Smart teachers as updatable software: A genealogical examination of teacher subjectivity in the era of technology

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This thesis results entirely from my own work, not offered previously for any other degree or diploma.

Word count: 68,634. I declare that the thesis does not exceed the permitted maximum word length.

Signature ....Sejin Lee........

Abstract

Teachers nowadays are expected to be fluent in using technology that would 'work like magic' in their classrooms. It would be very unwise for teachers to publicly criticise the value of digital technologies where the governments around the world put enormous efforts to innovate their education by implementing education technology reforms. In this context, this research elucidates the formation of a specific teacher subjectivity at this specific historical juncture to rethink what we are seeing as the smart teacher. As a research method, this study employs a 'genealogy' which enables to examine rules, norms, and knowledge of contemporary discourses about 'SMART education', an education technology initiative in South Korea. To identify what the target discourses produce, this paper uses 'four-part Foucauldian framework' to demonstrate the constructed teacher subject: 1) What aspects of teachers needed to change (substance), 2) For what reason should this change happen (mode), 3) What are teachers supposed to do to change themselves (the regimen), 4) What a model or perfect version of teacher might look like (telos). In order to appreciate each axis, I analyse public documents (e.g. national policies, research reports, news articles), and interview transcripts with the detailed analytical tools provided by Fairclough (2003). I argue that the 'smart teacher' is positioned as 'updatable software' which is to be thoroughly, constantly, ubiquitously and autonomously updatable. I discuss SMART education discourses is the complex of seemingly organised but coarse articulation of disparate discourses. Further, I contend that the identified teacher subjectivity might not be smart in so far as teachers are supposed to be 'receptive' in relation to external changes rather than teachers being proactive or critical. Ultimately, I recommend that we open up our discussions regarding different possibilities by re-imagining future versions of education and teachers.

Contents

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1. Introduction

1.1 Opening remark: research context and problem

Research Background. This thesis starts from the popular understanding that "we are living in the era of technology" which seems to be almost a truism (see e.g. Boyd & Crawford, 2012; Selber, 2004; Watson, 1998). Like 'magic', most of the impossible appears to be now possible thanks to the development of technology. Bio-scientists can precisely manipulate our genetical information by using cutting-edge technology, Artificial Intelligence is being researched to enhance the safety of self-driving automobiles, and researchers study consumers' perceptions about lab grown meat which will be commercialised by 2021 (see e.g. Bryant & Barnett, 2019; Doudna & Charpentier 2014; Pei et al., 2017) Most recently, a prominent historian, philosopher, and a best-selling author, Yuval Noah Harrari (2018) says Information Technology and Biotechnology in combination with Artificial Intelligence and Big data algorithms might *soon* change significant parts of human life when he "zooms in on the *here* and *now*" (p.2, emphasis added). He even expects that humankind might soon be pushed from labour because technology will be able to do practically everything that humans can do. Whether his anticipations will come true or not, these changes and popular ideas represent our general agreement to the happenings and the ideas in the society given that it is more common to hear that "technology can do everything" instead of "can technology really do everything?" or "technology failed to do this and that" (see e.g. Johnston, 2017; Sancho-Gil et al., 2020).

The story is no different in education where most people also seem to believe that information and communication technology (ICT) *has* a generally 'good' influence on educational changes (Selwyn, 2016).

see students receiving supports from their tutors in the comfort of their home and watching

online lectures, reading guidebooks, and taking exams (see Lee, 2018b). Students learn

abstract concepts by solving problems with Virtual Reality technology (see Chen et al.,

2019). It is often reported that utilisation of technology would enhance learners' autonomy,

higher thinking ability, and the quality of learning experiences (Kirschner & Erkens, 2006;

Lim & Chai, 2004; Sanprasert, 2010; Pivec, 2007; Young, 2003). Globally, many

governments have been putting efforts to introduce the latest technology into education which

makes sense given what have been seen and reported by news, public reports, research

articles and more (see e.g. Cardellino & Leiringer, 2014; Joo et al., 2016; Jones & Cowie,

2011; Kearney et al., 2018).

Personal Background. Now, I want to connect the global educational movement to my

personal but arguably common experience in South Korea as a teacher. Since 2011, the

influence of a new governmental education agenda, SMART education, has been substantial.

'SMART' is an acronym for Self-regulated, Motivated, Adaptive, Resource-enriched, and

Technology-embedded education (Korean Ministry of Education, Science and Technology,

2011). In relation to the initiative, even a 'smart city' was launched in 2011 where wireless

network, personal portable digital devices, and Interactive White Boards (IWBs) were fully

provided in every classroom in the entire schools investing enormous number of budgets (see

chapter 4, for the details).

In 2016, I was a member of an action research community in relation to SMART education.

My team members (in-service teachers, academic researchers) and I decided to study one of

the new pedagogies, 'Flipped Learning'. To briefly explain, it is named after its

characteristic, the inversion (Sargent & Casey, 2020). For instance, in a conventional

classroom, students would learn several concepts at school and practice by themselves at

home. In Flipped Learning, in contrast, students would learn the concepts by watching some

pre-made videos with their digital devices at home and would practice at their classrooms with the help of teachers or would carry a task while collaborating with their friends. It was the literally 'hot' SMART education pedagogy in South Korea. It was broadcasted in a documentary series on a public TV channel with the title "the *magic* of Flipped Learning". Books about Flipped learning were published and the person who invented (John Bergman) Flipped learning was invited to South Korea. He had a tour to attend flipped lesson demonstrations in several schools and encouraged teachers, teacher educators as well as administrative officers in education which were all published in featured articles. In Korean research journals, Flipped Learning was referred to as the 'innovative' pedagogy since it has made learning more accessible and engaging for students with the help of technology (Jung, 2015; Lim, 2015; Seo & Seong, 2015).

I was one of those researchers who focused specifically on the magical results of Flipped Learning. My team designed flipped learning lessons to teach English. We implemented the designed lessons and reported the outcomes in international conferences (see e.g. Chang & Lee, 2016) which mainly discussed the desirable results such as students' increased motivations and the communicative competence and how I developed my teaching practices. We were less interested in the downsides of the pedagogy and partially introduced difficulties very briefly at the end of presentations. We strongly encouraged teachers to reflect on their practices while implementing Flipped Learning. I regret that my team was not critical in the waves of a certain enthusiasm that technology can remedy educational problems and improve learning results and that my studies contributed to the reproduction of the enthusiasm even though it was not intentional.

Research Problem. As can be seen from my experience, teachers nowadays are expected to (or perhaps *want to*) be prepared to utilise the technology which would 'work like magic' in their classrooms. One of the reasons behind such expectation would be related to our

understanding of the role of teachers that they should be able not only to teach what is considered as (soon to be) necessary and important in the society but also to teach as effectively as possible for students so that the next generation can be prepared properly. Teachers, consequently, are being paid more attention as the agents which should be trained to fulfil what is capable with the technology and what is seen in the above-mentioned venues (see The Scottish Government, 2015). I do not intend to say they are false claims. Rather, I do intend to raise our critical awareness about our *here* and *now*. Most recently, computational thinking in education has been spotlighted (Tang et al., 2020). As of 2018, computing education has already been inserted into the national curriculum in South Korea which is intended to teach students how to code a programme. Teachers, of course, are struggling to cope with the newly added responsibilities to teach how to code.

At this particular juncture, before we run to chase what is believed to be urgent and important with regard to the technology and the matters of education again, it seems to be worthwhile to question the knowledge, rules, norms (i.e. historical artefacts) which we have taken for granted. While we have been very quick to integrate new technology into education, we have been quite slow to critically think about what we are building throughout these changes. It is not because of the anger that we have been fooled by magic, but because of a need to critically think about this specific construction of the historical artefacts shaping a specific version of 'good' teacher and limiting other possible futures. "Why does a good teacher need to change themselves constantly by updating their beliefs, teaching practices and identities to be fluent in using cutting-edge digital technologies?", "Why cannot a good teacher take risks by spending extra time in activities that were not originally planned?" If we only have very few answers to the questions above, we had better start to examine where we are, what we do for the sake of futures of education. This thesis, therefore, investigates certain power relations which might be involved in the creation of the new teacher subject in relation to technology

use in education. I launch an examination on the current construction of 'good' teacher represented in the power relations. I start to question what we have been told, what we have talked, what we used to believe or even *now* about good teacher in order to reconceptualise our restricted understanding for it in 'the era of technology'.

1.2 A Gap in current literature on teacher subject in relation to technology use

To be informed by studies that aim to investigate constituting elements of teacher subjects, this thesis focuses on three strategically chosen literatures in relation to technology use of teachers: 1) professional competence of teachers 2) teachers' practices and perceptions 3) teacher identity. This is aligned with Foucault's schematic four-part framework that interrogates 1) certain part(s) that the teacher subject is expected to work on to fit in, 2) reason(s) for the change, 3) practices that teachers need to do, and 4) the ultimate form of teacher subject. Through this, I intended to explore how the bodies of knowledge understand the respective area which can shed light on the formation of a teacher subject at this particular moment of educational change.

Professional competence of teachers. Professional competence of teachers about technology use includes (but not limited to) 'digital competence', 'ICT competence(s)', 'Technological Pedagogical Content Knowledge (TPACK)', and 'digital literacy'. Even though the given names are seemingly different, the studies of the proficiency revolve around a set of skills, knowledge, and attitudes required to use technology for learning and teaching (see Røkenes & Krumsvik, 2014; Tømte et al., 2015; Tondeur et al., 2018). Just as the title of Haydn (2014)'s article indicates, the main purpose of those research is mainly focused on "how to get teachers to become 'good at ICT' in their teaching" by increasing the relevant knowledge, skills as well as attitude.

We can see the expansion of the knowledge with the efforts made by researchers. For example, TPACK, referring to the knowledge base for teachers to effectively teach with technology (Scherer et al., 2018, p.68) is noteworthy. Ever since it was first proposed by Koehler and Mishara (2005) as a new knowledge domain, the framework has been investigated to test its validity and reliability. Scherer et al. (2017) test the factor structure of TPACK and stability of technology-dimensions in relation to other dimensions. Scherer et al. (2018) see how attitudes toward technology is related to TPACK. The body of knowledge do increase our understanding of the technology-related competences theoretically (e.g. conceptual validity and reliability) and empirically (e.g. wide survey and sophisticated statistical methods) that the society is expecting from teachers. Researchers seem to take practical responsibilities such as telling what kind of knowledge, skills and attitude on which a (pre-service) teacher might work more based on measurements of specific domains of subjects which originate from the conceptualisation of the competences which I call it 'medicalisation' (see section 2.2). The body of knowledge, however, tends to miss that its own academic practices are keen to strengthen its theoretical validity and to address its practical necessities. As Lee and Lee (2020) comment, the literatures are limited in considering of the general tendency of knowledge practices and underlying assumptions by which teacher subjects are being shaped in a certain but unidentified form.

Teachers' practices and perceptions. The existing literature on teachers' practices and perceptions of technology use is vast. Among many possible ways of categorisation, I argue that studies can be categorised based on 'whether technology use bring the expected effects on teachers' perceptions and practices' A pattern found in the results of the literature is that teachers found technology effective in teaching and learning process and they changed their practices as well as their attitudes. In addition, I contend that there is an implicit bias in the

literature that teachers' negative perceptions or inactive use of technology should be corrected by appropriate measures such as teacher training programmes.

This point would make more sense with an example. Wang and Tahir (2020) published an article reviewing 93 literatures about effects of using 'Kahoot!' in classrooms. They introduce Kahoot! as a game-based learning digital platform designed to review students' knowledge as a break from traditional learning and teaching activities. They conclude that the digital platform has a positive effect on changes in teachers' attitude among many other positive areas (Wang & Tahir, 2020).

Wang and Tahir (2020) add some comments that there are also studies where Kahoot! has little or no effect on the same areas. They also describe some teachers' negative perceptions in relation to the teaching practices while using the platform including unstable network connectivity, pedagogical limitations coming from the scoring system, and the lack of delicate difficulty control of quiz. It is implied that the system could be improved so that the good effects seen by most teachers could be brought into more classrooms where those teachers who could not see the good effects and who have negative perceptions are.

If the above research is about using a software, there are studies investigating the other types of technology use including hardware (see Deaney et al., 2009; Ifinedo et al., 2020; Roblin et al., 2018) or new digital pedagogies (Henderson & Philips, 2015; Seery, 2015; Starčič et al., 2016). Those investigations also report mainly the positive teacher perceptions and practices in relation to the type of technology use, but with some notes of negative perceptions.

What is remarkable is that the dominant positive results seen from teachers' practices and perceptions about technology use trigger another group of research. This group of research attempts to explain the phenomenon by constructing certain factors and their relationships within a model which enables to tell what factors would encourage teachers' technology acceptance or would discourage the use of technology (see Kohler & Mishara, 2005; Tondeur

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et al., 2018). This group of studies is no doubt orientated to favour the former (this will be further discussed in chapter 2).

It might be *true* (if there is such a thing) that teachers' perceptions and practices are mainly positive due to *good* effects of technology use in education. Also, it seems practical to work harder to minimise the observed weaknesses of technology yielding negative perceptions. For the same reason, it is hard to find a good reason to object to maximising the use of technology by understanding enabling factors. However, it might be dangerous to put all our efforts in the use of technology at the expense of neutralising certain voices. The current literature tends to treat negative perceptions or ineffective practices as the objects of normalisation (or correction) for the better education. Researchers might be ignoring unspoken stories telling something important. In this regard, the literature lacks considerations about the academic practices which can possibly inscribe unquestioned assumptions that those teachers who do not have positive perceptions and practices must be guided or convinced so that they can harness the magic-like technology *like everyone else*.

Teacher identity. The literature about teacher identity regarding technology use discuss 'shifting' (or 'must be shifting') identities of teachers while they are engaged with technology. In often cases, what it means by shift is a transition in recognising one's identity as a teacher: from 'a knowledge transmitter' who delivers information often lacking ICT competence (i.e. outmoded identity) to 'a designer' who orchestrates a complex system of learning and teaching with technology use (i.e. developed identity) (Burnett 2011; Kozma & McGhee, 2003; Ottensen 2006; Loveless & Williamson, 2013).

A few studies report what teachers may go through in the transition such as risks or even conflictions in dealing with technology (see Burnett, 2011; McGrail, 2006; McNaughton & Billot, 2016; Sockman & Sharma, 2008). For instance, McGrail (2006) shows contradicting perceptions regarding technology use by teachers. The educators are aware of benefits of the

laptop in teaching English. However, with the institutional control coming from the laptop technology initiative, their general experiences and attitudes toward the laptop use in the wider school context were not equally favourable. To cope with the conflictions and to facilitate the transition, Burnett (2011) highlights the necessity of greater consideration to the contexts where teachers experience digital literacy practices if identity shift should happen. Ottensen (2006) proposes an approach with sociocultural theory to better understand the interplay of personal and institutional contexts where teachers are situated rather than expecting teachers absorb what is taught and change their identities.

The studies in the body of knowledge shed light on the teachers' identities that is being constructed in relation to technology use. They also give rise to the voice that teachers' identities interact with their situated contexts and even the formed identities are constantly changing. However, the current literatures do not illuminate power relations existing in this historical juncture which might influence the transition process as well as the stage of the process (i.e. the contexts). In other words, they do not point out that taken for granted assumptions about technology use are involved in shaping the contexts where teachers are situated. As Lin and Schwartz (2003) argue, the changes brought by the technology development and the introduction to education let us reflect on our new environment, teaching practices, and perceptions. However, without the consideration of the power relations, the reflection might render us becoming more receptive to the presence of different values and practices (Lin & Schwartz, 2003).

I have briefly explored the related literatures and found out that they help to understand what it is *good* for teachers to have as competences, what teachers' perceptions, practices are like, and how teachers' identities change in relation to technology use. They seem to expand our knowledge by constructing stronger knowledge structure (e.g. TPACK or Technology Acceptance Model) with many proofs supporting it. However, they commonly lack criticality

towards their own contributions by not considering the wider contexts where teachers are situated as well as our taken for granted assumptions. These limitations have led me to take an alternative approach to studying the formation of teacher subject and the power relationships at this historical juncture.

1.3 An alternative approach: Foucauldian Critical Discourse Analysis

Drawing from the explored literatures, this thesis proposes an alternative approach which enables us to illuminate the formation of teacher subjects on the matter of technology use. The approach starts from the meaning of 'subject'. The term refers to the result of endless processes of construction of identities (Ball & Olmedo, 2013). Subject could be either significantly or partly (but never completely) shaped by the contingencies of power relations at the particular historical juncture in which one is thrown and said in specific ways (Ball & Olmedo, 2013). In this regard, what is meant by subjectivity is a version of what teachers do in order to fulfil one's constructed identity at a particular moment of history.

Previously, subjectivity of teachers has been an important topic and it attracts scholarly interests. There is a dearth of knowledge, however, discussing the subjectivities in the field of technology use in the current contexts of education. Further, researchers mostly associate teacher subjectivity with neoliberal regime of truths prioritising competition and entrepreneurship in examining undergirding power relations (e.g. Ball, 2003; Ball & Olmedo, 2013; Codó & Patiño-Santos 2018; Fenwick, 2003; Wu 2018). It cannot be denied that they help recognise one important aspect of the wider contexts to which researchers might pay attention. However, to broaden contextual considerations and to not to limit academic discussions in the neoliberal power relations, this research takes the different approach. It examines subjectivity of teachers by disentangling teacher subjects entwined with constantly

changing power relations in various contexts revolving around our taken for granted
assumptions about technology use in education.

Theoretical background. This study takes the notion of Foucauldian discourse to examine
the construction of teacher subjectivity. 'Subjectivity' can be called a certain pattern by
which the field of possibilities are shaped and produce possibilities of existence. Hence, this
research resembles the poststructuralist epistemological belief that truths are constituted
rather than there is only one truth. Accordingly, the approach of this study rejects the ideas
that a timeless and universal version of 'good' teacher exist or that stakeholders in education
need to struggle to build coherent claims about unconditionally 'good' education. To think in
a different way, this approach investigates the ideas, the claims, and the underlying
assumptions shared by a majority of people as knowledge at a particular historical moment
which this thesis defines them as 'discourse' (Lee, 2020). The definition of discourse is
rooted on the fundamental concept of power existing only in action (Foucault, 1996). To
investigate the teacher subjectivity, therefore, this thesis examines the dominant discourses
which both exercise its power to its subjects and represent power relations by producing and
circulating a specific version of knowledge, rules, norms, and regulation (Foucault, 1996;
Foucault, 1972) in relation to teachers' essential competences, desirable teaching practices,
favourable perceptions toward the uses of technology, and their proablematic or ideal
identities.

