as many as 60% of teachers are considering leaving the field, the most common reasons for which being the work burden in general, followed by the increasing workload. In this light, teachers turning to technological solutions to share the load is not surprising.

One interviewee mentioned how technology can also offer ready-made teaching materials, such as flash cards, reducing the time it takes to prepare a lesson. The materials popular sites of this sort (such as Kahoot! and Quizizz) host are not made by the textbook publishers or otherwise official, but are instead made by users – i.e., by other teachers. It should therefore be noted that even though digital textbooks for example can provide plenty of publisher-made digital materials, other materials, such as described above, always require being made by someone. In this sense, pre-made teaching materials only exist as long as someone else makes them, and as such do not universally expedite lesson planning.

Finally, one interviewee felt she kept her own working skills up to date by integrating technology, specifically by finding new ways to use technology, in her teaching. This can be interpreted as reflecting the teacher's view towards the role of technology in education in general: Technology is (at least in part) what keeps her pedagogy up to date. Ever changing, technology is surely an ever-flowing spring of novel pedagogical ideas and implementations.

5.3.2 Personal disposition towards technology

All three interviewees seemed to be positively oriented towards technology (which is likely why they volunteered to be interviewed to begin with; they are interested in the subject of the present study), with attitudes ranging from enthusiasm to the more neutral view of changing times, changing needs. The interviewees also talked about their fellow teachers, and how they perceived their colleagues' relationships with technology. As noted in Chapter 3.2., personal beliefs can outweigh knowledge and as such influence pedagogical decisions. Therefore, the teacher's personal disposition towards technology is crucial in how technology is present in their teaching, as poignantly demonstrated by June's account in Extract 22. Extract 4 also contained this same idea.

> 22) June: Some [teachers] think that the students spend a lot of time with computers or smartphones anyway, so it doesn't belong in the school. So uh, just pick up your pencil and start writing.

It was indeed a common observation that teachers have different relationships with technology, and these relationships as well as the digital competencies of the teachers are extremely varied. May, an education technology trainer of teachers, felt that many are hindered by their lacking ICT competency. As one of the teachers responsible for ICT-support in her school, she described how her help was often sought with "preparatory issues", such as whether it is safe to press certain buttons or click certain icons. Technology, based on May's interview, can be perceived as intimidating by some teachers, which is sure to be a factor when making pedagogical decisions on technology use. This is further illustrated in Extract 23.

> 23) Interviewer: Do you think low confidence in one's ICT skills is something that prevents the deeper integration of technology in teaching for many teachers?
>
> May: Yes, I think it is. Many, even if they've used the computer a lot and so, still rely on the three to four-ish familiar pages and applications, and if they at all venture outside that comfort zone, their uncertainty might prevent them from trying out new things. Then there's GDPR, copyright, information security... things like that can be very intimidating for many.

However, May goes on to describe how the period of distance teaching in 2020 during the COVID-19 pandemic acted as a "crash course" on ICT use for many teachers, and ICT-support inquiries have since become less frequent, with the focus moving away from the afore mentioned issues and towards more pedagogical discussion of what to use and when. Hence, there seems to be a connection between ICT competency and when one uses (or, as in this case, is forced to use) technology in novel ways, which, according to May, is reflected as heightened confidence in one's own ability to use technology. According to Opetushallitus (2021: 48), teachers

reported the learning of ICT use as a particular success of the distance teaching period. However, in contrast to May's observations, according to Opetushallitus (2021, 86), there was a slight decrease in (general upper secondary school) teacher confidence in their own ICT proficiency during the pandemic. It should be noted, though, that during the pandemic teachers were required to set up distance teaching on a very short notice, which entails a very different set of ICT skills than regular classroom-based teaching. Hence, the increase in confidence reported by May could be explained by the teachers returning to the familiar environment with enhanced ICT-skills acquired during the technological deep dive of the distance teaching.

April repeatedly compared her own use of technology to that of a neighbouring teacher. In Extract 24, while describing the colleague's unwillingness to start using digital learning games, she uses the phrase *resistance to change.*

> 24) April: …but [the colleague] doesn't want anything new, no they want to do things as they've been done before and… there is this resistance to change.