Methodological approaches. This thesis archives SMART education discourses which I
strategically have chosen to examine the dominant discourses. SMART education is one of
those government initiatives launched in 2011 to introduce and to integrate ICT in South
Korean education. SMART education is defined as an intelligent and tailored learning system
for educational environment, contents, method and assessment (MoEST, 2011). It is also
stated as the driving force which innovates the educational system enhancing the 21st learner

competences. It has been enacted as an important national task in various educational components which influenced in developing digital textbooks, teacher education programmes, SMART education schools (Lee & Lee, 2019b). What is meant by SMART education discourses, in this thesis, are the set of claims prioritising the aforementioned statements.

The collected statements in the archive encompass various texts which prioritise SMART education in Korean Society including policy documents, research reports, news articles, and interview scripts of teachers as well as the other stakeholders in a city. To highlight the significance of the documentation strategy, I am tempted to emphasise the research site, Sejong, the smart city. Given that smart city intends to empower its residents by adopting technology among many other functionalities, it resonates with the main intention of SMART education discourses (Albino et al., 2015). Further, it is the place where "SMART education Model Schools" were designated, enacted and researched (Kim et al., 2013). It also attracts numerous educational leaders from abroad visiting those schools to benchmark. By documenting not just a variety of texts, but also the essence of about SMART education discourses in important venues (e.g. research institute, classrooms, the office of education), the thesis can scrutinise the target discourses which represent the set of knowledge, norms, rules as well as our taken for granted assumptions and which exercise its power to the construction of teacher subjectivity.

To analyse the construction of the teacher subjectivity in SMART education discourses, I draw a four-part Foucauldian framework as the main research questions (these will be detailed in Chapter 3): 1) What aspect of teachers needed to change (substance), 2) For what reason should this change happen (mode), 3) What are teachers supposed to do to change themselves (the regimen), 4) What a model or perfect version of teacher might look like (telos). The four questions guide this research to identify the pillars of the constructed (but

never permanent) teacher subjectivity in SMART education discourses. To complement the analytical framework, I draw on Fairclough's textual analysis (2003) with which he provides useful tools for the close examination of written language (i.e. the collected texts). Combined, they allow me to launch an examination about how smart teacher (teacher subjectivity) is constructed in SMART education discourses.

1.4 Research Aims and Questions

The broader aims of this study are to provide a different type of knowledge to the literatures about teachers' professional competence, perceptions, practices and identity in relation to technology use; to add to the knowledge that exists on the subjectivity of teachers at this historical juncture; to contribute to the understanding of power relations between teachers and SMART education discourses in the current climate of education; to suggest an analytical framework for understanding how teacher subjectivity is constructed in the society; to present the version of teacher subject which people are incited to accept in this historical juncture; and to provide a chance for us living *here* and *now* to think and act in many other ways instead of the dominant way. By doing so, the study attempts to open up the possibilities for unique, contingent and diverse versions of future education and modes of teachers in which the teachers can freely form themselves in each of the different settings.

I am aware that the theoretical concepts and the methodological choices of this thesis can be found complex as they go along with the layers of discussions. To clearly state the developments of the arguments, and to help to shape the coherency of the research, I have designed three research questions:

How is 'smart teacher' constructed in 'SMART education' discourses?

To what extent and in what ways are SMART education discourses different from the previous dominant discourses in education in the society?

What is the significance of the findings for concepts and theory associated with teacher subjectivity, SMART education discourses, and, power?

The first research question illuminates the discursive construction of teacher subjectivity by analysing SMART education discourses. It uses the Foucauldian analytical questions and Fairclough's tools to examine teachers' substance, mode, regimen, and telos (see section 1.3). The second research question explores the power relations existing in SMART education discourses. Based on the findings regarding the constructed teacher subjectivity, it seeks to identify the existing power relations inside the discourses by displaying commonalities and variations among the embedded and related discourses. The third research question address the significant impact of the findings of the first two research questions on the concepts being studied in this study. It is to show contingent and unique power relations revolving around the discussed teacher subjectivity being created by dynamic interactions in SMART education discourses. Together, they provide a sonorous understanding of these critical issues within the field of teacher education especially in relation to technology use.

1.5 Layout of the Thesis

The thesis proceeds as follows: the next three chapters set the stage in collaboration with the discussions about current literature. Chapter Two discusses the existing literatures about teachers' competences, perceptions, practices, and identities revolving around technology use. The chapter argues that the value of knowledge contributions made by the literature tend to be tilted to practicality and lacking criticality. It points out the lack of critical awareness on

power relations which shape teachers as a certain type of subjects. Chapter Three introduces a theoretical framework of power to better examine the constructed subjectivity of teacher in SMART education discourses and to explore the entangled power relations. Whilst recognising the knowledge offered by the current literature trying to reconceptualise power at this historical juncture, the chapter proposes a conceptualisation of power based on contingency. It argues that such attempts to understand power relations based on the notion of competition or to connect structure and agency based on causality could be rather deterministic. Considering that there is a lack of scholarly discussions on this topic, this thesis strategically intends to provoke further discussions by opening up variety of possibilities to understand the teacher subjectivity.

The latter four chapters deliver the speciality of the thesis. Chapter Four outlines the methodological approach of the research. Chapter Five and Six illuminate the constructed teacher subjectivity in SMART education discourses to answer the first research question. Both chapters analyse various types of texts collected across the society as empirical data. Amongst the texts, the interview texts are collected in 'a smart city' in South Korea where SMART education discourses are most significant which proves the originality of the research (see Chapter 4 for the details). Chapter Seven discusses the confirmed teacher subjectivity in relation to the second and third research question being considered. It aims to demonstrate the significance of the findings by discussing it within the broader contexts as well as with the implications to the concepts and theory of power in the current climate of education. Even though I cannot completely disentangle every aspect of SMART education discourses and every detail of power relations in them, the findings allow me to argue that the current teacher subjectivity is unique and contingent at this moment and therefore can be changed for us to be freer. The last chapter recaps the research with a summary of the findings and reflects on this research project itself. It addresses both the knowledge gained

through the applied analytical framework as well as its limitations resulting from the choices

made. The chapter concludes with a discussion about the possibilities for future research.

2. Literature review

2.1 Introduction

In the previous chapter, I have stated that this research project problematise our taken for granted notions that technology usually 'work like magic' and that teachers are supposed to put effort to use digital technologies to ultimately innovate the problematic version of education (i.e. the current education). Now, this chapter is devoted to the discussion of the existing bodies of knowledge about teachers and technology use in education. As I stated in section 1.2, I focus on three areas of research: professional competence of teachers, teachers' practices and perceptions and teacher identity on the matter of technology use, which I will refer to as Area TC, TP and TI.

The choice of these three bodies of knowledge is largely inspired by 'Foucault's ethical formation of a subject' (this will be detailed in section 4.2.3) which will also guide the analysis of SMART education discourses. The ethical formation of teacher subject has to do with 1) certain part(s) that the teacher subject is expected to work on to fit in, 2) reason(s) for the change, 3) practices that teachers need to do, and 4) the ultimate form of teacher subject. By looking into studies in the chosen areas, I intended to understand how teachers are discussed as subjects and to find a gap to which this research can contribute by identifying the limited understanding of teachers.

Regarding the choice of the literature, it would be legitimate to argue that critical studies that aim to address taken for granted notions about the educational uses of technology (e.g. technology use enhances learning and teaching, teachers need to have digital competences). They would be effective in revealing the truth of falsehood by showing the true reality that is contradictory to the unquestioned notions (see e.g. Selwyn, 2016). However, this approach

cannot lend us a perspective from which we can make sense of what contemporary power creates given those studies seem to be interested in examining what is true and false.

To see beyond, this extensive literature review will report predominant narratives that might be limited in proposing alternative approaches. In the following sections (i.e. section 2.2, 2.3 and 2.4 respectively), I first describe how I constructed each dataset with 'a systematic scoping process' by using 'Scopus', an abstract and citation database (Lee & Bligh, 2019). With detailed explanations about the review process, for instance, relevant search terms, data parameters and multiple layers of including/excluding criteria, not only this review of literature can assure transparency but also can encourage fellow researchers to take part in this critical research practice to be vigilant in reflecting on our own academic practices. Next, I outline individual areas of research in accordance with my analysis and critique. It is noteworthy that I take academic articles, scholarly practices and trends seen in the articles as discourses. By doing so, I can critically examine what those dominant discourses are engaged with (e.g. medicalising professional teacher competences, neutralising undesirable teaching practices and building up the better teacher identity) in terms of their discursive consequences.

After I review each area, I admit that what has been studied contributes to building up practical knowledge which facilitating the technology adoption process. However, I contend that the trends seen in the literature lack 'criticality' in considering teachers' subjectivity in relation to technology use positioning teachers as 'the deficits'. After I comment on the potential limitations of this literature review, I introduce a few academic works willing to open new questions which critically scrutinise developments we witness in relation to technology. I conclude this chapter by emphasising the necessity of scholarly effort to address the imbalance identified in the dominant trends in the academic literature with an alternative approach that I take in this research.

2.2 Area TC: Teacher Competence on the matter of technology use

This section describes how the chosen studies in Area TC are collected and discusses the scholarly works about the professional competence of teachers with a particular focus on technology use. Regarding the latter, two themes are presented as a frame of studies in Area TC: 'medicalising the professional competence of teachers' and 'expanding the realm of the professional competence'. While admitting many possible readings of this area, I report a trend: there is a consensus that teachers' competences in relation to technology use need to be identified, measured and expanded up until they turn into scientific knowledge that is able to diagnose the problem and prescribe as solution. I accordingly propose that my project can contribute to diversifying the scholarly discussions by questioning the trend such as what studies in Area TC have been engaged and how they are limited.

2.2.1 Assembling and reading Area TC

I utilised an online website (i.e. Scopus) in order to recruit ample and trustworthy research papers given the website offers the largest abstract and citation database of peer-reviewed literature (Lee & Bligh, 2019).

The search terms were:

- "Technology" AND

- "Teacher" AND

- "Teacher education" AND

- "Competence"

The criteria (see Table 2.1) for this review was set to retrieve studies concerning teachers'
technology-related competences in the field of teacher education. I set the data parameter
from 2011 to 2019 in social sciences to limit the volume of results to a manageable number
and to align the review with the historicity of the SMART education initiative in South
Korea, which was launched in 2011.

This first process brought 108 items as a result of the initial search on Scopus which was
implemented in October 2020. I read through the titles and the abstracts. As can be seen in
Table 2.1, I excluded some of the articles by using a reference management software: they
were not written in English or they had slightly different focus (e.g. a focus on an implication
for developing students' digital competence or ICT textbooks for students; a focus on specific
teaching practices). Then, I examined the sources of the peer-reviewed academic articles to
assure the trustworthiness of the collected studies whether they demonstrate a considerable
level of editorial rigour (Web of Science Group, 2020). At the end of this process, I secured
23 articles.

Criteria	Inclusion	Exclusion
Publication year	2011 – 2019	Before 2011 and after 2019
Language	In English	Not in English
Methodology	Empirical, primary research	Non-empirical
Publication type	Academic journal articles indexed in Scopus and Web of Science	Editorial notes, book reviews
Education level	K-12	No learning setting in K-12
Subject of study	K-12 teachers or pre-service teachers	Students, lecturers
Topic of study	Teachers' competences	Teachers' practices

Table 2.1 Final inclusion and exclusion criteria
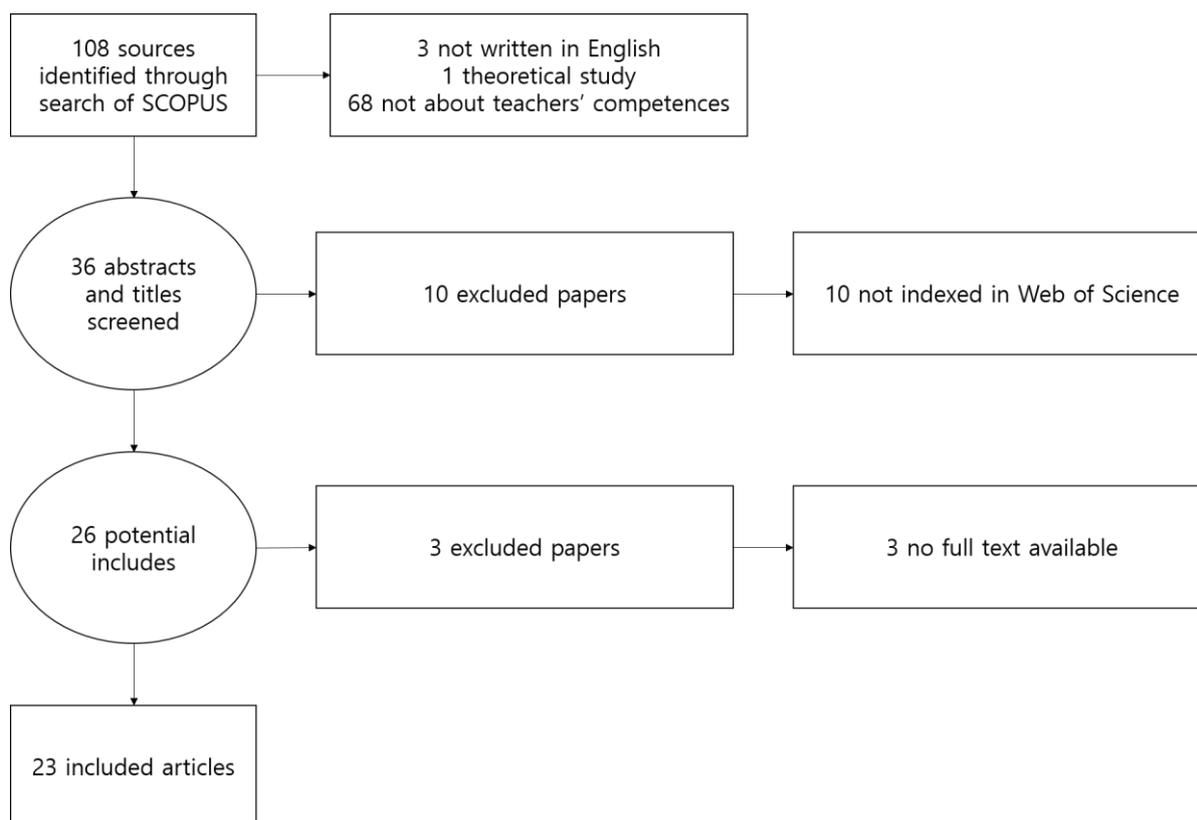
Figure 2.1 Systematic review flow chart

After this process, I began to read each text in full. Whilst I was looking into how the researchers engage with professional competence of teachers with regard to technology use, I noted various terms for the professional competences and how the terms were treated along with the main claims as well as supporting proofs. Later, I present the main narratives of the area identified in academic articles regarding 'what theories in technology enhanced learning have been doing in teacher education'. Lastly, to supplement this process, I made use of additional studies that are commonly mentioned in the dataset.

The terms for the professional competence of teachers in relation to technology use in Area TC have many variants. Teachers' technology-related professional competence is mostly referred, for example, as "digital competence(s)", "Technological Pedagogical Content Knowledge (hereafter TPACK)", "ICT competences" in the dataset with small variations

(e.g. teacher competence with ICT, competence in ICT, digital literacy). Although the given names are slightly different from one another, what they represent could be stated as 'a set of skills, knowledge, and attitudes required to use technology for learning and teaching' (see Gudmundsdottir & Hatlevik, 2018; Røkenes & Krumsvik, 2014; Tømte et al., 2015; Tondeur et al., 2018). In this thesis, I call them 'digital competences'.

2.2.2 Medicalising professional competence of teachers

The most distinctive application of the digital competences seems to be connected to 'examination', 'diagnosis' and 'prescription', which I call a 'clinical process' (i.e. medicalisation). It means that such competences are the core concepts that are applied to measure teachers' knowledge, skills and attitude which first become the tools for diagnosis and following prescriptions. Within this frame, teachers are supposed to perform properly in response to educational (or social) changes that are triggered by the development of technology and to cope with corresponding demands. Before discussing the clinical process, I intend to illuminate how this process itself attains the legitimacy.

2.2.2.1 Imposed responsibility

> The development of education in the 21st century has displayed ***the importance of technology in improving the learning and teaching processes***. … ***the introduction of information and communication technology (ICT)*** and new digital educational content requires teachers, counsellors, mentors, and trainees ***to master the ability to introduce new approaches***. … (emphasis added, Barišić, Divjak & Kirinić, 2019, p.163)

As shown in the excerpt above, the majority of articles in Area TC (N=20) sets a close relationship between "the introduction of ICT" and "learning and teaching processes" in which the former 'improves', 'enhances' or 'increases' the quality of the latter (see e.g. Guillén-Gámez et al., 2019, p.2; Tondeur et al., 2018, p.32). Consequently, it is the educators' responsibility "to master the ability to introduce new approaches".

The elements of the relationship (i.e. the development of ICT or the benefits of using ICT) might be directly mentioned. However, the responsibility of initial teacher education institutions or (pre-service) teachers is often explicitly stated.

> Like other professionals, teachers have experienced increased *access to digital tools, media and digital resources* in recent decades (Prestridge and Tondeur 2015). Students and *teachers use various digital resources and social media networks in their teaching*. This, in turn, influences pedagogy and how students and teachers interact and engage with learning (Burden et al. 2016). … Other research claimed that pre-service teachers *are expected to be proficient in their use of information and communication technology (ICT) for teaching and learning.* … (emphasis added, Gudmundsdottir & Hatlevik, 2018, p.214)

For instance, as the above text shows, the writers do not mention the positive side of using ICT. They seem to take a neutral stance instead by introducing a recent trend that teachers have more "access to digital tools, media and digital resources" which influences learning and teaching. However, the academic commentators, in the end, put forward that future educators "are expected to be proficient in their use of ICT for teaching and learning" which is set as a responsibility.

> Teacher training institutions (TTI) are expected to prepare future teachers to *integrate technology in their classrooms*. The need to integrate technology,

30

pedagogical and content knowledge has been noted by many researchers (Romeo,

Lloyd, & Downes, 2013; Sweeney & Drummond, 2013; Sang, Tondeur, & Chai,

2014; Voogt et al., 2014). This has resulted in the adoption of various strategies by

TTIs in order to develop pre-service teachers' competencies to use technology and

harness its potential to *enhance teaching and learning*. (emphasis added, Tondeur

et al., 2018, p.32)

In a similar way, the above excerpt starts by making a truth claim which represents a demand:
teacher training institutions 'are' requested to educate future teachers so that they can
"integrate technology in their classrooms". Along with the approved need (notice the cited
sources) that future teachers should be prepared in terms of technology integration, the
authors promote that using technology can "enhance teaching and learning". Even though the
benefits are not listed (see section 2.3.2 for the examples of the benefits), the writers
complete the relationship between the introduction of ICT and the benefits of using it without
instigating controversies regarding the issue (i.e. whether ICT really can benefit learning and
teaching).