Later, while describing how digital exams are saving her a critical amount of time (Extract 20), she continues to describe how the above-mentioned colleague tends to suffer from an increased workload because assessment with the traditional pen-and-paper exam method takes a substantial amount of time (compared to digital exams, which can feature automatic checking of answers). This underscores how a teacher's personal disposition towards technology can indeed impact pedagogical practises, and there is also the implication that perceived benefits (time saved in marking exam papers, in this case) alone are not enough to prompt the use of technology in the classroom – the attitude towards technology plays an important part.

The interviewees' beliefs about their own ICT proficiency display some interesting qualities as well. While April begins by stating that she is not "too good, ICT-wise", later, though, she thinks she is "getting along nicely with technology". These are not exactly conflicting statements (which can be present in one's beliefs, as mentioned in Chapter 3.2.), but even though April's own view is that she is not particularly proficient with ICT, her comments still display a certain confidence in her capability to manage new devices and most troubleshooting situations, but perhaps more importantly curiosity as well. This might be the sort of confidence discussed in Extract 23: April's (perceived) low ICT competency might not prevent her from integrating new technologies in her teaching due to increased curiosity in the field, and the confidence to enable the curiosity. May and June both indicate similar curious mindset towards technology as well, though for May it was a driving force behind her initial childhood interest in technology, while June framed her curiosity towards technology in a professional setting.

Does curiosity towards technology reflect a belief of technology being operable through learning? If the teacher does not see technology as something unconquerable and technological proficiency as something unobtainable, but as something they can learn how to use and ultimately have control over, the result can be growth in technological competency as they experiment and learn.

5.4   Technology in the classroom

This chapter explores various pedagogical reasons for technology use in teaching present in the interview data. According to the data, technology plays many roles in the classroom. The interviewees report using technology as a diversifying element, as by utilising technology it is easy to create repetition in novel ways or break "the monotone of the lessons", as put by one interviewee. Another common use was to lighten the classes, and all interviewees agreed that the students find technology exciting and motivating in general. The overall disposition towards educational technology is positive, and it seems the three teachers treat technology not only as a tool, but as an element of their pedagogical practises.

April felt that she was under pressure to constantly introduce something new to the classroom, else the students find the classes too monotonous. May had similar thoughts, presented in Extract 25, though for her the relation between technology and novelty was perhaps more contextual: She explained how she felt the classroom as an environment is different enough for the use technology to be exotic for the students; something that is common at home can be exciting at school.

> 25) May: I think that every time we deviate from the routine here in the school, do something else like get laptops [...] do something different, not just sit down and work the textbook. [...] at home it wouldn't probably mean anything, but in this environment it's sort of a small reward and a moment of celebration, that something different is happening today.

May saw technology as something that can be used to break the pattern, as something that can excite the students by bringing in something novel to the classroom. Furthermore, as illustrated in Extract 26, she mentions how such use of technology is actually a part of a wider pedagogical palette:

> 26) May: ... it's actually something we exploit a lot in teaching when we motivate the students [...] We do these small things that diverge from the normal, which immediately makes the students notice like "Hey we're doing something else than just the regular slog."

What makes this approach stand out is the fact that the use of technology, as presented in this study, is clearly not very uncommon in these schools, even though the uses for technology discussed in earlier chapters have mostly been on a very

general level, or somewhat teacher-centric. It is interesting that May nonetheless finds it as something that can be used as a novelty factor, which perhaps points to the school being an environment in which the continued presence of technology does not always make it transparent. Or perhaps the transparency of technology is more related to its use: When technology is brought in and treated as a novelty or something special, it does not become as transparent to the students as technology that is static in the classroom, such as the devices employed by the teacher. In the data, the interviewees barely mention their computers specifically, unless there is something wrong with them. On the other hand, as illustrated in Extract 27, May also suspects that some students may have ulterior motives which are displayed as eagerness to use technology. Notably, even though in cases such as this the motivation of the student is questionable, the pedagogical benefit of getting the student participate in the learning event remains, making this a part of a teacher's pedagogical arsenal as well.

> 27) May: Some may think along the lines of "if we use laptops, and I'm fast with my assignments, I can play [a game] afterwards, if the teacher doesn't come by", so there can be these kinds of motivating factors.

Resources presumably also play a part. According to May, the laptops-to-students ratio is about one-to-four in her school[5] – if there are not enough devices for everyone, continuous use is impossible, and in schools that for example provide laptops for every student, pedagogical approaches might differ from what May described in the interview. Nonetheless, this could be what using technology 'appropriately', as put in the NCC, is in practise – finding ways to use technology in a manner that is beneficial for both the students as well as the teacher.

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[5] Coincidentally, about one-to-four matches the national average of devices per student (Opetushallitus 2021, 43).

6   DISCUSSION

This chapter will discuss the findings of the study, presented in Chapter 5, and relate them more clearly to the research questions and the theoretical framework. The research questions, as presented in Chapter 4.1. were:

1. How do language teachers see the role of technology in language teaching?

2. Why do language teachers use technology in their teaching?

The present chapter includes three sub-chapters: Two are dedicated to discussing the research questions, one for each question, and the subsequent final sub-chapter will discuss the limitations of the study, as well as avenues for further study.

6.1   Language teachers and the role of technology

While the three teachers' views on technology and language teaching were mostly along the same lines, individual differences peaked up consistently. All three, for example, agreed that the use of technology in teaching was necessary as it is a fundamental part of the students' world, though the individual views varied: One teacher saw technological competency as an important skill of the future specifically, while the other two related the importance of technology integration to the needs of the student today. Using technology in this way is congruent with the NCC, according to which the role of technology is to both learn with and learn about (Opetushallitus 2016: 23) – using technology in such a way that strengthens the students' ICT proficiency (be it for the needs of today or the future) and is integrated to teaching fills this role.

All three agreed on the importance of the curriculum as a guiding entity behind pedagogy, even though doubts were expressed on whether the guidance it provides for technology integration is satisfactory. One teacher also questioned the contents of the curriculum, pondering whether technology education was concentrating on the right things in a world where change is fast paced. This relationship between change and technology, and the implications this relationship has for the education system, is something all teachers perceived in some way, and it was approached in different ways, which relate to the above: One teacher took an active role in preparing her students for the future and its changing needs by using technology in a way that builds the students' confidence in their ICT competency. The other two, though aware of the issue, assumed more passive roles and in the interviews concentrated on voicing their concerns on whether the school was able to respond to change in a meaningful way.

The uncertainty expressed above is not without foundation, as there seems to be an absence of top-down policy on the digitalisation of education in Finland. OAJ (2020) notes that at the moment[6], digital learning does not form a continuous trajectory throughout the educational track, and that as such the digital skills the student learns in school are wholly dependent on where they happen to receive their education. There is no set assessment framework for digital skills in the National Core Curriculum and the guidelines for technology integration are vague, as mentioned in Chapter 3.1. The curriculum's approach to technology integration has also attracted criticism of superficiality and lack of substance (Pirhonen & Rousi 2018: 69). In their report on the digitalisation of Finnish basic education, Tanhua-Piiroinen et al. (2020: 95) suggest including the definition of the minimum requirements for ICT proficiency to the NCC, as well as including similar guidelines for teacher ICT proficiency. From this perspective, the interviewees' position on the curriculum seems valid, though less vague curricular guidelines could help make the role of technology more clear for the teachers.

For the interviewees, technology is something that is often approached critically. The concept of appropriateness of use surfaced on multiple occasions, though not always explicitly. For the interviewees, balance was an important aspect of technology integration, and the use of technology was approached with its function on mind, i.e., how technology can enhance the teaching and work together with more traditional methods, and not be used just for the sake of using technology. While the teachers perceived numerous benefits of using technology, they were aware of the drawbacks too, concerning both the students and the teachers themselves. From this perspective the role of technology can embody some contradictory qualities: Technology seems to have immense value for the teachers and can be crucial, critical even, for their ability

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[6] In 2020; This does not seem to have changed as of the writing of this thesis.

to manage their workload, but it can simultaneously cause issues in the forms of digital strain, which seems well documented (Coles-Brennan, Sulley & Young 2018), and various technical difficulties that can disrupt teaching.

Even though the benefits of technology were clear for the interviewees, they implied that some of their colleagues had negative attitudes towards technology despite being aware of its apparent benefits. The use of the phrase *resistance to change* in relation to a technology-rejecting colleague in the interview data indicates that negative attitudes towards technology are indeed present. According to Ertmer et al. (2012: 424), both attitudes (and beliefs) are perhaps more crucial for successful technology integration than barriers related to resourcing – the equipment, for instance, will not be of much help if the teacher resents using it.