2.2.2.2 Examination

Having set the responsibility of teachers, many studies in Area TC highlight the deficiency of
the teachers' relevant competence in comparison to the responsibility (see e.g. Al-abdullatif,
2019; Brox, 2017; Instefjord & Munthe, 2016; Starčič et al., 2016; Tondeur et al., 2018). For
example, Instefjord and Munthe (2016) state teachers do not feel well prepared to use
technology effectively and Hilde Brox (2017) maintains the digital competence of teachers
has not yet reached 'the desired level'. With this regard, the digital competences render

measuring tools examining teachers' knowledge, skills and attitudes which find pathological

matters that hamper teachers' performances in relation to technology integration.

Technological Pedagogical Content Knowledge (i.e. TPACK) would be one of the most

distinctive examples in which digital competences are utilised as conceptual frameworks of

examining tools. In short, TPACK is a theoretical structure providing the knowledge basis in

conceptualising teachers' specific knowledge that is necessary to pedagogically teach the

content of a subject with technology. TPACK appears in eight articles out of 23 (i.e. Al-

abdullatif, 2019; Barišić, Divjak & Kirinić, 2019; Dockendorff & Solar, 2018; Farish, 2016;

Farjon, Smits & Voogt, 2019; Instefjord & Munthe, 2017; Tømte et al., 2015; Zhu, Justice &

Mugenyi, 2015).

In terms of quantitative research approach, Ahlam Mohammed Al-abdullatif (2019)

investigates the technological knowledge (TK) and TPACK confidence of student teachers in

Saudi Arabia by utilising the TPACK Confidence Survey that was developed by Albion et al.

(2010). The purpose of the study is to assess whether pre-service teachers have the sufficient

level of technical knowledge and the confidence. The writer explicates sections in the survey:

> … A second section requested participants about … their TK in relation to modern
>
> technologies; and their competence with a range of ICT applications on a four-
>
> point Likert scale that ranged from "no competence" to "very competent". The
>
> extent to which participants' interest for using ICT … and the extent to which they
>
> believe ICT could enhance students learning outcomes surveyed in this section on
>
> a four-point Likert scale ranged from "not at all" to "very great extent". The third
>
> section comprised 20 statements that requested participants to indicate their
>
> perceived confidence to facilitate ICT integration with future students (TPACK
>
> confidence) on a four-point Likert scale… (Al-abdullatif, 2019, p.3400)

As the inserted text states, TPACK confidence is specified in a form of 'statement'. By applying the Likert scale, the domain of interest can be calculated; TK is measured by items that list various technology-related applications such as Microsoft Excel, Google (see ibid., p.3406). The data harvested from the student teachers are quantified which would tell not only the average but also the under (or above) the average. The use of TPACK as the framework of measurement of teachers' digital competence can be identified in Barišić, Divjak and Kirinić (2019) as well. The researchers test a survey (i.e. SPTKTT, the Survey of Pre-service Teachers' Knowledge of Teaching and Technology) in order to validate it as a tool to measure the TPACK of future teachers in Croatian education context. They investigate whether TPACK domains can be measured in a reliable way and test the possibility by implementing multiple validation processes.

In contrast to the aforementioned articles, Dockendorff and Solar (2018) take a qualitative approach in using the TPACK framework. They assess the impact of a software (GeoGebra) in teaching and learning Mathematics courses by analysing one research participant's experience and reflection. They applied two surveys to see the development of the TPACK from a research participant's responses and examined how the software use affected the participant. Even though both approaches draw on the TPACK framework in different ways, the underlying intention comes down to the measurement of the digital competence of teachers based on the identification of relevant domains.

2.2.2.3 Diagnosis and prescription

Now that the responsibility of teachers to engage with technology and the theoretical frameworks for measurement have been set, the clinical process moves to diagnosis of the status of teachers (or related institutions and their curriculums), and later, to prescription

advising the necessary actions to be taken. These two stages of the clinical process are identifiable in 18 articles.

Diagnosis. Such studies tend to diagnose that teachers lack certain areas of the digital competences (see e.g. Al-abdullatif, 2019; Farjon, Smits & Voogt 2019; Guillén-Gámez, Lugones & Mayorga-Fernández, 2019*;* Tondeur et al., 2018). Those aspects include (but are not limited to): teachers' insufficient knowledge about ICT in promoting the learning process (Sipilä, 2014); the ability to meaningfully appropriate ICT in the practical context rather than just having skills in using technology (Guillén-Gámez, Lugones & Mayorga-Fernández, 2019*;* Tondeur et al., 2018); remaining informed regarding new digital technologies and solving their own technical problems (Al-abdullatif, 2019); using ICT for continuous professional growth (Esteve-Mon, Cela-Ranilla & Gisbert-Cervera, 2016); empathy (García-Pérez, Santos-Delgado & Buzón-García, 2016).

Based on the responsibility of teachers that they need to use ICT and all the potentials of ICT that have not been realised well enough, such diagnosis cannot counter that basis; the given diagnosis cannot be thwarted but can only be bolstered by supporting proofs. For instance, Guillén-Gámez, Lugones & Mayorga-Fernández (2019) write a diagnosis as follows:

> … it is clear that the future foreign language teachers who participated in this study have ***the medium-low level of pedagogical digital competence*** in the use of ICT, which corroborates the results obtained by Sadaf et al. (2016), Siddiq et al. (2016) and Pinto-Llorente et al. (2017), since said teachers continue to have a digital pedagogical competence lower than expected. In this sense, the results of Salomaa et al. (2017) continue to be confirmed due to the ***fact*** that, currently, future teachers still do not receive ***solid initial training*** in regards to ***the development of pedagogical digital competence***. (emphasis added, ibid., p.11)

The future teachers have "the medium-low level of pedagogical digital competence". The researchers connect the finding to what other researchers have argued partly because to inform readers that their academic contribution is in line with the academic trend. The writers point out a pathogenic "fact" that the teachers are not receiving "solid initial training" which deters "the development of pedagogical digital competence". Again, the commentators draw on an academic work which reinforces their diagnosis that these kind of practices in initial teacher education institutions have been problematic and reported elsewhere.

Prescription. Diagnosis necessitates prescription suppressing the pathological matters. The prescriptions tend to be focused on reforming teacher education programmes. Al-abdullatif (2019) and Spiteri and Chang Rundgren (2017) argue that the reformation can be implemented based on certain conceptual frameworks of digital competences such as TPACK. Keijo Sipilä (2014) recommends nation-wide provision of technological standards, pedagogical guidance, financial support and teacher training programmes. Tondeur et al. (2018) emphasise the importance of teacher educators and claim that teacher educators need support for the task of modelling ICT integration which would influence student teachers (Tondeur et al., 2018). Instefjord and Munthe (2016) argue that raising pre-service teachers' awareness of school realities such as social conditions and technological support that exist in schools is necessary. García-Pérez, Santos-Delgado and Buzón-García (2016) shed light on this relationship and contend that creating safe and motivating environments and the establishing positive relations are recommended.

This prescription process can be exemplified with a study conducted by Guillén-Gámez, Lugones and Mayorga-Fernández (2019) in which they advocate motivating teachers with benefits of using ICT. They write:

> ***All teachers***, and specifically foreign language teachers, ***must make use of the***
> ***tools available*** to them to teach languages, since these tools are ***fundamental*** for

the acquisition of languages (Bucur & Popa, 2017; Tømte et al., 2015). Therefore, little by little, both from *initial training* and from *continuing education*, *educational institutions* should focus on the training of future teachers based on motivation, ensuring that said teachers see *the real benefits of using ICT*.
(emphasis added, ibid., p.13)

The degree to which the writers are devoted to their prescription is strong as shown in the assertion that "all teachers must make use of the tools available". The writers position tools (i.e. technological devices and Web 2.0 tools) as "fundamental" in acquiring foreign languages. With the strong claim and by drawing on two supporting studies, the authors continue to suggest that future teachers be motivated by witnessing "the real benefits of using ICT". While the prescription encourages educational institutions to take part in the procedure, both 'pre-' and 'in-' service teachers do not have a choice but to be taught as it is prescribed to develop their digital competences.

2.2.3 Expanding the realm of the professional competence

Having illuminated the clinical process found in Area TC studies, I present another important trend in Area TC that domains of the professional competences are being expanded. The expansion of the domains of the digital competences is often related to a set of research practices which can be labelled as 'carve', 'dictate' and 'march'. In addition, it is a conversion in which a matter of 'probability' turns into 'certainty' based on supporting research and suggestions made in a study by researchers calling further scientific investigation on unresolved or unsettled issue(s).

2.2.3.1 Carved boundaries

Research in Area TC carves out their realm. Here, 'carve' refers to strategies employed as means to reinforce an academic contribution accomplished in a study. The strategies are concerned with relating research findings and theoretical claims to the existing literature which can support both the findings and the claims. It not only builds a stronger theoretical claim but also draws a boundary to which the findings and the implications of a study are applicable.

In fact, this carving practice can be easily seen in all articles given the default intention of research is to contribute to knowledge and that knowledge is needed to be reliable. Among the articles, I pay more attention to a group of research seeking to build up a tool or a theoretical model in relation to the digital competences (i.e. Barišić, Divjak & Kirinić, 2019; Farisi, 2016; Farjon, Smits & Voogt, 2019; García-Pérez, Santos-Delgado & Buzón-García, 2016; Goodwin et al., 2015; Guillén-Gámez, Lugones & Mayorga-Fernández, 2019; Instefjord & Munthe, 2017; Spiteri, Chang & Rundgren, 2017; Tondeur et al., 2018). The effect of the carving process; it turns the matter of 'probability' into 'certainty'. In order to provide an example of this point, I choose Barišić, Divjak and Kirinić (2019)'s article.

As mentioned earlier, Barišić, Divjak and Kirinić (2019) investigate whether domains of the TPACK framework can be measured in a reliable way with a survey. The writers test the utility of the survey in a new context (i.e. Croatian education). They found a variation in the factor structure in comparison to a previously conducted study in American education system. They write:

> … the variation in the factor structure among this research and that conducted by
> Schmidt et al. [7] can be explained by the different organization of content within
> the subjects in American and Croatian schools. The T8-T19 items were deployed

within ***three factors***, unlike the exploratory factor analysis conducted by the authors of the questionnaire, where they were deployed within ***four factors***. The rationale for such a different factor structure ***probably*** lies in ***the differences in the education systems*** the respondents attend. (emphasis added, ibid., p.176)

The observed variation is first specified; while there are "three factors" among certain items (T8-T19) in the previous study, there are "four factors" in the authors' study. However, based on 'probability', the difference is neutralised (notice the writers use "probably" in the text above).

In the USA, school subjects, according to their content, are Mathematics, Science, Social Sciences, and Literacy, while in Croatia, they are Mathematics and Literacy (named Croatian Language), and Social Sciences and Science are combined into one subject (named Nature and Society). ***Therefore,*** it ***is understandable*** that the items of Social Sciences Content Knowledge and Science Content fall under one factor. (emphasis added, ibid., p.177)

As the above text demonstrates, the academics give a rationale of the difference by commenting that it "is understandable"; the American education system has three subjects and the Croatian education system has four. "Therefore", the 'probable' rationale for the difference 'certainly' address the issue; at least, the authors do not provide any other possible explanations.

Confirmatory factor analysis validated the empirical data and theoretical model. The reliability of the SPTKTT inventory was shown using Cronbach α coefficient. The results indicate a high level of reliability for ***all subscales and items of the inventory***, which corresponds with ***existing results*** [7]. (emphasis added, ibid., p.177)

Lastly, the authors legitimise the reliability of the survey items by stating that "all subscales and items of the inventory" consistently measure the domains of the TPACK framework and by drawing on "existing results" presented in a different context (i.e. American education system). The two different factor analysis, in combination with the previous study, contribute to the 'certainty' in terms of the utility of the survey in Croatian education context. The boundary seems to be carved clearly: the measuring tool would be still valid in this context as well as in the other context.

2.2.3.2 Dictate and march

The boundary that is carved by research enables researchers not only to recognise the limits of the study but also to 'dictate' the directions for future research. By following the directions, knowledge about a certain subject can 'march'. In a continuum with the effects of the carving practice, the review of Area TC demonstrates that the boundaries of the digital competences are being expanding based on dictating and marching research practices.

Nine articles which deal with a measuring tool or a certain theoretical framework regarding the digital competences 'dictate' the future directions and 'march' to expand the territory. The directions can be categorised into six groups: 1) research paradigm (i.e. conversion from qualitative approach to quantitative one or vice versa; see e.g. Tondeur et al., 2018), 2) subjects (i.e. not just teachers but also teacher educators; see e.g. Instefjord & Munthe, 2017; Tondeur et al., 2018), 3) time frame (i.e. having a longer period of measurement , see e.g. Tondeur et al., 2018), 4) a way of measurement (i.e. from a self-reporting measure to an objective measure; see e.g. Barišić, Divjak & Kirinić, 2019), 5) accuracy (i.e. more precise relationship between factors; see e.g. Farjon, Smits & Voogt, 2019; García-Pérez, Santos-Delgado & Buzón-García, 2016; Goodwin et al., 2015), 6) reality (i.e. applying a prescription

in real education context; see e.g. Guillén-Gámez, Lugones & Mayorga-Fernández, 2019; Instefjord & Munthe, 2017; Spiteri, Chang & Rundgren, 2017).

> Future research related to this issue should include the development of an instrument that is not based only on self-assessment measures. Such ***an instrument should be able to objectively determine the level of knowledge*** that teachers have in applying technology to education. Since the method used in this research is a self-reporting measure, it would be ***interesting*** to explore how an instrument that objectively examines the teacher's knowledge of applying technology correlates with that of a self-assessment (emphasis added, Barišić, Divjak & Kirinić ,2019, p.177)

As the text above states, Barišić, Divjak and Kirinić (2019) point out a limitation which arises from the way domains of the TPACK framework are measured (i.e. self-reported measure). It leads the authors to suggest that a new measuring tool be developed (i.e. dictate). It is "an instrument which should be able to objectively determine the level of knowledge" about the digital competence. Before they end the research, a study that aimed to observe the correlation between the two measures (i.e. a self-assessment tool and an objective assessment tool) is proposed. If this limitation is addressed in future research by taking the suggestions, the two measures are likely to be compared and researchers would be able to march further to decide which tool is more accurate in diagnosing teachers (i.e. accuracy).

In this section, I have explored Area TC which medicalises the digital competences of teachers. Based on the imposed responsibility that the use of ICT enhances learning and teaching, teachers' knowledge, skills and attitude are measured, diagnosed with subsequent prescriptions. In the meantime, the boundary of the digital competences is carved with the findings of research and being expanded by the identification of limitations and suggestions for future research. Therefore, I argue that most studies in Area TC are limited in terms of

considering the general tendency of knowledge practices and underlying assumptions by which teacher subjects are being shaped in certain but unidentified forms. This limitation in turn increases the necessity of this thesis project.

2.3 Area TP: Teacher Practices and perceptions in relation to technology use

This section reports how the reviewed studies in Area TP are collected and outlines the body of knowledge that revolves around teachers' practices and perceptions in relation to technology use. I argue that a question, "Has technology use brought the expected effects on practices and perception of teachers?", could be one of the possible categorisations in this vast research area. In this case, the effects of technology use (i.e. whether it brought the intended (or positive) results on teachers' practices and perceptions) have been the main academic interest. I discuss that the literature lacks considerations about this limited academic practice and does not have a grip on unquestioned assumptions. Such assumptions either explicitly or implicitly affect us to believe that those teachers who do not have positive practices and perceptions are supposed to be cared so that they can harness the technology just as 'everyone else'.

2.3.1 Assembling and reading Area TP

In order to explore research in Area TP, I took the same scoping process used in exploring the area TC. I utilised the same search engine (i.e. Scopus). The search words were:

- "ICT" AND

- "Teacher" AND

- "practice" OR "perception"

With the date parameter from 2011 to 2019, the search retrieved 1486 documents in November 2020. In order to reduce the number of articles to a manageable number, I added two more filters; I only included articles in social science written in English and excluded conference papers, books and book chapters. This process still brought 637 articles. Here, I further filtered the search by adding one more word, "foreign language" (see Table 2.2).

Criteria	Inclusion	Exclusion
Publication year	2011 – 2019	Before 2011 and after 2019
Language	In English	Not in English
Methodology	Empirical, primary research	Non-empirical
Publication type	Academic journal articles indexed in S Scopus and Web of Science	Books, Editorial notes, book reviews
Education level	K-12	No learning setting in K-12
Subject of study	K-12 teachers or pre-service teachers	Students, lecturers
Topic of study	Teachers' perceptions and practices about technology use in foreign language education	Not about foreign language

Table 2.2 Final inclusion and exclusion criteria

It not only reduces the number of articles dramatically (i.e. from 637 to 81), but also does not contradict the intention of this review which is to find 'a trend' that could be limited in a certain way and to fill in the corresponding gap existing in the literature. Furthermore, it was not the intention of this review to make a generalising claim that the identified trend is valid in all research areas about teacher's practices and perceptions with regard to technology use. For these reasons, limiting the boundary to foreign language could be justified.

82 articles were further sifted by reading the title and the abstract of each paper. The sifting process set the criteria as follows:

- Does an article discuss foreign language teachers' practices or perceptions in relation to technology use?