One teacher displayed somewhat contradicting views on technology: She simultaneously viewed technology positively and perceived a shift in the nature of knowledge the ramifications of which she was unsure of. As discussed in Chapter 3.2, beliefs permit conflict with each other (Kalaja et al. 2016: 10), which seems to be the case in this example. There is uncertainty related to using technology as well, as indicated by one interviewee's account on providing ICT assistance to her colleagues who were unsure of how to operate ICT devices and what they were allowed to do with them from an information security standpoint.

Finally, technology has a clear role of an enhancing element in learning, as it can be employed not only to diversify the teaching, but also to develop new pedagogical practises and generate learner motivation. As such, technology is not only a tool for the interviewed teachers, but also a fundamental element of their pedagogical practises, with multiple functions and purposes. The role is somewhat amorphous, transforming from role to role depending on the context and the situation. Different teachers approach technology differently, and the students likely have their own perspectives as well; What is novel and fun for one is boring for another. In general, the role of technology was seen as growing.

6.2   Reasons for the use of technology

Reasons for the use of technology are mostly, perhaps inherently, tied to the perceived role technology has for the teachers, and therefore this sub-chapter shares some features with the previous one, though from a different perspective.

Firstly, as an underlying foundation, the teachers feel obliged to follow the curriculum, even if its exact contents are unclear or disagreed with to some degree, and as such it is a direct reason why technology is being used. This is an important observation, as the curriculum is meant to function as a common thread that education

follows, and even though the interviewees' personal methods, reasons, and resources for the use of technology vary, their technology integration nonetheless operates on the same foundational basis, even if it is not a very solid one, as discussed in the previous sub-chapter.

Interestingly, even if congruent with the contents of the curriculum, the motivation to use technology did not always stem from the curriculum, but from personal observations or beliefs. As mentioned above, one teacher saw integrating technology into her teaching as important because she could provide her students with technological skills she believed they would need in the future, while the other two integrated technology because they saw technology as a part of the students' lives, and as something the students expect to be present in education as well. Both views echo the NCC's sentiment of ICT competency as an important life skill, and account for technology's presence in society in general, also mentioned as a focus of instruction in the curriculum (Opetushallitus 2016: 23). However, some of the interview data indicated that the level of technology integration does not always extend beyond the mere digitalisation of traditional teaching methods, as technology often seemed to serve a presentational or data management purpose. On the other hand, since the NCC is rather vague about the specifics of technology integration the teacher is free to implement technology as they see fit within their individual pedagogical framework.

In addition to curricula-based or belief-based reasons, there are more concrete factors affecting the technology integration of a teacher as well. One such factor is the influence of top-down policy from the administrative level, which in the data is present as the obligation to use specific learning management systems based on school-or city level policy. Two of the three interviewed teachers reported being affected by these kinds of guidelines. Since school and city level policies reach many teachers, it is probably safe to assume this is one of the more prevalent shared reasons teachers are guided towards specific platforms. There does not seem to be previous research on this specific topic, though Wideroos and Pekkola (2011) have investigated municipal decision-making regarding educational technology acquisitions in Finland, noting that in the process of decision-making the discussion about the pedagogical usefulness or appropriateness of the equipment can be superseded by discussion of cost (Wideroos & Pekkola 2011: 318-319). Additionally, Khalid and Buus (2013: 17) mention the lack of ICT planning (i.e. policy) at the school level as a barrier to technology integration, meaning both the presence and absence of policy can steer technology use to a specific direction.

Another reason, perhaps in the same vein, is resourcing. Though all interviewees described having a sufficient number of devices at their disposal, complaints about lacking or aging infrastructure were prevalent. According to EDUFI (Opetushallitus

2021: 53), however, almost a third of teachers reported in a 2020 survey that their lack of devices is reflected as lower quality teaching. This indicates that even though the participants of the study found the quantity of their equipment sufficient, others may not.

Resourcing extends to the digital realm as well. One teacher also found using freeware annoying and thought that the school should provide the teachers paid-for software applications in addition to the hardware. Hence, funding can guide teachers towards certain technologies, and the lack of resourcing can keep the teacher from using a technology, or guide towards freeware. Additionally, the devices themselves can steer technology integration into a specific direction: A devices operating system, for example, can limit the range of applications available. While the above are not exactly reasons to use technology (on the contrary), they indicate barriers (some hindering and some completely obstructing) to technology integration, and in part shed light on why the teachers use the ICT solutions they use instead of something else.

The ability of technology to lighten teacher workload seemed especially important for the participants as two brough the subject up specifically, implying they might not be able to survive without the help of technology in some areas, especially exams and assessment. Bilgin, Rowe, and Clark (2017: 178) name assessment "the single most important contributor" in university teacher workload, but the impact of digital exams on teacher workload seems to remain unresearched, especially in the basic education context.

Another barrier identified within the data was ICT proficiency, with one interviewee expressing that she felt some of her colleagues were discouraged by their lack of proficiency in some areas of ICT. This includes not only the technical ability to use the devices, but other knowledge as well: Some find areas such as GDPR and information security intimidating enough to keep them in their comfort zones and restricting novel uses of education technology. This finding is congruent with previous research, as the link between teacher ICT proficiency and technology integration is fairly well documented (e.g. Khodabandelou et al. 2016: 56, Hsu 2010).

The interviewees all displayed a mix of curiosity and confidence towards technology integration, which seemed to drive their pedagogical practises in that regard. Concrete pedagogical uses for technology included the creation of both repetition and diversifying elements for their lessons, as well as the use of technology as a medium of teaching that motivates the students, even if the motivation is not necessarily driven by the opportunity to learn but by the opportunity to misuse the technology. Additionally, one interviewee felt pressure from the students to develop new ways of integrating technology, or the students would find the teaching too monotonous.

The reasons for the use of technology are evidently numerous and can range from the guidance of the curriculum to the influence of wider policies and the interests of the individual teacher. The interviewees were all able to discuss their use of technology in a critical manner, perhaps indicating that there are pedagogical thought processes behind technology implementation in addition to the external influence.

In conclusion, this study has aimed to map the role of technology as seen by language teachers in Finnish basic education, and their motives for using technology in their teaching. The results represent only a tiny snapshot of the target group, and thus are not generalisable. The findings indicate that the participants view the role of technology in a multitude of ways, some of which are shared and some individual. The curriculum provided come common ground, as did a critical approach to integrating technology in teaching, and the view of technology as a necessary tool. The differences were mostly in the smaller, individual differences in perspective: One teacher, for example, related technology to the needs of the students in a different way compared to the others. The findings regarding the reasons for the use of technology are similar: The curriculum forms a foundation for the use of technology in the classroom, and all three participants agreed that technology is helpful and enhances the teaching. In addition, there are barriers to technology integration that guide the use of technology by limiting the range of choice the teacher has.

6.3   Limitations and further studies

Perhaps the single most significant limitation of the present study was the small number of participants – though the interviews yielded enough data to proceed with the study in a meaningful way, the interviews were constructed with a larger number of participants in mind, meaning the interviews did not delve as deep into the interviewees' pedagogy as they could have, since at the time more interviews were expected to take place. There were initially five participants, but one withdrew from the study, and one interview recording was lost in an unfortunate mid-interview computer crash. The reason for the number of participants boils down to the researcher simply not finding any more suitable participants – teachers are notoriously busy, and the present study being a master's thesis, there were no resources to motivate participation with rewards. The lingering pandemic might have also affected the number of interested participants. Despite the above, the data nonetheless yielded satisfactory results and if anything, the participant pool could have been more diverse, as all participants were female, had been in the field for over a decade, and mostly had similar educational backgrounds.

While the present study cannot, due to the small sample size, be generalised to the wider population of teachers, the results nonetheless indicate what sort of reasoning can exist behind language teacher technology use. The findings can thus be treated as basis for future research though, and there is plenty to grasp on.