As a result of the filtering process, those articles which study students, which do not have a focus on language education, ICT, teachers' practices or on perceptions, and which are not written in English were excluded. After the process, 43 articles were secured. Lastly, I checked out the academic rigour of each article by examining the sources in Web of Science Group. Finally, 21 articles were chosen as the refined dataset for the review (see Figure 2.2).
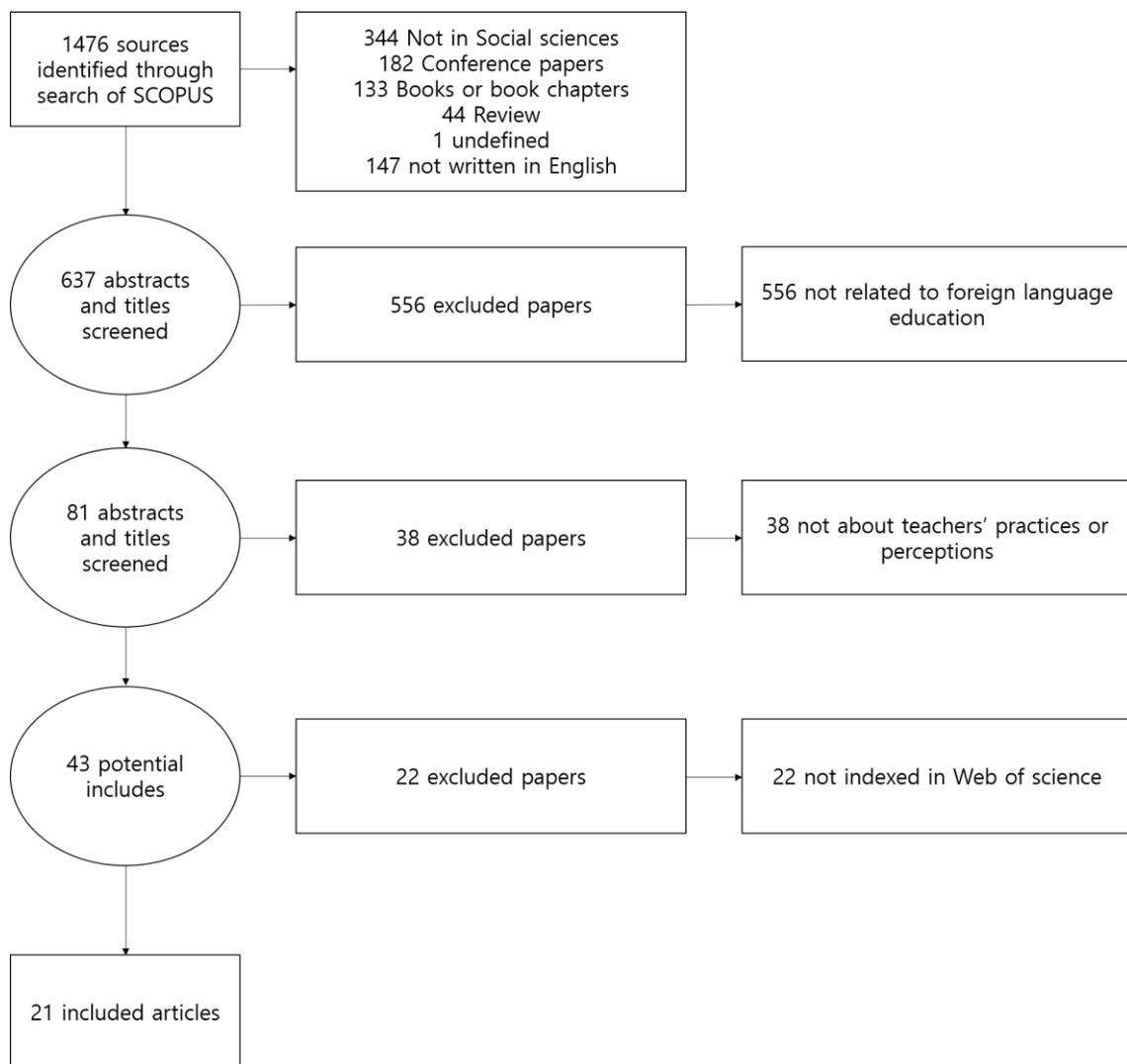
Figure 2.2 Systematic review flow chart

While reading the chosen articles in full, I paid attention to the following points:

- What is the aim of the research?

- What is presented as the findings about teachers' practices and perceptions?

- How are the findings interpreted and treated?

- What are the suggestions made in relation to the findings?

Regarding the points of interest, the relevant passages were noted, analysed and categorised until they showed certain patterns. They allowed me to come up with a frame that can capture the general trends and reveal potential limitations in Area TP.

2.3.2 Displaying the positive effects on teachers

While the imposed responsibility of teachers that they are supposed to use technology in their classrooms is also identifiable in this group of studies, scholarly works in Area TP revolve around a key question: "has technology use (or technology-related pedagogy) brought the expected effects on perception and practices of (pre-service) teachers?" The question implies that there is a pre-determined direction for the sake of 'effective' foreign language education which can be achieved by successful integration of ICT.

The effects of technology use on teachers studied in more than one third of the articles (N=9). Most recently, Garcia-Esteban, Villarreal and Bueno-Alastuey (2019) investigated the effect of telecollaboration in a foreign language course. Telecollaboration, according to the authors, refers to a learner-centred activity between students in different locations via virtual collaborations to achieve common learning goals. The writers show the general increase of a competence that is comprised of various perceptions and practices (see ibid., pp. 13-14) when

teacher trainees are taught with technology. In addition, the researchers report there was a further development in a specific area after taking the course designed with telecollaboration. These positive effects on teachers' practices and perceptions can be seen in the other seven articles. For instance, Esteban and Laborda (2018) argue that there is evidence that technology has positive effects on enhancing critical reflection of student teachers when dialogic interaction between teacher educators and student teachers is facilitated by ICT. Harmandaoğlu, Balçıkanlı and Cephe (2018) provided a course designed to provide experiences to integrate ICT into language learning and teaching based on a conceptual model. Again, after the course, future teachers held positive attitudes in relation to using ICT in language teaching. What is interesting is that the research team documents 'negative perceptions' of the trainee teachers with regard to integration of ICT. However, the writers explain that those negative comments are coming from 'lack of relevant facilities in real education contexts' rather than the participants' reluctance to use ICT; researchers seem to imply most future teachers would take ICT in their language teaching based on their course experiences once necessary facilities are set up.

In fact, there is one study which does not follow the pre-determined direction and highlights the importance of 'criticality'. Norris and Coutas (2014) claim that experience with technologies can impact negatively on teachers while studying teachers' perceptions regarding language learning. In order to challenge our unquestioned assumptions that technology enhances education in an effective way, the authors emphasise the complex nature of the nexus of technology and language education coming from personal, institutional and regional differences. While commenting on the marginalised language programmes in Australian schools, they put forward the need for language teachers to be 'critical' and argue that teachers should not be passive but be proactive against the implementation of the new Australian curriculum. Considering the severe unbalance between the academic discussion

over the positive effects of ICT and the critical reflection illuminating the complex nature of technology use, adding some weights to the marginalised side would help to address the unequal academic trend.

2.3.3 Neutralising undesirable practices and negative perceptions

We need to pay attention to the aforementioned dominant trend (i.e. research about positive effects of technology use) in Area TP. The reason being that the trend can seamlessly guide researchers to conduct another type of research—this type of research investigates 'what motivates (or discourages) teachers in terms of using ICT'. Moreover, it clearly responds to the pre-determined direction of ICT use in terms of 'effective' foreign language education. Just as Norris and Coutas (2019) point out, scholars who strive to integrate ICT in language education do recognise the complex nature of language education and technology. However, they take a different approach. Rather than questioning the taken for granted assumptions about teachers' responsibilities in relation to ICT use, they seek to find a way to integrate technology keeping in mind that technology integration in language education is a challenging task. Some of the collected articles in Area TP show that researchers have been identifying factors in relation to 'what makes successful ICT integration in language education or constrains it' while specific research topics are vary.

De paepe, Zhu and Depryck (2019) study factors which deter or facilitate 'online foreign language learning' by examining educators' perceptions. They present that negative beliefs about the effectiveness of technology use, high costs, lack of support, and insufficient skills of teachers are identified as the deterring factors. In comparison, the writers list course design, support, learners' skills and attitudes, and competitive instructional designers' competences as the critical success factors. In the same vein, Mavroudi and Tsagari (2018)

discuss the importance of profiling language teachers' preferences and experiences of ICT when it comes to designing online training environments and training programmes. Based on a conceptual framework for ICT competence of teachers, the authors investigate a few variables that can affect teachers such as technology literacy confidence, lesson formats (e.g. blended learning, printed self-study materials, online resources for self-study), methods (e.g. short video presentation, reading materials, discussing with others), gender and age.

The intention of both papers is clear: it is to overcome what are found as the hurdles and to inform what matters in introducing new pedagogical changes (i.e. online foreign language learning and online professional development training courses). Furthermore, implications suggested in both papers strengthen my analysis that there is a trend which seeks to neutralise negative perceptions or undesirable practices.

> The findings of this research can help (second) language professionals and policy makers introducing online L2 learning, by helping them to overcome constraints identified through the perception of practitioners, and by considering critical success factors, to reduce disappointments during course development and implementation. (De paepe, Zhu & Depryck, 2019, p.288)

As shown in the previous section about teachers' deficiency of digital competences and prescriptions, the inserted text highlights the importance of 'overcoming' hindrance, 'considering' important success factors and 'reducing' negative perceptions. In line with the finding that teachers' deficiency of digital competences necessitate prescription argued in the previous section, negative perceptions and practices are supposed to be eradicated. Particularly interesting is that the researchers, through this type of research, not only identify key factors but also provide a basis for further research regarding the topics (see e.g. De paepe, Zhu & Depryck, 2019, p. 288).

There are three studies (i.e. Bai, Wang & Chai, 2019; Chen, 2011; Liu, Lin & Zhang, 2017) in which the provision of factors ends up with the development or the utilisation of a theoretical framework (e.g. Technology Acceptance Model, the value-expectancy theory; Model of digital competence for ESL student teachers, theory of Diffusion of Innovations; theory of change). In order to explicate this point, I take Technology Acceptance Model (TAM) and demonstrate what the model is and how the model is discussed in an article. Technology Acceptance Model (TAM) is "a model that describes the interplay between factors that explain variation in teachers' behavioural intention and their actual ICT use" (Scherer et al., 2018, p.68). According to Bai, Wang and Chai (2019), TAM has been the most popular model for describing technology acceptance in education. In the field of teacher education, it theorises the intention of teachers' ICT use is regulated by perceptions (i.e. perceived usefulness and ease of use) and facilitating conditions (i.e. resources and opportunities for performing behaviours) (Bai, Wang & Chai, 2019).

Bai, Wang and Chai (2019) extend the boundary of TAM; they investigate how 'motivational beliefs', 'ICT learning behaviours', 'facilitating conditions' and 'perceptions towards ICT use' affect language teachers' intention to use ICT continually. As the base of a new prediction model, the researchers draw on TAM to give rationale for the examination of the perceptions and the conditions. In addition, the authors complement TAM by adding other elements ('motivational beliefs' and 'ICT learning behaviour') which are supported by the value-expectancy theory and a learning perspective (see ibid., pp.4-5). As a result, this model encircles ESL teachers in a web of measurements—measurements of perceived usefulness and perceived ease of use, resources, opportunities for performing behaviours, self-efficacy, interest, perceived enjoyment, effort regulation and help seeking.

By testing the new model via a few statistical procedures, they argue that all factors play important roles in predicting future behaviours of ESL teachers in relation to the continuance

use of ICT. The researchers not only identify and integrate factors that were separated but also provide more thorough knowledge about what is better support and design for ESL teachers in terms of using ICT. The authors write about this new knowledge and its importance as follows:

> The identification of factors influencing teachers' ICT adoption is critical because knowledge of what factors contribute to English as a second language (ESL) teachers' ICT use intention would be useful in providing support and designing teacher education programs to enhance ESL teachers' ICT use for teaching. (ibid., p.2)

As the inserted sentence states, this knowledge and its importance resonate with the studies which simply identify factors that facilitate or deter technology integration given that Bai, Wang and Chai (2019) also seek to maximize ICT use and minimize negative perceptions and practices. However, the new model that is built based on the pre-established model (i.e. TAM) and theories can predict the future. Compared to the simple identification of factors, the power that the new model carries would be even more significant; within this comprehensive model teachers' negative perceptions and practices would not have a place to exist neither in the present nor in the future.

In this section, I have explored Area TP and discussed that the body of knowledge is 'certainly' biased to a side which advocates teachers' integration of ICT; regarding the effectiveness of technology use on teachers' practices and perceptions, the majority of the articles either report positive changes of teachers or seek to find what encourage (or discourage) language teachers to use ICT. Moreover, negative practices and perceptions are considered as the bad things that are to be neutralised by relevant measures (recall 'prescription' in section 2.2.2.3). Lastly, I have shown that various factors in conceptual models (e.g. TAM) are identified and expanded by researchers. Therefore, I maintain that

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there is a severe unbalance in Area TP and the biased academic literature need to be addressed with a study that critically considers the dominant discourses (e.g. discourses about the positive effects of ICT) represented in the chosen articles so that one can appreciate how teachers' identities are socially constructed.

2.4 Area TI: Teacher Identity and technology use

This section documents Area TI in which the body of knowledge investigates teacher identity in relation to technology use. After I demonstrate how I collected scholarly works, I point out that the majority of studies deal with desirable teacher identities that are acquired by newly introduced ICT. In opposition to the favoured roles of teachers, I present a general agreement seen in studies in Area TI that teachers' status quo identity is regarded as 'flawed'. While acknowledging there is a scholarly recognition that teachers' identities interact with their situated contexts and the identities keep changing while creating contradictions, I contend the knowledge base lacks consideration about power relations existing in this historical juncture which might shape the formation of teacher identity.

2.4.1 Assembling and reading Area TI

As it were the case for the previous two research areas, I used Scopus to collect studies in Area TI systemically (see Table 2.3). The search terms were:

- "Technology" AND

- "Identity" AND

- "Teacher education"

With the data parameter from 2011 to 2019, 90 papers were retrieved. To reach a manageable

number of articles, I included journal articles and book chapters and excluded conference

proceedings in social sciences.

Criteria	Inclusion	Exclusion
Publication year	2011 – 2019	Before 2011 and after 2019
Language	In English	Not in English
Methodology	Empirical, primary research	Non-empirical
Publication type	Academic journal articles, book chapters indexed in S Scopus and Web of Science	Editorial notes, book reviews, conference proceedings
Education level	K-12	No learning setting in K-12
Subject of study	K-12 teachers or pre-service teachers	Students, lecturers
Topic of study	Teachers' identity in relation to technology use	

Table 2.3 Final inclusion and exclusion criteria

Then, 73 studies were briefly examined by reading their titles and abstracts. The sifting

process had the criteria as follows:

- Does an article or a chapter discuss teacher identity in connection with technology use?

While skimming through the texts, I excluded some articles and book chapters which do not

have a focus on teachers and their identities as well as technology integration. There were

several studies not written in English. This inclusion/exclusion process brought 31 articles

and book chapters. In case of journal articles, I checked the academic rigour by identifying an

index label of each article in Web of Science Group. Finally, 18 written pieces were chosen

(access could not be gained to one book chapter).
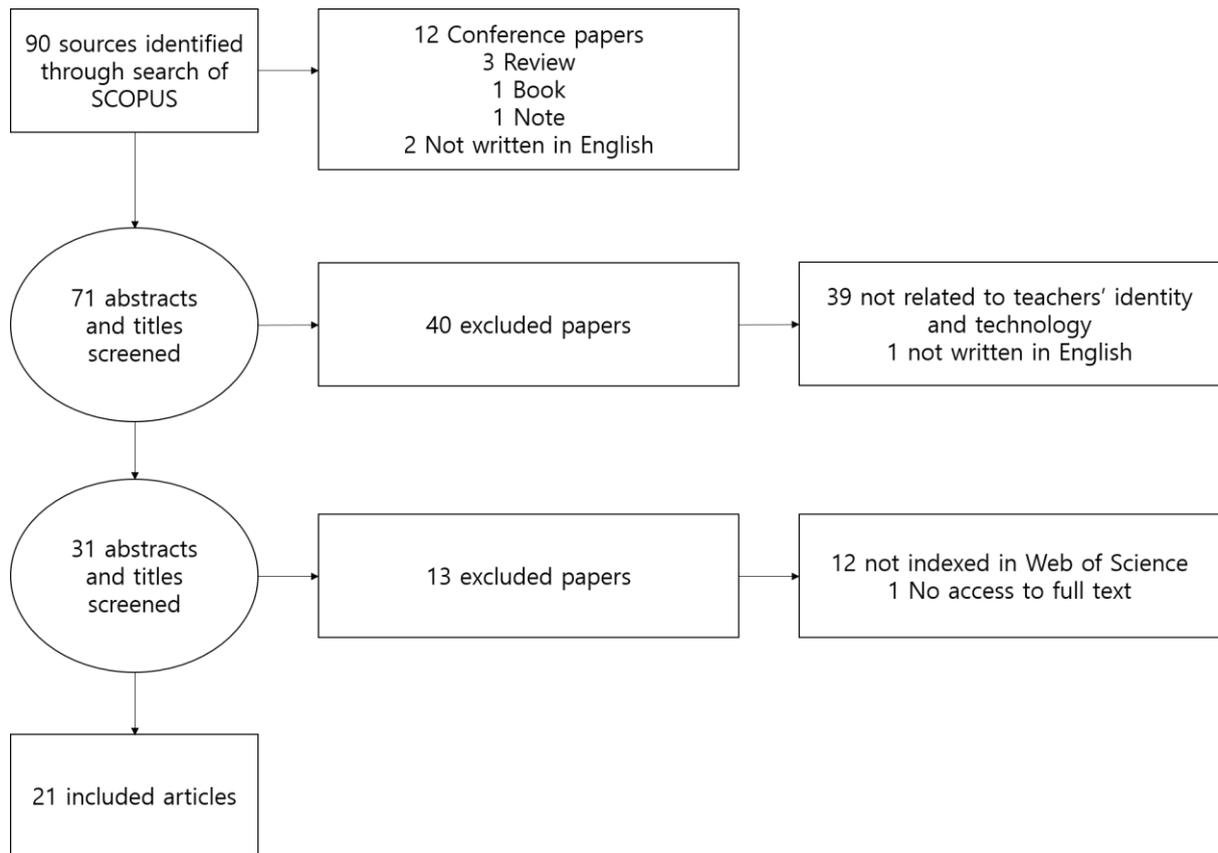
Figure 2.3 Systematic review flow chart

I began to read the collected papers in full. While reading along the texts, I carefully examined several points:

- What is the technology utilised in research?

- What is the role of the utilised technology?

- What is positioned as a(n) (un)desirable teacher identity?

- What is the relationship between teacher identity and technology integration?

The analytical questions allowed me to identify patterns in the body of knowledge and to find out a gap to which this research project can contribute. Lastly, in order to support the identified patterns seen in Area TI, I drew on a few commonly cited studies that were not originally documented in the collection process.

2.4.2 Building up the better teacher identity via ICT integration

Among 19 studies, 12 papers present positive influences of ICT use on identity formation; in this group of research, various technologies are utilised in order to help (student-)teachers to be well prepared as a teacher. The introduced technologies encompass, for example, online community (Li, Yang & Craig, 2019), digital story telling (Thompson, Long & Hall, 2018), social media (Charbonneau-Gowdy et al., 2016), electronic portfolios (Boulton, 2014; Trent & Shroff, 2013), blogs (Wood, 2012) and web editor, Movie Maker and PowerPoint (Kim, 2011). The positive influences of such technologies brought by teacher development courses are mainly related to the construction of 'professional identity' in comparison to personal identity. To showcase this point, I draw on Hyunjin Kim (2011)'s study.

Hyunjin Kim (2011) conducts a multiple case study in which the author examines 20 first-year preservice teachers. The researcher, as a lecturer, provided an introductory course focused on teaching with technology. She observed the differences between 'socially shared identities' or 'professional identity'. 'Socially shared identities' in the paper represent 'a shared view' among exemplary teachers about teaching with technology that the role of computers is important and supports constructivist, student-centred pedagogical beliefs and methods (Kim, 2011).

She compares the participants' perceptions in the beginning of the course with those at the middle and the end of the course and reports that freshmen preservice teachers made some developments "in some limited way" (ibid., p.13).