It is apparent that the use of technology and especially the teachers' perspectives of technology's larger role in language teaching are constructed from a vast number of pieces that can be unique for each teacher. There are several possible avenues of further study present in this paper. The relationship between policy-imposed barriers for technology integration and preferred practises of the teachers clearly exists but has not been researched so far. There is also the alternate angle of how the absence of policies related to educational technology could affect the integration of technology – either positively or negatively. Another subject of interest is how teachers perceive and strive to achieve the goals related to technology in the NCC in the absence of dedicated ICT classes. Since the goals of the curriculum are somewhat open to interpretation, there might be significant differences between individual teachers. Finally, to what degree do the teachers who share a work environment (i.e., school) share technological practices – since there are clear differences present in this study – as teachers often share the same resources, local curricula, and work in close proximity to each other, as there should be level of school-level conformity in their practises.

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APPENDIX 1: ORIGINAL INTERVIEW EXTRACTS

1) April: …ja nekin kokee ja pitää sitä itse asiassa jopa ihan itsestään selvänä, että kaikkea tämmöistä on ja että tavallaan niinku kielissä pidetään jotenkin oppilaat pitää sitä itsestäänselvyytenä että että pelataan ja on digi pelejä ja digi materiaalia.

2) April: …mä itse jotenkin koen, että että se tietotekniikka on tätä päivää.

3) June: Ja sitten jotenkin ehkä just se, että se se on osa nykyajan lasten ja nuorten elämää ja koulun pitää olla myös ajassa kiinni.

4) June: Tavallaan on jotenkin kauhean sellainen… öö Ylevä ajatus, että me kasvatetaan jotain sellaista niinku suurta digi sukupolvea tai jotenkin. … Aina välillä niinku vähän niinku miettii että… Me ei välttämättä osata ehkä kuitenkaan niinku jotenkin.. Opettaa niille. Tai ohjata niitä jotenkin silleen oikeisiin asioihin. öö Siis tavallaan, sehän on siellä opetussuunnitelmassa jotenkin silleen. Ainakin siis se miten mie Niinku tavallaan. Mitä sitten sitten tulee mieleen, että se on aika silleen jotenkin ympäripyöreästi tai jotenkin silleen että. 'Ohjataan oppilaita, oppilas oppii näin', mutta sitten tavallaan se on ehkä jäänyt sitten vähän silleen. Opettajan oman mielenkiinnon, oman harkinnan varaan jotenkin.

5) June: Että että ne se on vaan niinku se on eri eri maailma. … Omaa opetusta ja omaa pedagogiikkaa pitää sitten vaan niinku sopeuttaa siihen vallitsevaan maailmaan, eikä pitää jääräpäisesti kiinni siitä mitä seminaarissa on. Aikanaan kerrottu.

6) May: Minusta teknologia on niin.. kun sehän tietysti on niin valtavan iso osa meidän elämää nykyään, niin kyllä se peruskoulussa pitäisi jollakin lailla huomioida, että me koulutetaan niitä… tulevaisuuden työntekijöitä, joilla olisi sitten niitä teknologiataitoja.

7) May: Mä tiedän että jatko-opinnoissa oppilaat tulee tarvitsemaan semmoista niinku matalaa kynnystä ruveta käyttämään teknologiaa ja voi tulla uutta. Uutta tulee koko ajan niin täällä välillä just vähän sekoitetaan pakkaa … että tulisi tavallaan semmoinen varmuus liikkua tuolla digimaailmassa oli se sitten sovelluksia tai läppärillä tehtävää hommaa tai muuta ja sitten semmoisia perus työtaitoja, esimerkiksi meillä yllättävän harva oppilas tietää, mikä on osoiterivi tämmöisiä niinku ihan tämmöisiä käytännön termejä … niin tämmöisiä asioita haluan että heillä varmasti on kun he peruskoulun päättää, niin tämmöiset muun muassa tämmöiset asiat olisi sitten.

8) April: Mutta se ei tarkoita sitä, etteikö ihan perinteiset noppa pelit ja kaikenlaiset tämmöisetkin ole ihan hyviä. Niinku ab kortit pareittain suullisesti, että ei sen ole mikään pakko olla kaikki digitaalista, että sekin voi olla oppilaiden mielestä välillä kuormittava, että on ihan hyvä, että on niinku perinteisiäki tapoja tehdä asioita.

9) April: Mä veikkaan että oppilaatkin kokee sitä digitaalista stressiä, että.. että siinä just tuleekin se että on hyvä, että välillä sitten ei käytetäkään tietokoneita.

10) June: Välillä vähän miettii sitä sellaista. Ehkä vähän sellaista ruutuaika-asiaa. Siis siis siinä mielessä, että. Että ei se voi olla pelkästään sitä [digin käyttöä].

11) May: Meillä on siis oppitunteja monta jossa ei käytetä digiä ollenkaan, että se ei ole mikään semmoinen että mulla pitäisi joka tunnilla oli joku digiosuus, mutta aina kun se on tarkoituksenmukaista [...] Mulla on aina se sama mantra, että ei digiä digin vuoksi että ihan ihan tarkoituksenmukaisena työkaluna pidä- koitetaan pitää sen mukana.

12) June: Aika paljon niinku kuulee… Meilläkin opettajan huoneessa sitä, että. Että 'kun ne ei ne osaa edes sähköpostin liitetiedostoa lähettää.' Ja se on kyllä yläkoululaisten kohdalla valitettavan totta. Että tavallaa. Ja ne käyttää sitä puhelintaan kaikkea, mihinkään ei tarvitse kirjautua sitten yhtäkkiä kun sulla onkin vieras kone edessä. Sun pitäisi tietää mikä sun

sähköposti on ja miten sinne mennään, niin sitten ne on niinku aivan kuutamolla. Mutta sitten toisaalta. Onko se semmoinen taito joka ihmiselle kahdenkymmenen vuoden päästä edes tarvii enää olla?

13) April: Että se tieto mitä ne oppilaat sitten osaa niin on hyvinkin toisenlaista … tiedon luonne niinku on muuttumassa tosi paljon, että niinku tavallaan huono puoli on se, että vaikka toisaalta oppilaat oppii, niin ne oppii lainausmerkeissä semmoista digitaalista tietoa, että ne ei opi samalla tavalla samoja osioita kuin aikaisemmin ja kukaan ei voi tietää onko tämä hyvä asia vai huono asia.

14) May: Haluan näyttää oppilaille, että mitä mitä heillä on niinku odottaa jatkossakin eli… Juuri niin kuin oli puhetta siitä varmuudesta, että se on heille semmoinen työkalu, joka on toivottavasti itsestään selvä. Sitten kun hakevat vaikka töitä että siinä kohdassa… tietävät että OK tää multa ainakin sujuu, tän mä osaan, ja olen myös valmis ja kykenevä oppimaan uusia systeemejä tarvittaessa et mä tiedän että nekin nekin multa sitten sujuu että mulla on se taito ja mulla on se vaikka just se virhetilanteiden sietokyky ja niin edelleen olemassa, että mä ymmärrän miten- ymmärrän miten asiat toimii…

15) May: No tavallaan sekin on niinku mun mielestä tulevaisuuden taitoa, että kyllä hekin joutuu varmaan jossakin tämmöisessä… Oli se sitten minkä palveluntarjoajan tahansa, mutta jossakin tämmöisessä verkkoympäristössä, missä tehdään niin kun vaikka työasiat tehdään jonnekin tuota samaan paikkaan, että siellä on sähköpostit ja siellä on yhteiset tiedostot ja kaikki muut että he niin kun ymmärtää sen merkityksen.

16) June: Muistan käyneeni yhen yhen pedanet koulutuksen, koska meidän kaupunki on päättänyt, että pedanet on maailman paras ja oma mielipide siitä ei ole ollenkaan ihan niin positiivinen.

17) May: Meillä on rinnakkain mahdollista käyttää google classroomia tai O365:sta. Se on vähän mennyt semmoinen linjaus, että käytettäiskö mieluummin O365:sta, että että olisi niin kuin vähän sama linja… koko kaupungissa tai ainakin samassa koulussa ja näin. Että tuota itse haluaisin käyttää Google Classroomia mutta tuota ihan tämän tämmöisen linjauksen takia niin sitten ollaan siellä O365:ssa, mutta sitä käytän kyllä esimerkiksi jos jotain esseetä tehdään niin siellä on ne ohjeistukset ja palautuspäivämäärät ja muut oppilaille ja pystyvät sieltä seuraamaan niitä tehtäviä.