> …In the first CBA project, the PowerPoint game, preservice teachers considered computers to be *supplementary tools for getting students' attention* and *helping them to understanding topics*. They noted that the most important purpose of the PowerPoint game was to practice repeatedly what students had already learned…

(emphasis added, ibid., p.13)

At the beginning, as the excerpt states, the future teachers' view that computers are "supplementary tools in getting students' attention' or tools for practice is regarded as a 'limited' view. The key point of the limited view would be that technology can be replaced as they are additional tools which are not necessarily embedded in learning. Later, the researcher documents that there was a small progress during the course:

> 10 freshmen started to mention ***new views of computers***, such as "helpful for understanding concepts ***unlike the existing traditional approach***—learning by rote," "vicarious experience," and "applying what students learned from textbooks." (emphasis added, ibid., p.13)

The development can be represented by "new views of computers" in which half the teachers changed their view of computers and accepted what computers do. Here, the focus is on the 'essential' role of computers that are not 'replaceable'; computers aid in understanding concepts "unlike the existing traditional approach", mediating experience and applying what is learned from textbooks. Here, this new view is positioned as a part of 'socially shared identities'.

Lastly, the author presents the final development of teachers' identity:

> During the final CBA project, the WebQuest, freshmen expanded their perceptions of ***the value of technology***, identifying multiple effective roles of computers for student learning. That is, the use of computers can facilitate students' "autonomy," "information gathering," "voluntary and practical inquiry-oriented" learning, and "self-directed learning and engagement through instructional media." (emphasis added, ibid., p.13)

The further development is related to 'expansion' of "the value of technology". In the above excerpt, the author elaborates the desirable version of the shared identities regarding the use of computers. Under this 'exemplary' version of the professional identities, the use of computers seems so necessary that the utilisation of the digital devices seems to be taking the core role in learning and teaching as demonstrated by the positive functions (i.e. students' autonomy, information gathering, voluntary and practical inquiry-oriented learning, self-directed learning and engagement through instructional media).

This stark contrast between the limited identity and the professional identity, and the positive influences of technology use are the common themes in Area TI. For instance, Charbonneau-Gowdy (2015) sets 'the inferior' versus 'the superior' relationship between two identities—the early-career teachers' traditional, passive and narrow identity as individuals and learners versus the identities of effective 21st century teachers. Not surprisingly, the author shows the encouraging effects of 'innovative technology-infused courses on the participants' mindset and suggests there be an attempt to see the effects of a proposed pedagogical model in a 'real' classroom setting.

Researchers, however, acknowledge the limitations of such training courses in terms of their influences by stating that there were a few student teachers who did not take up the professional identities even after taking those trainings (e.g. Boulton, 2014; Kim, 2011; McLay & Reyes Jr, 2019, Thompson Long & Hall, 2018); that the effects were not sustained (e.g. Charbonneau-Gowdy, 2015, Charbonneau-Gowdy et al., 2016); and that contextual factors were not considered that might have played in the identity formation process (e.g. Boulton, 2014; Wood, 2012). The researchers take this complexity and tensions into consideration even though they do not engage with the issues at the expense of highlighting positive functions of technology use in cultivating professional teaching identity.

2.4.3 Struggles and Conflictions around identity formation

Having explored studies dealing with the positive functions of technology use in identity formation, I turn to the other group of research in Area TI that pays attention to the tensions existing in the process of identity formation. I have identified five articles (Anjos-Santos et al., 2016; Burnett, 2011; Curwood, 2014; Phillips, 2016; Trend & Shroff, 2013) wherein the papers illuminate the complexity as well as tensions swirling around teachers' identity formation.

Firstly, Michael Phillips (2016) illuminates the complexity of identity formation process by considering socio-cultural influences. The author conducted a case study in which he provides a thick description of a teacher in a secondary school regarding her enactments of TPACK. As discussed in section 2.2, TPACK refers to a certain knowledge domain that is believed to be involved when a teacher teaches the content of a subject pedagogically with the use of technology. By drawing on interview texts of teachers, the author explicates that TPACK framework might need to be reconsidered with the importance of socially mediated workplace settings which affect enactments of TPACK. The author elaborates the argument by revealing that TPACK enactment is related to the processes of identity development instead that the enactment is solely bounded to TPACK; the participant was eager to increase her technology knowledge in harmony with her pre-established identity as an administrator and as a classroom teacher. While her colleagues regarded Anna (the participant) as an 'all-rounder' who has good pedagogical knowledge, content knowledge as well as knowledge about ICT use, she still kept pushing herself to have more knowledge about technology seeing her colleagues' use of technologies which reminded her own insufficiencies (see ibid. p.564).

Second, Anjos-Santos et al. (2016) show not only the complexity of technology use but also the tensions that teachers face; the team of researchers studied English language teachers' professional development through digital and media literacies in a 40-hour course in a Brazilian university. After the examination of the formative workshops (i.e. the 40-hour course), they diagnose that the workshops were suitable to develop required skill sets even though the course needs to have better connection between the uses of technologies and the interaction between teachers, students and the school community. What is interesting here is that they identify a few emerging identities and tensions arising. The emerging identities and the tensions include: a teacher who wants to use technology, who seeks professional development but who is afraid of using technologies, who overcomes socio-political challenges (e.g. lack of infrastructure, deprived work conditions), who recognises the social role of digital and media literacies (see ibid., p. 431). The pronounced tensions are well represented in a sentence that the contradictions lie in between the desire to use it and the struggles they have to face in the school (ibid., p. 431).

Third, Jen Scott Curwood (2014) and Trent and Shroff (2013) report tensions which teachers experience in the process of technology use. Jen Scott Curwood (2014) sets an analytical point on narratives of high school English teachers about technology integration. Curwood argues that the integration may challenge established identities of teachers or even threaten their authority. She suggests that valuing established and emergent identities are important and that a space for dialogic narratives are necessary in order to facilitate the identity transformation process.

Meanwhile, Trent and Shroff (2013) documents the process of using e-portfolio in which pre-service teachers struggle to make sense of themselves as a teacher during an eight-week teaching practicum. They report that e-portfolios can be seen as spaces where complex negotiations take place constructing and reconstructing their identities; the e-portfolio

functioned positively for the pre-service teachers in becoming 'modern' teachers while using the technology as a tool for sharing, discussing and reflecting. However, the authors write that the e-portfolios carried risks in terms of identity formation since the participants developed negative evaluations of those teachers who lack interest in learning about e-portfolio by labelling those teachers as 'shameful', 'low technology', 'old-fashioned', 'outdated' teachers.

Lastly, Cathy Burnett's study could be described as representative in terms of showing how the struggles and conflictions have been investigated. I thus intend to review this study in depth. Cathy Burnett (2011) shows the 'contingency' of digital experience by showing identity is continually recreated not only by the well-intentioned attempts to develop innovative pedagogies, but also by informal expertise and (un)favourable experiences. In order to explicate the 'contingency', she maintains that the development of teachers' professional identities is rather context-specific and influenced by unstable sense of appropriateness, legitimacy and risk, which explains why certain teachers make successful identity change and others not in a contingent manner.

The author demonstrates how pre-service teachers in a college in England made sense of their digital practices while they are engaging with, for example, emails, SMS text messages, websites or computer games both inside and outside the classrooms. The writer presents:

> … Digital communication and networked technologies were mainly associated with *a broader professional role*, for example using email and text-messaging to communicate with *teachers, tutors and peers* but not their pupils, and gathering resources from the Internet to support their practice. Indeed, the use of participatory networked technologies in classrooms was explicitly presented by some as *inappropriate*. … (emphasis added, ibid., p. 440)

As shown in the excerpt, the researcher shows that the perceived appropriateness of using technologies could vary depending on the people who pre-service teachers are engaged with; when it comes to "a broader professional role", using email and text messaging are rendered 'appropriate' when pre-service teachers communicate with "teachers, tutors, and peers". In contrast, Cathy Burnett adds that using those technologies in a communication with pupils is perceived as "inappropriate" by some participants.

Cathy Burnett provides the other factors of identity formation—relationships between self-narratives, dominant discourses or risks. To be clear, self-narratives are the creations that support a sense of consistent identity; dominant discourses can be identified in some taken for granted responsibilities such as "you've got to get your level 5 SATs and if you don't you're a terrible teacher" (ibid., p.442). Burnett explicates this point by documenting that certain combinations of self-narratives and dominant discourses can either be a threat to one's identity or be a chance to change oneself.

> Holly implied her frustration as the children *moved off task*, suggesting her authority was tested as they started exploring different paths. As Britzman (2003) argues, establishing 'control' of a class is often a priority for new teachers seeking to establish a credible teaching identity. The children's unauthorised searching challenged this. In response, Holly went on to describe how she redesigned the task as *more tightly structured* and *teacher-led* and in doing so managed to *regain control*. It could be argued that in doing so she limited opportunities to support pupils in refining their search skills. However, had she allowed the children to continue in a less-structured way, the consequences might have challenged her sense of self as a successful teacher. (ibid., p.444)

In the paper, Holly (a pre-service teacher) uses web-based resources and participates in online while actively reworking her identity through digital communications (see e.g. ibid., p.441-

443). However, as the quoted text demonstrates, Cathy Burnett shows Holly's frustrating experience in her class. After Holly saw her pupils "moved off task" and recognised it as a 'risk', she changed her lesson design to "regain control"; it was the transition from 'student-centred' way to the "teacher-led" approach that is "more tightly structured", as I discussed in section 2.3, which is not supposed to be the case in using technology. Here, the author's intention seems to show that teachers manage multiple identities in different parts of their lives (e.g. as a student, as a teacher, as a colleague) where technologies are concerned. Moreover, it proves the point that there could be more factors that are involved when teachers develop their professional identities in relation to technology use.

The review of the five studies sheds lights on the complicated nexus between teachers' identities and the use of technology. It broadens our perspective with the possible influences coming from personal experiences and socio-cultural contexts. Furthermore, it is now clear that identities created by technology integration may not be always positive and stable but be contradictory and unstable. Thus, the dominant trend identified in Area TI which supports a view that 'technology integration helps to build the better teacher identity' can be effectively countered by drawing on this group of research. However, even these studies lose their grip on the issues of power relations. Without taking power into consideration, it is prone to be receptive to the influences of power that might be involved in shaping not just teaching and learning process but also the overall contexts which all affect the process of identity formation (Lin & Schwarz, 2003).

2.5 Conclusion

In this chapter, I have explored a wide variety of research and provided an in-depth overview. I acknowledge that they help to understand what is good for teachers to have as competences,

what teachers' perceptions, practices are like, how they are supposed to be and how teachers' identities change in relation to technology use as well as what might be involved in the process of identity formation. Moreover, they expand our knowledge by constructing a stronger knowledge structure (e.g. TPACK or Technology Acceptance Model) with many proofs supporting it. This well-built structure and associated proofs add more practicality in terms of diagnosing what the problems are and of prescribing what needs to be done aiming at more efficient technology integration. However, they lack criticality towards their own knowledge contribution; there is a lack of considerations regarding power relations that might shape the wider contexts where teachers are situated and our taken for granted assumptions (e.g. teachers are supposed to use ICT in their classrooms; those teachers who do not use ICT are problematic and outdated). In return, the academic trends discussed in this review revolve around a 'receptive approach' regarding technology use of teachers in comparison to another approach questioning the very foundation they stand on. In this approach, teachers are positioned not as artists or poets but as 'the deficits' that are supposed to be filled with appropriate measures. These limitations increase the legitimacy of this thesis in which I question the formation of teacher subjects and consider influences of power relationships at this historical juncture.

In fact, there are researchers who critically scrutinise socially predominant discourses about 'good' teachers who reflect the rules of the market and seek maximized performativity (see e.g. Mooney Simmie & Moles 2020; Ward & Quennerstedt 2019). While they contribute to expanding our understanding about the consequences of education in neoliberal societies, the aftermaths of technology-related reform initiatives and the related discourses have been less investigated (see section 4.2.3 for further discussion). Through this research, I expect that this thesis can alarm stakeholders in education and open up further discussion on the agenda this thesis brings.

There are several limitations of this review of the literature regarding the reviewed research areas and the choices I made in archiving relevant research works. Firstly, I could have explored the other branches of academic research, for example, investigating education initiatives driven by an institution or a government. In fact, there are some studies documented in this chapter which are situated in a government initiative (e.g. Al-abdullatif, 2019; Anjos-Santos et al., 2016; Trent & Shroff, 2013) or a university initiative (e.g. McLay & Reyes Jr, 2019). Given this thesis is concerned with the SMART education initiative driven by Korean government, further documentation of the topic might have supplemented this review. Secondly, the review could have been more comprehensive if I expanded the time boundary represented in the articles as well as the boundary of the included sources. The measures I took to align the review with the timeline of the SMART education initiative in South Korea (i.e. 2011) might have excluded more diverse perspectives and insightful academic discussions that might be still valid nowadays. In the same vein, this review could have invited fresh ideas if I were able to scrutinise conference proceedings, books and book chapters as well as those articles written in different languages. Bearing these limitations in mind, I now turn to the theoretical framework of this thesis in order to effectively navigate the complex webs of power relations.

3. Theoretical Framework

3.1 Introduction

Now that I have illuminated what has been lacking in teacher education with regards to technology use, I turn to the theoretical framework of this thesis to provide a set of conceptual tools. In Chapter 1, I have mentioned that this research takes Foucauldian discourse position in order to study teacher subjects in connection with SMART education discourses. This chapter is devoted to explicating the position by outlining the theoretical framework.

As can be seen from the word, 'Foucauldian', the framework draws Foucault's unique theoretical approach to three inter-related concepts: discourse, power, subject. It is necessary to specify each concept due to their 'fluidity of their meanings' (Mills, 2004). First, I start from Foucault's understanding of 'discourse' while introducing the related but different views regarding discourse. I make clear the definition of discourse in this study. I also clarify the meaning of 'SMART education discourses with the characteristics of discourse.

Second, I outline the unique theoretical concept of power by drawing on Foucault's theory of power. In order to align discourse with power, I state the significance of the conceptualisation of power as a web of relations in comparison to 'juridico-discursive' power. I cover the characteristics of power that are contingent, omni-present, and productive originated from the decentralised view on power.

Next, I theorise 'teacher subjects' by employing Foucault's view of 'subject', which is to be integrated with the conceptual framework of discourse and power as the venue where we can observe the effects of discourse and/or power. I introduce the various meanings of subject and situate the concept in power relations. I argue that teacher subjects are to be understood

as 'the effects' of specific power relations circling around and piercing through SMART education discourses. I show the limitations of a view, which sees teachers as individuals who are to conform inscribed norms and to seek to be the 'authentic self' without consideration of power relations. Later, I argue that the conceptualisation of subject does not reject the possibility of resistance.

Lastly, I review 'governmentality' and 'the modes of power' which Foucault identified in democracies. I demonstrate a few examples of how power can operate in the society not based on coercion and violence. I argue that there is a need to launch an examination to understand what is being produced by power relations where the rise of SMART education discourses is significant.

3.2 Discourse

Discourse is used both in everyday speech as well as in scholarly writing as 'common currency' (Fendler, 2010; Mills, 2004). This might be the reason that discourse has been deployed in various ways depending on the context where it is adopted to serve its purpose. Foucault had his own *ways* of understanding and using the term even though his ways were not singular but rather flexible (Fendler, 2010; Mills, 2004). Before delving into his unique ways of using the concept, it might be worth visiting how the term discourse has been theorised in scholarly writing.

3.2.1 Dealing with fluidity of meaning

Amongst multiple academic disciplines, the uses of the concept of discourse in linguistics have been influential in which some hints can be garnered to understand Foucault's uses of discourse. Lynn Fendler (2010) briefly states that discourse refers to a group of sentences,

which could be a conversation, a paragraph, or a speech in linguistics (p.35). Sara Mills (2004) specifies the meaning of discourse in linguistics. She says, within mainstream linguistics, discourse refers to an abstract system concerning language in use which signifies a turning away from sentence or utterance. She also mentions other linguists who see discourse as an extended piece of texts which show some form of *coherence* and *cohesion* (Sinclair & Coulthard, 1975; Carter & Simpson, 1989, cited from Mills, 2004). These approaches in linguistics allow us to recognise a domain beyond sentences or utterances where one can see its important characteristics: coherence, cohesion. These characteristics are seen in Foucault's reflection about the uses of the term. He writes (1972):

> Instead of gradually reducing the rather fluctuating meanings of the word 'discourse', I believe I have in fact added to its meanings: treating it sometimes as the general domain of all statements, sometimes as an individualizable group of statements, and sometimes as a regulated practice that accounts for a number of statements. (p. 80)

The first definition has the broadest meaning which resonates with the one in linguistics, referring to all utterances being made, in any form of communication (e.g. communication through visual images) – which have coherent meaning and some effects in the real world where people breath (Mills, 2004). The second and third definition are rather more *tangible* and *countable* than the first definition. They are the working definitions which Foucault often used when he was actually analysing any discourse (i.e. discourse as in the first definition) (ibid.). The second definition refers to a coherent and thus distinguishable group of statements about a particular topic. The group of statements is to be regulated by a certain rule to achieve the coherency. Here, it seems that the statements might represent unseen but distinctive presence of power (this point will be detailed in the next section). The third

definition of discourse indicates that discourse is "a regulated practice which accounts for a number of statements" (ibid., p.6). It sheds light on the rule-governed nature of discourse (ibid.). Mills (ibid.) comments that Foucault was interested 'less' in the actual utterances/texts that are produced and 'more' interested in the rules and structures which produce particular utterances and texts. Nevertheless, I argue that both the former (i.e. the actual utterances) and the latter (i.e. the rules and structures) need to be considered when one tries to understand discourse. Fairclough (2003) refutes Foucault's selective approach when he writes:

> Social scientists working in this tradition generally pay little attention to the linguistic features of texts. My own approach to discourse analysis has been to try to transcend the division between work inspired by social theory which tends not to analyse texts, and work which focuses upon the language of texts but tends not to engage with social theoretical issues. This is not, or should not be, an 'either/or'. On the one hand, any analysis of texts which aims to be significant in social scientific terms has to connect with theoretical questions about discourse (e.g. the socially 'constructive' effects of discourse). On the other hand, no real understanding of the social effects of discourse is possible without looking closely at what happens when people talk or write. (pp.2-3)

This research agrees with the view of Fairclough and intends to pay attention to 'the actual utterances/texts' in the target discourses as another realm governed by a certain rule of discourse. Despite my examination of 'the actual utterances/texts', the definition of discourse of this research would still be 'Foucauldian'; the meaning of 'less' does not mean Foucault has zero interest in the actual utterances/texts. Further, the definition of the term would also be 'Foucauldian' as far as the regulated practice includes the attention on 'how people talk or write' which formulating certain discursive practices in relation to language use. By adding

the perspective of Fairclough, Foucault's concept of discourse can be supplemented by including what Foucault could have potentially missed without violating his original definition. As can be seen from the remark of Mills (2004), it might have been the aspect of 'cohesion' which has been 'less' highlighted at the expense of the search for 'coherence' aspect. Graesser et al. (2004) says 'cohesion' is an objective domain of the explicit language and text whereas 'coherence' is rather a subjective domain occurring to readers' minds. Given that the actual utterances/text can be aligned with the objective domain of discourse, the point that Mills (2004) makes has the danger of dismissing the importance of the key element, cohesion. It might be worth including the aspect of the actual language use in defining discourse when one keeps in mind Graesser et al. (2004) stating "cohesive devices cue the reader on how to form a coherent representation" (p.193) not to mention the Fairclough's argument in the excerpt. In fact, this seems to be the main reason why linguistic aspects of discourse have been regarded as significant and passionately examined in discourse studies in a very sophisticated manner either explicitly or implicitly (see section 4.2.3.2 for further discussion).