18) June: No tietysti vielä kun ei ole itse maksanut maksanut että käyttää sitten ilmaisversiota, niin on se välillä tosi ärsyttävä. … Että tota. Pitäisi ehkä vaan uhrata se… Mutta toisaalta mä oon niinku myös sit et , että työn työnantajan pitäisi kyllä niinku rahoittaa näitä.. [epäselvä:] mut ei ne rahota..

19) April: Tiedän, että varmasti voi tulla semmoisia laitteita mitkä niinku tuottaa hetken aikaa ongelmaa, että silloin kun on joku tämmöinen tilanne niin tuntuu että se digitaalinen kuormitus on kova kun yhtäkkiä pitää muistaa niin monta niinku asiaa ja niin monta klikkausta ja nää nää ja noi ja noi ja tuolta vielä se virta ja sitten kun lopetat niin teet niin ja niin ja niin itse asiassa juuri ennen tätä älytaulua oli sellainen, että se oli hirmu monimutkainen kun siellä oli vaikka mitä nippeliä.

20) April: mun täytyy myöntää että se mun työtaakka on niin järjetön, et jos mä pidän sana kokee n256:lle oppilaalle niin mä en tässä nyt olis, vaan mä olisin joka ilta yötä myöten niitä tarkistamassa. Että tää, nää sähköiset kokeet mahdollistaa sen, että mä oon vielä niinku järjissäni. [nauraa]

21) May: työmäärä on mulla tippunut aivan valtavasti sen myötä […] Ja siinä on semmoinen psykologinen vaikutus, että mä vien läppärin kotiin enkä 80:tä koe nippusta kotiin, että onko kevyemmältä ainakin se työ siinä.

22) June: No osa on just sitä mieltä, että ne on niin paljon muutenkin muutenkin niinku tavallaan koneiden kanssa tekemisissä tai että tai puhelimen niinku että että ei ei. Ei ei se. Kuulu niinku tavallaan enää sitten kouluun, että sitten vaan. Vaan tota. Kynä käteen. Kirjoittamaan.

23) Haastattelija: Koetko että tai no ehkä se nyt tuli tässä jo vähän esille, mutta koet sä että tää niinku käyttövarmuus on sellainen asia mikä monella ehkä estää sitä niin kun… niin kuin syvempää integroimista siihen opetukseen.

24) May: Kyl- kyllä varmasti on, että moni on edelleen, vaikka olisi käyttänyt koneita paljon ja näin, niin he käyttää usein niitä sanotaan kolmea-neljää tuttua sivua ja sovellusta, että sitten jos yhtään mennä sen mukavuusalueen ulkopuolelle, niin se epävarmuus saattaa siellä olla semmoinen että en- ei niinku uskalla uskalla lähteä kokeilemaan, ja tuota sitten tää G2R, tekijänoikeudet, tietoturva tämmöiset asiat niin saattaa monelle olla semmoinen tosi pelottavan kuuloinen asia.

25) April: mutta hän on sitä mieltä, että "ei ei mitään uusia juttuja", että hän pitää tehdä niinkuin aina ennenkin ja… Että niinku on sitä muutosvastarintaa.

26) May: Mä luulen, että aina kun koulussa tehdään jotain poikkeavaa, että jotain muuta kuin oli se sitten että käydääs hakea läppärit vaikka […] että tavallaan jotakin poikkeavaa, että ei vaan sitä et ota kirjeen sille ja istu siinä pulpetissa nyt tämä tämä tunti. […] kotona se ei varmaan merkkaisi juurikaan mitään, mutta tässä ympäristössä niin se on aina vähän semmoinen pieni palkinto ja pieni juhlimisen hetki tiesi, että jotain jotain muuta tänään tapahtuu.

27) May: …Sitähän me paljon hyväksikäytetään sitten opetuksessa kun motivoidaan. Tehdään niitä semmoisia pieniäkin asioita täällä joka poikkeaa normaalista niin se on heti semmoinen, että hei täällä nyt täällä tehdäänkin jotain muuta kuin tätä… perus perus puurtamista.

28) May: Monelle on se, että "hei että otetaan läppärit jos mä oon oikein nopea niin mä voin pelata clunckeria tossa lopputunnista jos opettaja ei kierrä tätä puolta luokkaa", että sieltä voi olla myös tämmöisiä monella semmoisia omia omia motivaatiotekijöitä.