So far, I have explored one of the core concepts for this study, discourse. I have identified the three meanings of discourse which Foucault used when he analysed power relations. I have mentioned that the identified definitions of discourse are used interchangeably just as most discourse theorists do. Also, I have pointed out what has been 'less' focused in studying discourse and included the layer of actual language use by drawing on Fairclough's argument.

3.2.2 Defining SMART education discourses

The broader aim of this research is to problematise our taken for granted assumptions advocating a certain claim that "technology integration in education innovates the current problematic education" (see Chapter 1 for the details). In other words, the broader aim is to problematise 'education technology innovation discourse'. Here, the term discourse refers to a set of rules and procedures for the production of particular discourses that are related to the third definition of discourse (Mills, 2004, p.55).

To achieve the aim, I intentionally pay attention to a national education technology initiative in South Korea, SMART education (see Chapter 1 for the details), in which one can observe certain sets of rules, norms, knowledge prioritising the claim. The sets of statements supporting SMART education are defined as 'SMART education discourses'. Here, the use of discourse is related to the second definition. Precisely, discourses as in SMART education discourses refer to sets of *approved* statements which are governed (e.g. institutionalised and circulated) by some rules formulated in 'education technology innovation discourse'. To be clear, I further explicate SMART education discourses with five points.

First, the term SMART education discourses in this study is not just a conceptual notion but also empirically tangible material. By devising SMART education in this way, this research can be conducted by collecting empirical data (see Chapter 4). This is possible due to my use of the theoretical notion discourse; it is not limited to any individual definitions of discourse. Rather, just as Foucault did, it encompasses all of them. It should be remembered that, for something to be in discourse, it must have been thought or spoken into any form of language (Fendler, 2010).

Second, SMART education discourses do not refer to the statements produced by the Korean government or some institutions. Rather, they are the creation in which many members of the society are engaged collectively (Fendler, 2010). Therefore, discourse cannot be owned by a single person, a group of people, or (a) certain institution(s). This increases the necessity of

collecting textual data from multiple sources at multiple sites (see section 4.2.2 for the actual textual data gathered).

Third, SMART education discourses may influence what people perceive and how people think in a certain way. However, it does not mean that SMART education discourses determine what people can or cannot do. In other words, discourse does not have thorough authority or forceful effects on people (Fendler, 2010). Instead, there is always a possibility to act or think in a different way even under the most dominant discourse, which will be discussed in the next section (Mills, 2003; Thompson, 2003). Hence, this research takes the concept of discourse to effectively problematise SMART education discourses.

Fourth, SMART education discourses are the mosaics of multiple other discourses which are summoned by certain rules or unseen power governing them considering any discourse is the combination of multiple related discourses (Fendler, 2010). It makes sense given words, phrases, sentences altogether are strategically brought together to represent a certain idea which on their own (i.e. words, phrases, sentences) are already the representations of the other discourses.

Fifth, by strategically devising 'SMART education discourses', this research can theoretically secure a position where I can argue that the discourses that individuals are being influenced are no more than 'a version' of possibilities and could be changed by us (recall the third definition). The reason is discourses are bounded by time and space (Fendler, 2010). In other words, discourses are historically contingent; discourses continually change, and they could mean something else depending where they are situated. At the same time, it implies that discourse cannot go well with universal and timeless truth just as this research does not aim to make a generalising argument about SMART education.

To summarise:

    (1) Discourse is a both theoretical and empirical notion.

(2) Discourse cannot be owned by certain institution; it is created by collective thoughts and actions of people in the society as 'common currency'.

(3) Discourse does not have complete control over people.

(4) Discourse is made of discourses. By looking at a discourse (or discourses), the peculiar relation can be seen with other discourses.

(5) Discourse is historically specific rather than persistent regardless of time and space. Any discourse which an individual sees as inevitable could have been different and can be formed in different ways and it will be.

Throughout this section, the meanings and the characteristics of discourse have been explored and conceptualised accordingly to be fit in the research that is designed to study SMART education discourses. As is hinted in the characteristics of discourse, it can be observed that there is *unseen* but *distinct* power in, out, between, above, underneath, and around discourse. It is clearly different from the 'common' notion of power that someone (or some people) in higher positions own it and wields it to its subjects to control them within its clear boundary (Fendler, 2010; Lynch, 2011; Mills, 2003; Newman, 2016). To elaborate this radically different notion from the common view, it seems to be necessary to switch the focus of the discussion from 'discourse' to 'power'.

3.3 Power

Power tends to be thought as the 'possession' of the powerful agents standing at the top of pyramid such as kings or dictators (Fendler, 2010; Lynch, 2011; Mills, 2003). In such a view, power can control people. It also has a clear origination and boundary of its influence. It has a simple cause and the direct effects. The relationship of power and its subjects is stable and linear. However, it is not compatible with the characteristics of discourse (see the previous

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section). The concept of power must be resonating with discourse for the investigation of this study. In other words, power needs to be something less centralised, less authoritative, and less touchable (Newman, 2016). To successfully satisfy the conditions, I turn to Foucault's theory of power.

3.3.1 Beyond 'juridico-discursive' power

Foucault's theory of power seeks to disrupt our commonly held view about power. It is 'juridico-discursive' power that Foucault says people need to see beyond. It is based on the notion that the sovereignty of monarchies or dictatorships oppress the public (Fendler, 2010; Kendall & Wickham, 1999; Lemke, 2010; Lynch, 2011; Newman, 2016). Foucault writes (1978):

> But the word power is apt to lead to a number of misunderstandings—misunderstandings with respect to its nature, its form, and its unity. … By power, I do not mean, either, a mode of subjugation which, in contrast to violence, has the form of the rule. Finally, I do not have in mind a general system of *domination* exerted by one group over another, a system whose effects, through successive derivations, pervade the entire social body. The analysis, made in terms of power, must not assume that the *sovereignty* of the state, the form of the *law*, or the over-all unity of a domination are given at the outset (p. 92, emphasis added)

It might be worth looking at the language use of Foucault to appreciate its meaning and its implications. The adjective "juridico" indicates "law". As the excerpt reads, Foucault clearly states that his understanding of power is not based on law and prohibition (Lemke, 2010; Lynch, 2011). It denies the view that "sovereignty", "law", and "domination"' are the fundamental elements of power mechanism, which focuses on the negative side of power as a

means of interdiction (Lynch, 2011). Instead, Foucault argues that, so called, 'sovereign power' is merely one of the modes of power which public can see in democracies (Fendler, 2010).

With the following adjective 'discursive', Foucault illuminates that power can be perceived as having those features of discourse while strategically implying the relationship between power and discourse: "power is inherently discursive" (Lynch, 2011, p.18). The implied relationship needs to be unpacked a little bit more. The use of the adjective can indicate that the relationship between power and discourse may not be straightforward as it seems in the sovereign power model revolving around repression or prohibition (recall the characteristics of discourse).

The theoretical notion that 'power is discursive' does *not* mean 'power is discourse' and vice versa. Indeed, discourse may look like the primary domain of power effect. For example, when certain behaviours are prohibited in any form of language as a statement (i.e. a discourse), it might be assumed that power takes effects on the discourse while imposing the control over people's behaviour. However, Foucault would not support such a naïve view (Lynch, 2011). It is essential to remember the adjective form. Power is 'discursive' not 'discourse'. Foucault (1978) clarifies this point by saying that:

> Discourses are not once and for all subservient to power or raised up against it …
> We must make allowance for the complex and unstable process whereby discourse
> can be both an instrument and an effect of power, but also a hindrance, a
> stumbling-block, a point of resistance and a starting point for an opposing
> strategy. Discourse transmits and produces power; it reinforces it, but also
> undermines and exposes it, renders it fragile and makes it possible to thwart it.
> (pp. 100-101)

The relationship between discourse and power is a complex entanglement. Perhaps it is why Foucault cautiously puts 'discursive' as a strategy to show that his theory of power cannot be reduced to one model based on 'causality' which is distinct, for example, in law, violence, and punishment. To refute the common notion of power, he points out some other discourses which represent the other forms of power that are involved even where most people believe sovereign power is dominating. On this point, Richard Lynch (2011) explains the works of power by giving a useful example about how people decide what to wear. He writes:

> Let us consider another example to illustrate this "juridico-discursive" view of power: is what you are wearing today an effect of power relations? If you picked your clothes to conform to a dress code (skits must fall below the knee, no profanity of T-shirts, etc.), then your choices can be explained by a "juridico-discursive" account: a prohibitory discursive law specified what you could or could not wear. Within those rules, on that view, your choices were presumably made without external interference. But when we look more closely, this view is not correct: a number of other, "capillary" (your friends) and "macro" (fashion) as well as extra-legal power relations have almost certainly shaped your choices of what to wear. Foucault's own theory of power is meant to replace these "juridico-discursive" accounts… (p.18)

The author argues that various forms of power are engaged where a prohibitive dress code seems to take control of what is wearable and not. He says the other forms of power are easily overlooked without closer inspection. The writer points out other influences (i.e. extra-legal power relations) seen in the closer look which come from both micro- and macro-context. By doing so, the author shows that Foucault analyses power in a network or web of relations which is called 'micro-physics' of power (Foucault 1978; 1991). In fact, Foucault notes in the 1976 Collège de France course that "power is never anything more than a

relationship that can and must be studied only by looking at the interplay of terms of the relationship" (2006, p.94). It is perhaps why Foucault speaks of power relations rather than power itself (Lemke, 2010, p. 32).

3.3.2 Characteristics of power

Understanding power as a web of relations renders at least three characteristics: contingent, omni-present, and the productive feature of power (Lynch, 2011). First, power is based on contingent feature of power relations. If power is created and circulated amid a web of relations in a society, power would be exercised differently while moving across the constructed relations at a particular time and space. In that regard, the theory can be said as having contingency (or historicity) in so far as the analytic focus is on specific power relations formed in given historical times (Ball, 2013; Kendal & Wickham, 1999; Lynch 2011; Newman 2016). In his book, *The Archaeology of Knowledge*, Foucault shows the contingency of power by describing the changes and discontinuity in human history (Fendler, 2010). Foucault challenges the dominant ideas back in his time (i.e. Marxists' and Structuralists' claims in 1950s and 1960s; this will be discussed in Chapter 4 in detail) that there are universal underlying patterns and rules in history by illuminating the differences between the discursive patterns (i.e. power relations) of sixteenth century and those of seventeenth century (Fendler, 2010).

Next, power is based on the 'omni-presence' feature of power relations (Foucault, 1978). The relationship between power and discourse suggests that power is everywhere. It was previously discussed that power is entangled with discourse in a complex manner. In that regard, given that discourse exists in everything people can access with their minds, it seems reasonable to assume that power is also everywhere. It should be noted that, though, power is

everywhere as far as it comes from everywhere rather than it encompasses everything (Foucault, 1978). It also does not mean that there is a "deeper" reality that power relations reflect impossible to be seen from the surface (Lemke, 2010). This is the conceptual consequence of setting 'juridico-discursive' power as one of the modes of power. As I have discussed with the example of how people decide what to wear, the decentralised power and the promotion of 'peripheral' and 'micro' power analysis lead us to see that there are "the extra-legal power relations" embedded in everyday practices and in social relationships (Ball, 2013; Lynch, 2011).

Lastly, power is based on 'productive' or 'positive' feature of power relations. Again, this is the counter feature of 'juridico-discursive' power which refutes the taken for granted assumption that power is prohibitive, oppressive, and thus negative (Lemke, 2010; Mills, 2003). In Volume I of *The History of Sexuality* (1978), Foucault pays attention to 'the repressive hypothesis' which represents 1) a common belief that sexuality has been repressed as can be seen in Victorian era (1837-1901) 2) a grave mission that need to challenge our own silences and shame in order to liberate ourselves (Fendler, 2010; Heyes, 2011; Mills, 2003). However, Foucault writes (1978):

> If sex is repressed, that is, condemned to prohibition, nonexistence, and silence,
> then the mere fact that one is speaking about it has the appearance of a deliberate
> transgression. (p. 6)

Foucault juxtaposes the belief about the repressed sexuality with the constructed pervert sexuality established by the cooperated talks: the concerns about masturbating children, the publication of numerous advice manuals on how to prevent such practices and the full-scale surveillance of boys for the elimination of the very sexuality (Mills, 2003). By doing so,

Foucault shows that the way how power relations worked in Victorian era was far more productive than power was ever a repression of sexuality (Foucault, 1980).

The characteristics of power suggest that the ways how power relations would work *here* and *now* would be different from the ways in which how power relations used to work some other times and somewhere else. It encourages us to take on a study of power relations rather than to accept what have been told as the truth (e.g. the repressive hypothesis). Therefore, it would worth investigating power relations, if we—the modern people—are truly living in the era of technology that is (if not 'should be') believed to be radically different from the previous version of era. Hence, why I launched to work on 'micro-physics of power' in relation to SMART education discourses by observing the actions of power in terms of its micro and peripheral effects.

Throughout this section, I have outlined the concept of power to align it with the concept of discourse in this thesis. By understanding power as decentralised power relations, I have shown that discourse and power are intertwined in a complicated manner. As a way to investigate the contingent, omni-present, and productive power relations in the era of technology, I have stated the necessity of micro-analysis of power relations which can be implemented by the study of SMART education discourses. The last issue arises here regarding the concept of subject. Given that this thesis is interested in teacher subjects constructed in SMART education discourses, it seems necessary to outline subject in an alignment with the discussed concepts (i.e. discourse and power).

3.4. Subject

It has been controversial whether subject has its own stable capacities to the extent that it can exercise its agency independently regardless of surrounding power relations (see e.g.

Flyvbjerg, 1998; Hayes, 2011; McGushin, 2011; Newman, 2016). Even though there are various views regarding subject, I have mentioned subject as the effects of power relations who conform to various norms and rules based on scientific knowledge of their own and of the society. In this section, I clarify the meaning of subject and conceptualise teacher subject so that the concept can resonate with the other concepts (i.e. discourse and power) without rendering teacher subjects as passive and powerless individuals. Lastly, I briefly explore how teacher subjectivities have been studied and point out a gap to which this thesis can contribute.

3.4.1 Subject as the effects of power

When Foucault theorises subject, he attempts to show that subject is hard to be simplified as a coherent and clear entity (e.g. an individual anchored in transparent and rational thought). He instead illuminates the elusive and incoherent nature of subject in opposition to the coherent and clear version of subject. Lynn Fendler (2010) lists the five definitions of subject that the Foucault's theorisation includes (pp.53-54):

- A subject as in a sentence which is the combination of subject and a predicate.
- A subject as in the subject of a discussion or subject of a conversation.
- A subject as a person who is governed.
- A subject as the opposite of an object.
- A subject as a disciplinary domain of academic knowledge

As elements of one particle, each definition constitutes the whole meaning of subject even though they seem to contradict each other. Subject acts while it is being objectified and governed (ibid. p.54). It is a personal area and thus cannot be reduced to objective characteristics such as race, class, gender, age, ability or sexual identity even though such

characteristics become the main domain of knowledge (ibid,. p.54). In its theorisation, individuals are neither totally independent agents nor completely passive beings (Ball & Olmedo, 2013). The theorisation of subject makes more sense to us when subject is situated both as an agent and an object in a web of power relations.

Foucault's theorisation of subject matches well with the governmental mode of power. I have mentioned that subjects, as the constituent of governmentality, are constantly being inscribed to do something. Plus, while governmentality provides the field of possibilities, specific modes of power (i.e. disciplinary power, pastoral power, bio-power) would effectively turn the individuals into their subjects (regarding governmentality and the modes of power see the next section). For instance, I have shown Foucault's works in which he describes how prisoners are subjectified and govern themselves in the prison and how Nazi Germany incited its people to systemically purify the German blood by eliminating eugenic threats, which all resulted from the historically contingent power relations (Foucault, 1978; Foucault, 1991a; see the previous section for the details).

Foucault's theorisation of subject goes against the classical Cartesian view of the subject. The subject of Cogito is transparent and anchored in rational thought which is to be understood as 'the essence' instead of 'the effects' of power (Mills, 2003; Newman, 2016). In its view, individuals are assumed to have "certain universal qualities which are ontologically prior to the exercise of power" (Heyes, 2011, p. 160). In contrast to Foucault's view of subject, the forces are understood as external (Heyes, 2011). Accordingly, the emergent task of the subject is to "Be yourself", "Find yourself" aiming to overcome the repressive force from outside and recover the inner, pure, and true self (Hayes, 2011; McGushin, 2011; Newman, 2016). It is important to note that the version of one's 'true self' is not so much one's personal characteristics but naturally given self-knowledge that should be used in a 'right' way and should not be disrupted by any external forces (Stone, 2011).

It is the urgent task of finding 'truer self' against the repressive power that Foucault puts a lot of effort to refute by arguing that the self or the self-knowledge is historically unique and has never been 'pure' from discourses and power relations (Ball & Olmedo 2013; Heyes, 2011). It was the very external and repressive power that produced the knowledge about pervert sexuality resulting in the concerns about masturbating children, the publication on how to prevent such practices and the full-scale surveillance of boys (see the next section for more detailed explanation). Based on the characteristics of power (i.e. contingent, omni-present, and productive), the Foucauldian view of subject gives a conceptual space in which one can problematise the discursive invention of classical Cartesian subject which is destined to work to find herself in response to the external power (Ball & Olmedo, 2013; Newman, 2016). Even though the Foucauldian view of subject is understood as the effects of power relations, it neither supports the idea that subject is essentially passive nor that it gives up resisting to power (Ball, 2013; Fendler, 2010; Mills, 2003; Thompson, 2003). In so far as resistance is understood in the external and the repressive mode of power, Foucault's subject could be seen as a passive entity. However, within the Foucauldian theoretical framework of power where the subject constitutes oneself within the complex network of power relations, individuals can recognise that the agency of a subject (i.e. resistance) is already implicated in itself. In this regard, Foucault (1978) writes:

> Where there is power, there is resistance, and yet, or rather consequently, this
> resistance is never in a position of exteriority in relation to power. (p. 95).

Foucault often refused the self-evident and preferred to know what is possible and he highlighted the courage to seek out what had yet to be done (Thompson, 2003). He encourages that the possibility for us (i.e. as subjects) to live in different ways as oppose to the dictates of knowledge and science is always possible (Fendler, 2010; Thompson, 2003).

In other words, the task of the Foucauldian subject is not to chase after 'the truer self' which can be achieved by someone who is able to thwart external power. The imperative task would be to critically engage with the techniques of various power relations as a way to carry out the project of self-constitution or self-fashioning to ultimately become a 'freer' individual in the field of possibilities (Thompson, 2003).

3.4.2 Teacher subjectivity

Taking the Foucauldian view of subject, I am interested in what could be named the *teaching subjects*, "an individual teacher as a subject that has been constituted and that has constituted him/herself through certain practices" in relation to SMART education discourses (Ball & Olmedo, 2013, p. 87). More specifically, I put in particular effort in finding out a certain teacher subjectivity with regard to technology use. 'Subjectivity' refers to a pattern by which personal and social experiences or surrounding discourses are organized to form one's self image, one's sense of self and others, and the possibilities of existence (De Lauretis, 1986, cited from Ball, 2003). It forms a relationship of the self to itself to take care of oneself, which can be defined by concrete form of activity exercised by oneself to itself (McGushin, 2011). Accordingly, teacher subjectivity is a version of what teachers do in order to fulfil the constructed (but often unidentified) identity in discourses at any given moment of history. Scholarly attention on subjectivity of teachers regarding technology use in teacher education has not been active. Instead, many studies about teacher subjectivity tend to be focused on neoliberal society and education which are prioritising performance (i.e. the indicator of ability), rigorous assessment, professional standards, market-oriented competition, and entrepreneurship (see e.g. Ball, 2003; Ball, 2013; Ball, 2016; Brass, 2014; ; Codó & Patiño-Santos 2018; Fenwick, 2003; Wu 2018). Even though these works are not directly related to

the topic of this thesis, it might be worthwhile looking into some studies to recognise an important aspect of the wider contexts, its potential influences as well as the limitations. Stephen Ball (2003) argues that a new mode of regulation based on performativity produces 'the new performative teachers' brought by neoliberal educational reform. The mode of regulation 'judges', 'compares', and 'displays' which aims to govern (e.g. giving incentives, promoting, suspending and etc) the performances of individual teachers as well as the schools. The author illustrates teacher subjectivities in neoliberal education reform discourse where he sees the installation of certain discursive techniques:

> …To be *relevant*, *up-to-date*, one needs to talk about oneself and others, and think about actions and relationships in new ways. New roles and subjectivities are produced as teachers are re-worked as *producers/providers*, educational *entrepreneurs* and *managers* and are subject to regular appraisal and review and performance comparisons. We learn to talk about ourselves and the relationships, purposes and motivations in these new ways. The new vocabulary of performance renders *old ways of thinking and relating* dated or redundant or even obstructive. We must become adept at presenting and representing ourselves with this *new vocabulary* and its prescribed signifiers and the possibilities of being 'otherwise' to or within it are extremely limited … (p.218, emphasis added)

In the excerpt above, the writer shows that teachers are supposed to govern themselves as "producers/providers", and "entrepreneurs" and "managers" to be "relevant" and "up to date". Each individual teacher is subjected to evaluation and the results are displayed and compared (see the 'panopticon' in the next section). Further, the neoliberal discourse even necessitates the process by installing the "new vocabulary" of performance which makes the newly pronounced "old ways of thinking and relating" obsolete.

He also highlights a contradiction arising in the name of performativity which paradoxically requires more activities (i.e. accounting for task work, erecting monitoring system, collecting performative data, attending to the management meetings), time, and energy resulting from the neoliberal performative practices. The commentator reports that (at least some, but not all) teachers and institutions 'fabricate' themselves to be the 'reformed version' (i.e. the true self) by letting the contradiction occurred in their practices. According to the writer, the fabrication has little to do with 'truthfulness' of such efforts. He claims that the neoliberal education reform discourse would care about 'the effectiveness' of the newly installed performative regulations.

Jory Brass (2014) argues that there have been multiple and contradictory educational reforms which have structured English Education in the US. In the same vein as Stephen Ball (2003), the author continues the argument by pointing out neoliberal policies and their disciplinary techniques (e.g. performance, rigorous assessment, professional standards). Just like Ball's recognition regarding the installation of the new vocabulary, the writer notices the repeated 'threat, protagonist, and antagonist rhetoric' in the mainstream media. The rhetoric is made of 1) 'educational crisis' in which pupils' academic performance are declining and evidenced by standardised test scores, 2) a discursive frame in which there is a struggle between a group of people (i.e. teachers, professional organisations, unions and teacher education faculty) who stick to previous education establishment and a group of reformers (i.e. entrepreneurs, philanthropists, neoliberal economists, state governors, neoconservative think tanks, corporate foundations, test-makers, and business leaders) who are positioning themselves as educational experts.

He asserts that neoliberal education discourses are moulding English education into a different form where the author sees the regulative strategies shaping the subjectivity of English teachers:

> In technical discourses, English teachers have been constructed as "***managers***" of learning and behaviour who structure environments, demonstrations and linear sequences of instruction to transmit "content" and reinforce the overt behaviours and terminal performances that constitute the knowledge and skills that external agencies have named learning, achievement and excellence. (emphasis added, p.122)

In a view which sees education in technical terms (i.e. technical discourses), teachers are basically distrusted, sought to be restricted in making professional decisions regarding teaching, and actively evaluated based on 'so called' objective evaluation (ibid., p.122). Teachers are supposed to be the "managers" who are accountable for educational outcomes and have a duty to meet the national standards of pupils' academic achievement (Brass, 2014).

It is observable that the reported teacher subjectivities in neoliberal discourse studies are mainly in similar terms with some minor variations in details. In line with Ball's (2003) theorisation, Ward and Quennerstedt (2019) investigate how national Standard Assessment Tests (SATs) in the US shapes teacher subjectivity. The authors report that teachers govern themselves as 'evidence hunters' who collect evidence of pupils' attainment. Codó and Patiño-Santos (2018) study a neoliberal government initiative (i.e. Plurilingual Experimentation Plan in Catalonia) fostering a specific English and foreign language education approach which uses the target language as a medium for learning target contents. The writers present three teacher subjectivities formed in a partnership school where the initiative is supposed to help the enrolled students who are from working or lower middle-class families:

1) the entrepreneurial head teacher: an enthusiastic visionary self who envisions educators and creates the passionate team ethos in the school while implementing the requirements

demanded by the policy makers

2) the activised civil servants: an enthusiastic entrepreneurial self who makes an extra effort for professional development in line with the initiative even when it is not required to do so which causes him/her to recognise oneself as a different (and rare) kind of teacher among those who hold permanent teaching position

3) the maximally flexible temporary teachers: a restless self who is caught up in a tension between a moral commitment to quality education for the pupils, professional instability caused by one's temporary contract, the heavy requirements of the school system such as taking professional development courses, enrolling in teacher training seminars, as well as making plans for one's own teaching subject.

It is noteworthy that the study identifies various teacher subjectivities can be constructed differently depending on professional trajectories of teachers. However, despite the speciality of the research, performativity and disciplinary techniques (e.g. the regulation for the requirements regarding the initiative and professional development requirements), and corresponding teacher subjectivities seem to match with the previous studies I have explored in Chapter 2.

If it is assumed that the prioritised innovation in education with technology and that innovation often means better performance, SMART education discourses are likely to be relatable to neoliberal discourse and the constructed teacher subjectivities. However, I have no intention to limit our scholarly discussion in neoliberal discourse when I examine teacher subjectivity in relation to SMART education discourses. It is critical that power relations are inherently contingent and produce different discursive effects depending on the contexts. Plus, keen academic interests are to be focused on the lack of knowledge about the topic in scholarly literature.

In this section, I have outlined 'subject', 'subjectivity', and 'teacher subjectivity', which are aligned with the other main theoretical concepts of this thesis (i.e. discourse and power). Specifically, it is made clear that resistance is implicated in the definition of Foucauldian subject and therefore this research understands subject as a paradoxically free entity which is able to constitute itself within the field of possibilities. On top of that, by theorising subject as the effects of power instead of the essence of the naturally given human capabilities, this thesis has devised a theoretical space where one can problematise an unquestioned mission for teachers to be 'the truer version of teachers' in SMART education discourses.

3.5 Governmentality and Modes of power

I have discussed that Foucault took on analysis about power relations in which he observed and found some modes of power in modern democracies that were distinctively different from juridico-discursive power in monarchies. By analysing the power relations in the modern democratic society, he finds out how subjects are governed where the head of king is cut off by decentralised power through the identification of modes of power (Lemke, 2010). In this section, I introduce governmentality and various modes of power in order to elucidate some ways of how power works in modern societies as well as to be inspired by them before the analysis of SMART education discourses.

Governmentality. Foucault coined a term 'governmentality' to indicate a way how people govern themselves in a democracy (Fendler, 2010). It sees the concept of power as 'guidance' (Lemke, 2010). 'Guidance' is how the government utilises the instruments of power including but not limited to coercion and consent to the coercive state power to manage the people's conduct by opening and shaping the field of possibilities (Fendler, 2010; Lemke, 2010; Thompson, 2003). It is key to understand the relationship between the two entities,

'government' and 'people', in the governmental mode of power. They should not be regarded as two separate notions (Fendler, 2010). Instead, just as power and discourse are entangled in a complex manner, government and people's mentality (i.e. the way how they govern themselves) are entangled and define one another (Fendler, 2010). In this model, the theoretical interest is not on conflictions or struggles between the oppressor and the oppressed just like it does not make sense to wage a war by oneself against themselves. It has more to do with how we, as the constituent of governmentality, can become freer in the field of possibilities while people are being incited, induced, released, or sometimes compelled and forbidden (Fendler, 2010; Lemke, 2010; Thompson, 2003).

In the meantime, Foucault shows various modes of power in which one can observe how regimes of governmental practices shape the individual's conducts in democratic societies (Thompson, 2003). The modes of power are 1) disciplinary power, 2) pastoral power, 3) bio-power. To be clear, I do not consider that these modes are the only possible forms of power in our society. Further, I do not intend to take these modes and explain the power relations in SMART education discourses. Instead, I review these modes of power to be inspired while appreciating how Foucault examines various power relations in democratic societies without resorting to juridico-discursive power and with consideration about presence of power that is everywhere and produces some effects in the field of possibilities.

Disciplinary power. First, disciplinary power shall be in action when it analyses and breaks down its object (e.g. individuals, places, time, movements, actions and operations) and normalises what it is being seen (Ball, 2013). Surveillance and knowledge play important roles in the action of disciplinary power as its mechanism. (Fendler, 2010). Foucault argues disciplinary power can be best explained with the 'panopticon', which refers to Jeremy Bentham's architectural plan for the model prison (Hoffman, 2011).

Panopticon is a ring-shaped structure with a tower at the centre which renders asymmetrical visibility. Specifically, the building has an internal periphery consisting of cells containing iron grate doors opening to the interior and windows opening to the exterior as well as a multi-floored central tower containing wide windows with blinds and partitions (Hoffman, 2011, p.34). In each cell, an inmate is not able to identify whether there is a person at the tower who watches over them due to blinds and partitions as well as the artificial light coming from the tower. In contrast, prison officers in the tower can 'gaze' at an individual inmate and tell whether the inmate is acting normal or not. Further, the gaze can produce an administrative 'knowledge' about the inmates at any time (Hoffman, 2011). Consequently, the inmates will discipline themselves based on the norm, which is not strictly legal with or without the presence of prison officers.

We can see that disciplinary power 'breaks down' the structure, 'situates' the prisoners, 'watches over' the actions of each prisoner, and 'specifies' the operations of the prison. Disciplinary power is a versatile governing strategy in governmentality given that it concerns individuals as objects at one level (i.e. individuality) and it is able to render the individuals instruments of its exercise (i.e. totality) at the same time (Hoffman, 2011; Oksala, 2013). In other words, the individuality and the uniformity of disciplinary power make disciplinary power as the effective strategy in governing the population (Ball, 2013).

Pastoral power. Next, pastoral power shall be in action when it protects and nurtures (i.e. cares for) the individuals (Fendler, 2010; Lemke 2010). It is noteworthy that this mode of power is reproduced by people themselves meaning that they are willingly turn themselves into subjects trusting the promise of care from power (Nygren & Gidlund, 2012; Pandian, 2008). Pastoral power can be understood quickly by considering the meaning of the word, 'pastoral'. Literally, it refers to 'a pasture' where a shepherd cares for a flock of sheep (Fendler, 2010, p.45). It is possible to visualise that modern state, as a shepherd, provides

comprehensive guidance of individuals (i.e. a flock of sheeps) for their wellbeing in democratic societies (i.e. a pasture). This conceptualisation of power brings about a peculiar characteristic when it is compared to that of juridico-discursive power. When sovereign power is abused, people would get to the street to rebel against the problematic laws, ruthless kings, or cruel dictators. However, it would be puzzling when an individual thinks about who or what to rebel if pastoral power is abused. Even if pastoral power is exercised at its maximum level, it would not make sense to rebel against our shepherds who do their best to protect us (Fendler, 2010).

Pastoral power relies on the production of rational knowledge as its source of authority in a democratic society (Lemke, 2010). Foucault shows that the source of pastoral power used to be the divine law in the Bible during the many centuries of medieval Christian Europe (Ball, 2013; Fendler, 2010; Pandian, 2008). In a democratic society, in contrast, the authority comes from the rational knowledge about us, as the object of knowledge for the care while producing the truth about us as an individual and as a population (Fendler, 2010; Lemke, 2010; Nygren & Gidlund, 2012; Pandian, 2008). Therefore, just as disciplinary power does, pastoral power also shows both 'individualising' and 'totalising' characteristics in so far as it provides each individual with 'complete guidance' based on scientific knowledge about human beings valid to an individual and as well as to the population.

Bio-power. Lastly, bio-power shall be in action when it fosters life or disallows life to the point of death (Foucault, 1978, p.138). Given that sovereign power (i.e. juridico-discursive power) holds the right to take life, bio-power illuminates that power not only holds the right to take life but also protects life. Of bio-power, it can be said that it originates from pastoral power to the extent that it cares for human species based on expert knowledge about us (Oksala, 2013). Thus, as seen in pastoral power, the acts of bio-power can shape how we (i.e. subjects) think ourselves without incurring fierce rebellions when the state exercises bio-

power as it governs birth rates, longevity, public health, sicknesses of a population (Fendler, 2010; Taylor, 2011). However, if pastoral power is originally geared to individual bodies, bio-power is more focused on the life of the body of the population so it is 'totalising' instead of 'individualising' (Ball, 2013; Lemke, 2010; Newman, 2016).

The relationships between the modalities of power can be better understood by contemplating what bio-power does. Bio-power regulates and controls the target population by incorporating sovereign power and disciplinary power (Oksala, 2013; Taylor, 2011). For an instance, Saul Newman (2016) mentions the humanitarian relief operation by military forces. He points out sovereign power (i.e. military forces of Western governments) sustains biological life of the starving people who are dependent upon bio-power which feeds them. With regard to the relationship with disciplinary power, Chloë Taylor (2011) states that the same tactics of disciplinary power will be employed under bio-power with a stronger focus on the population rather than on an individual. When a criminal goes through psychological examinations, surveillance and rehabilitative practices, bio-power is in action out of the interests of control or regulation of crime rates in the society rather than the interest in individual discipline itself by using disciplinary techniques (Taylor, 2011).

We must not forget that bio-power can be the most destructive and violent mode of power. If the expert knowledge detects any threats to the survival of the population, it would do its best to regulate and control the threats efficiently and ruthlessly. For an instance, Nazi Germany was successful in exalting its race as a higher breed based on eugenic taxonomy (Thompson, 2003). It was the scientific knowledge and a grave mission that German blood must be kept pure against the inferior bloods of the Jews, gypsies and those people with developmental disabilities who are posing threats to "racial hygiene" or "German well-being" (Taylor, 2011). Consequently, in assuming responsibility over the power of life, the German regime also assumed the "right to kill" in the interests of lives of the German population (Ball, 2013).

This combination resulted in "the ultimate genocidal blood bath" (Thompson, 2003, p. 116). The historical review of bio-power advises that we had better pay attention to certain collective and relentless efforts which we can see in SMART education discourses. If the state puts efforts towards something very important in the name of survival as well as our well-being, it would willingly take risks of systematic deletion of some denounced entities without hesitation.

I explained that power can work in various ways other than forcing people to do something with coercive power. Further, it shows the various modes of power could be dangerous given their significant influences in the form of 'complete guidance' shaping people's beliefs that it is not escapable. Thus, I argue the importance of the examination of SMART education discourses in which people could be inspired by the ways in which power works. With the knowledge acquired by this examination, readers of this thesis shall recognise the shaped field of possibilities that affects us in constituting ourselves at this historical juncture.

3.6 Conclusion

To clarify Foucauldian discourse position, this chapter has dedicated three inter-related theoretical concepts: discourse, power, and subject. By defining each term in line with the study, I have devised a conceptual framework by which I construct SMART education discourses, analyse power relations intertwined with SMART education discourses, identify teacher subjectivity, develop and differentiate the theoretical perspective in the relationship with the discussed theoretical approaches (e.g. a view which sees power as possession; subject as the essence of human capabilities). Specifically, by conceptualising discourse both as a theoretical and empirical concept and aligning it with the theory of power, I have shown that the investigation of SMART education discourses can mean the investigation of power

relations. Further, by employing Foucault's power, not only have I shown that teacher subjects can be understood as the site where one can examine the inscribed power relations upon individual teacher's body and soul (i.e. self) but also that teachers can be conceptualised as the freer being who can challenge the effects of power and constitute themselves in the field of possibilities based on 'self-fashioning' approach.

Considering the significance of the uses of the inter-related concepts which overlap and interlink, the framework shall give a richer and fuller description of a shape in which one can see a version of teacher subjectivity represented in SMART education discourses. The necessity of this research increases if it is remembered that power relations produce certain discursive effects in a historically contingent way, and consequently, that the previous studies about teacher subjectivities would not be applicable. Now, I move to the methodology to complement and advance this theoretical framework.

4. Methodology

4.1 Introduction

The theoretical framework requires a corresponding methodology which clarifies an object of research and manoeuvres methods of analysis. In a continuum, this chapter is designed to serve the main purpose of this research. To remind, the research questions of this thesis are:

How is 'smart teacher' constructed in 'SMART education' discourses?

To what extent and in what ways are SMART education discourses different from the previous dominant discourses in education in the society?

What is the significance of the findings for concepts and theory associated with teacher subjectivity, SMART education discourses, and, power?

To answer the questions, I have chosen methods that would allow a detailed examination about the ways in which teachers are positioned in SMART education discourses as subjects which represent contingent and unique power relations at this *historical* moment. In this chapter, I detail the chosen methods and the rationales behind the decisions followed by explanations regarding where and how the data was collected and analysed. In particular, I report how the archive of SMART education discourses is resourced which represent the historicity. I also provide the detailed process of data collection followed by the lists of texts. The significance of the collected data is also stated. Next, this chapter outlines the methodological framework which draws on and combines Foucault's genealogy and Fairclough's textual analysis. I elaborate that how this framework can efficiently analyse

SMART education discourses and illuminate the constructed teacher subjectivity with examples that were demonstrated in scholarly works. Later, the methodological framework is situated in poststructuralism. On this point, I understand the order of this chapter is not common; philosophical background lays the foundation first, and methodological choices originate from there. However, my decision about the order of this chapter was intentional. Foucault is very hard to be considered as a standard philosopher who has a single philosophical label (Mills, 2003). Thus, I introduce the methodological choices first and cautiously argue that they can fit in poststructuralism. At the end of this chapter, reflection on ethical considerations is discussed.

4.2 Research Methods

Just as historians make use of written texts from multiple sources (Tight, 2019), this research can also be categorised as *document-based research*. It followed three steps. First, I archived primary and secondary texts collected in multiple venues across South Korean society which prioritise SMART education (i.e. SMART education discourses). Second, the archive of SMART education discourses was scrutinised to figure out the discursive formation of the 'good' teacher. Third, this research identified the power relations while examining the embedded and the related discourses in SMART education discourses. The design of the research is significantly inspired by methodological tools provided by Foucault. Among the tools, *genealogy* stands at the core of the methodological decisions. Genealogy studies what kind of people would fit into a certain set of historical artefacts (e.g. knowledge, rules, norms) and it is based on *archaeological*-type of study which archives various texts to analyse what is inscribed in discourses (Fendler, 2010; Kendall & Wickham, 1999; Mills,

2003). Genealogy, therefore, renders the examinations in the study as 'Foucauldian Critical Discourse Analysis' (hereafter, CDA).

4.2.1 Data sources

This project archives SMART education discourses by collecting and generating relevant textual data. This sub-section reports how the archive is resourced. By documenting SMART education discourses with official texts, reporting covers, and personal texts, this research was able to secure an ample textual dataset. The archive allowed this research to examine the historical artefacts and to illuminate how the dominant discourses have exercised its power while carving out a particular teacher subjectivity.

4.2.1.1 Official texts

This study includes an analysis of official texts. The texts refer to a selection of two policy documents announced by the South Korean government and three research reports published by a national research institute. This method is employed by Mooney Simmie and Moles (2020). They investigate policy documents along with their observations to highlight the changing subjectivities of teachers in relation to neoliberal political economy. In line with the writers' choice, there were reasons behind the methodological choice. First, the decision was made to better understand the ways in which teachers are positioned in 'genres of governance' in relation to a particular subjectivity of teacher (Faircough, 2003). It was anticipated to see how power is exercised in official texts where policy writers and researchers do not expect to be questioned while advancing 'one, accepted, standard point of view' (Tight, 2019, p.114). Moreover, the decision was also made to see how SMART

education discourses are verbalised through certain language uses. Given what Foucault mentions—'power is everywhere' (Foucault, 1991), the domain of language use can be the fruitful venue to examine the materialised power relations (this will be detailed in the later sub-section). Lastly, official texts were collected and analysed to guide further document collections, for example, by identifying potential venues for further data collection and in extracting some useful texts as a trigger for interviews. In opposition to the critical realists' view (see section 3 in this chapter), it should be clearly mentioned that there was no intention to trace any discursive causality between the government policy papers and the following research reports not to mention the other type of texts (i.e. media texts and interview texts).

4.2.1.2 Media texts

This study includes media texts about SMART education as one of the important venues in archiving SMART education discourses considering its wide audience and the power of information delivery (Fairclough, 2003). Indeed, media texts have been used to investigate constructed images of teachers in news discourse at certain periods of history. Jennifer Cohen (2010) investigates how teacher identity is shaped in news discourse in relation to expected roles of teachers (i.e. accountability and caring) in the USA between 2006-2007. Anders Hansen (2009) studies the changes in portraying teachers' subjectivities in the news in the UK between 1991 and 2005. The choice was also made to pay attention to three roles that media takes in the society: 1) texts in news media can connect different social events involving the networking of different social practices across different domains or fields of social life (Fairclough, 2003), 2) media sets the agendas in public discourse, 3) it establishes the range of criteria for constructing, debating, and resolving social issues (Domke et al., 1999; cited from Lee & Lee, 2019a). It is thus reasonable to assume that news articles

prioritising SMART education would not only represent what is likely to be accepted by its wide audience in the society but would also promote certain social events or practices shown in the texts. The included news articles helped with drafting interview questionnaires as the props and identifying a specific teacher subjectivity based on what is included regarding teachers' perceptions and practices seen by others.

4.2.1.3 Semi-structured Interview

Interviews were chosen to document perceptions about SMART education, practices in relation to SMART education as well as the shaped identities of the target participants which will be introduced in the following pagraphs. Unlike the other types of texts, "interview is a powerful and flexible implement for collecting data since the interviewer can ask not only to complete answers but also can encourage the participants to respond about complex and deep issues" (Cohen et al., 2011, p.409). Moreover, interviews can generate empirical and textual data which are useful in starting from "a localised empirical field" (Ferreira-Neto, 2018).

I have defined, in the previous chapter, that a subject can be either significantly or partly (but not completely) shaped by certain power relations in which they are situated and inscribed. In other words, the interviewees could be understood as the places where power is enacted and also where we witness their resistance (Mills, 2003, p.35). In this regard, interviews can be described as an effective way to gain primary textual data about the teacher subjectivity directly from the subjects. Especially given all participants are recruited within the 'smart' city (see the next section for the detailed explanation), the interview texts can be understood as one of the representations of the constructed teacher subjectivity with regard to SMART education discourses. The SMART education initiative launched in 2011 and there is a time gap between the early stage of the initiative and when I collected data. In that regard,

interviewing teachers, teacher educators, and other stakeholders would be a convenient way to document past events (Peräkylä & Ruusuvuori, 2018).

I interviewed several groups of participants (N=18): in-service teachers, teacher educators, school managers, and a regional education supervisor in the city. Interviews were aimed to draw their conceptualisation of 'smart' teacher (i.e. a specific teacher subjectivity in SMART education discourses) while asking about their experiences, opinions and reflections related to SMART education (see Appendix 3). This method was a valuable tool for the 'thick description' of SMART education discourses; the fact that it provided abundant data including the enacted practices in classrooms, perceptions, and formed identities in the field is important. It could have not been possible to document if I had only archived official and media texts. The analysis of these witnesses also provided rich insight into the taken for granted assumptions as well as the historical conditions that shaped the participants' perspectives.

Semi-structured interview has been used as a valid method to study teachers' perceptions and perspectives in relation to teacher subjectivity. Englund et al. (2019) employed semi-structured interview to draw out what teachers say about the influences of such dominant performative discourses on understandings about themselves as teachers. Varea et al. (2019) used semi-structured interview to collect the influences of consumerism on teachers' perceptions and behaviours such as their physical appearance, dress and consumption pattern. Lewis and Holloway (2019) conducted semi-structured interviews to investigate how data-driven practices and logics have shaped the image of teacher profession. It is mainly because that semi-structured interview is useful in studying a specific agenda by preparing the relevant topic areas and themes to pursue (Arksey & Knight, 1999, p.7). Further, it allows researchers to be free to 'follow up ideas and probe responses and ask for clarification or further elaboration' (Arksey & Knight, 1999, p.7).

4.2.2 Data collection: Archiving SMART education discourses

This sub-section is devoted to the detailed process of data collection as well as the results of the process. I explicate how each text data for each research method is gained along with explanations of the significance of collected data. Lists of the collected data is also provided.

4.2.2.2 Official texts

Government policy papers. I archived two government papers produced by the Ministry of Education, Science and Technology (MoEST). The papers were collected from the government website of the Ministry of Education in March 2018 (SMART education Implementation Strategies) and May, 2018 (SMART education Strategy Action Plan). The first document has 37 pages and the second document has 105 pages. They are evaluated as having significant influences just as research reports that SMART education research has considerably increased since the documents were first announced (Kwon & Chun, 2013).

Issued	Title	Publisher	Format
06. 2011	SMART education Implementation Strategies	MoEST	Policy paper
09. 2011	SMART education Strategy Action Plan	MoEST	Policy paper

Table 4.1. List of government policy papers

One of many possible reasons for their significance could be that they set up and put forward SMART education by defining SMART education and by providing the national vision and necessities for it as well as by providing following implementation action plans in various sectors to enact the initiative. For example, in the first policy paper, titled "SMART education Implementation Strategies", key tasks are set with an astronomical budget (about 1.5 billion pounds): 1) development and application of digital textbooks , 2) activation of

online teaching and evaluation, 3) fostering accessible and safe environments for the use of educational contents, 4) reinforcement of SMART education competence of teachers, 5) fostering infrastructure for cloud education service, 6) establishing an enactment system. The second paper, titled "SMART education Strategy Action Plan", details the first paper by specifying the roles of institutions and promotion strategies. It commands the Korea Education and Research Information Service (hereafter, KERIS) to take charge of the first five key tasks. Further, it also sets plans as to how the government will manage media agencies, for example, by providing media coverage resources and allocating publication numbers for individual news agency. In sum, it helped to identify all the other venues for further data collection: the national research institute, news agencies, Sejong city.

National Research Reports. Informed by the second policy paper, I collected three research reports from the digital archive of KERIS. The earliest published paper has 77 pages, the second one has 169 pages, and the last one has 75 pages. The institution promotes various national educational projects which are mainly related to ICT. They carry out academic research to embody the general directions of governmental policy into a form of knowledge. I accessed to the digital archive of the institution and put a search word, 'SMART education' in March 2018. Thirteen documents were identified. The reports cover a wide range of topics; developing SMART education training programme for school managers, guidelines for developing SMART education supports, a framework to test the efficiency of SMART education and so on. Amongst the documents, I archived three research reports which are closely related to 'teacher' as can be seen in the table below.

Issued	Title	Publisher	Format
2012.12	Teaching Tips & Self Checklist for the 'Good Instruction' of SMART Education	KERIS	Research Report
2013.03	Smart Education Teacher Competence and Training Program Development for Smart Education	KERIS	Research Report
2014.02	The development and implementation of an online assessment tool for teacher competency in Smart education	KERIS	Research Report

Table 4.2 List of research reports from KERIS

First, I chose a report providing knowledge about 'Good Instruction' of SMART education introducing teaching tips and self-checklist. I was able to capture what is reported as the elements of good instruction as well as what teachers are supposed to do in relation to SMART education. Given that teacher subjectivity is a version of what teachers do in order to fulfil one's constructed identity at the historical juncture, what teachers are encouraged to do in the document seems to be valid texts for the purpose of this thesis. Second, I included a report defining 'SMART education teacher competence' and providing a framework for teacher training programmes to develop the competence. I was able to capture how the competence is constructed and, more importantly, how teachers' knowledge, attitudes, and practices are being reorganised, which enabled to compare to the previous versions of teacher subjectivity. Third, I analysed a report which provides an online assessment tool to measure the teacher competence for SMART education. In addition to the text data regarding the teacher competence, I was also able to point out how teachers are monitored and regulated based on the measurement which supposed to be implemented by teachers themselves.

4.2.2.3 Media texts

I have mentioned earlier that the second government policy paper devises some marketing strategies. One of them was to use media agencies as channels to raise public awareness regarding positive aspects of SMART education. Based on an assumption that the news

articles published sooner or later than the first announcement of SMART education policy might represent SMART education discourses, I documented five news articles about SMART education. I collected them in a digital news archive of a major news agency, The Chosun Ilbo. The newspaper was chosen based on a report investigating media readership from 2013 to 2016 (the second committee of media readership investigation, 2015). The report shows the newspaper agency has the biggest market share (24.6%) in 2015 among ten other newspapers.

I searched for a phrase, 'SMART education', within the time period starting from June 2011 up until now (October 2018). The search resulted in 120 news articles. Rather than including a large number of news articles, I chose to select and analyse the appropriate amount of data in consideration of the methodological approach. The reason is the focus of analysis of this research is on even small details of language use (see the following section). So, I set four criteria to reduce the number of articles:

1) Is the article related to SMART education?
2) Does the article prioritise SMART education?
3) Is the article related to primary or secondary education?
4) Does the article include any comments from stakeholders (i.e. school managers, teacher educators, teachers, parents) about teaching or learning practices, experiences or reflections in relation to SMART education?

The set of questions was designed to align with the purpose of the research: to investigate teacher subjectivity in SMART education discourses in the context of public education. Those articles dealing with SMART education, prioritising positive aspects of SMART education in the K-12 school setting, including views of stakeholders were chosen. I was able to reduce 120 articles to 5 news articles. The collected articles can be seen in the table below.

Issued	Title	Publisher	Format
2011.06	In a classroom at a primary school in South Korea in 2015…	The Chosun Ilbo	News article
2011.11	Preview 'digital classroom', Changwon O-chang primary school	The Chosun Ilbo	News article
2012.11	I'm a smart teacher…I teach by NIE method with Tablet PC	The Chosun Ilbo	News article
2012.12	Backpack is light, lesson is more fun	The Chosun Ilbo	News article
2013.03	SMART education is rushing into…This is how to do 'Mum-made education'	The Chosun Ilbo	News article

Table 4.3 List of news articles

As a type of narrative, news articles are both additive and elaborative while they are reporting details about events in a certain way (Fairclough, 2003). This characteristic of the genre was particularly helpful in identifying what is particularly prioritised when the news articles (i.e. SMART education discourses) narrate SMART education, teachers, lessons.

4.2.2.4. Interview texts

Lastly, I documented interview texts generated by conducting 18 interviews in a city called 'Sejong' with teachers, teacher educators, school managers, and a regional supervisor. In the following paragraphs, I state the detailed explanations regarding where the interviews were conducted, when and how I recruited participants, who they are, what I asked the participants, and lastly the significance of the collected interview text data.

Research Site. Sejong city was chosen as the research site to conduct interviews. Sejong city is planned by the Korean government and launched on 1st July 2012 to decentralise the too heavily centralised administrative function of Seoul, the capital of South Korea (Kang, 2012). It is located in the centre of South Korea as shown in the figure below.

Figure 4.1 The location of Sejong city (The Korean Times, 2009)

Also, SMART education promoted by the Sejong city Office of Education was planned as one of the strategies to provide a competitive education environment from the beginning of the construction of the city (KERIS, 2016). Particularly, the city has been highlighted for its cutting-edge future schools since those new schools were equipped with technology infrastructure (see e.g. KERIS, 2016).

Further, as mentioned earlier, both of the government policy papers promote a plan to run 'SMART education model schools' in Sejong city, South Korea by stating that it intends to 'visualise' and 'spread' the 'SMART education model' gradually. Indeed, those model schools were actually enacted in the city and became the epicentre of SMART education research (see e.g. Kim et al., 2013). Therefore, it seems reasonable to assume that the city is a significant place where I can document the power of SMART education discourses which

favour what it is positively said about SMART education. To add, this decision turned out to be adequate when I heard the voices of teachers who used to work in the other cities saying "the other cities in South Korea apparently were less influenced by SMART education compared to Sejong" (this will be shown again in Chapter 5).

Recruitment. 18 interviewees were recruited as the participants in this study with the snowball sampling. Snowball sampling was particularly useful since I, as an outsider, did not know any personage who works in Sejong as a teacher. Hence, as the researcher of this study, I asked participants to recommend other individuals. In that regard, I used snowball sampling (Creswell, 2014). The first person I contacted was a regional supervisor of Sejong city office of education who directed SMART education. I assumed that the person is very likely to lead me to the next interviewees given that the supervisor is responsible for organising general events about SMART education in the city. Before contacting the supervisor, I located a document on the official website about SMART education professional development plan for teachers in Sejong city. I noticed that there are teacher educators who take charge of teacher trainings. Next, I identified the supervisor's email address in the website and sent an email. In the email, I introduced myself as a doctoral researcher who studies SMART education and my former career as a primary school teacher. Then I asked for contacts of teacher educators and whether she can have an interview about her opinion about SMART education.

She was cooperative. The supervisor agreed to have an interview later and gave me three contacts of teacher educators working in different schools. I contacted them separately by sending an email, a text message, and making a call to arrange interviews. Recruiting the rest of the participants was relatively easier as the teacher educators were willing to connect me to the other teachers in their schools. Teachers also introduced me to the other teachers (and a school manager at a different school) who participated in this study when they were asked. In the later stage, I interviewed school managers and the regional supervisor. It was an

intentional decision not to develop any prejudices before I hear teachers' experiences, opinions, and reflections from teachers.

Participants. I conducted interviews in four schools and in the Sejong city Office of Education. There were ten in-service teachers, five teacher educators, two school managers, and one regional supervisor (see Appendix 3). Gender-wise, there was an equal number of males and females (the regional supervisor's gender is not revealed for anonymity). The average teaching experience for each group was: teachers (about 4.5 years), teacher educators (about 9 years), school managers (about 30 years), the supervisor (about ** years-not revealed for anonymity). It is noteworthy to mention that it was difficult to document the perspectives of older teachers (i.e. those teachers who are in their 50s, 60s). Indeed, Yoonha (school manager of School A) says that more than 50% of teachers in Sejong have less than five years of teaching experience. According to Hansol (teacher of school B), Sejong city was not very popular among some experienced teachers when the city first recruited teachers in 2012. Reasons for this phenomenon include certain required skill and knowledge about using technology, obligatory teacher trainings, and possible pressures coming from highly educated parents who are mostly government officials. In the meantime, to include those old teachers, I politely asked those more experienced teachers to participate when I came across them in schools, they refused to do so.

Interview. Three interview questionnaires were prepared to interview different groups of interviewees. There were 16 open-ended questions for the teachers; 13 open-ended questions for the teacher educators; 12 open-ended questions for the school managers; and 11 open-ended questions for the regional supervisor (see Appendix 2 for interview questionnaires). However, the format of the interviews was broadly identical. The format consists of two sections. Based on my analysis of the policy documents and the media texts, I decided to use extracts from the first government policy paper and one news article within the interviews in

the opening section (see Appendix 2). It was to jog the participants' memory to gain more accurate responses (Arksey & Knight, 1999). Also, as Lee (2020) explains in designing her interview protocol, it was to make conversations more comfortable and to ground interviewees in their contexts such as personal experiences or institutional rules.

The first set of questions asked their related memory about the presented passages in 2012, 2013, 2014—the excerpts were published in 2011 and 2013 respectively. The decision was made on the basis that the first three years of SMART education would have been particularly strong enough to create such texts, therefore, the time period might be a good point to begin an interview to stimulate participants' previous experiences related to SMART education discourses. The first section also asked their opinion about the excerpted texts whether they agree or disagree with the statements. While I was listening to their opinions, I shared my similar experiences as a teacher and it helped creating a supportive atmosphere where the interviewee can express their opinions comfortably afterwards. The questions in the first section were also useful for the interviewer to notice interviewees' overall opinion or attitude about SMART education and to adjust the overall direction of interview.

The second section delivers the main purpose of conducting interview which is to document how teachers' knowledge, skills, and attitudes are being discussed in SMART education discourses. The second set of questions asked participants' experiences and thoughts on SMART education. For example, in the interviews with teachers, they were asked: what they have done so far to implement SMART education and to develop themselves, what will they do for the future, and why they made such decisions. They were also encouraged to define what SMART education is on their own term, to say why teachers need to use technology in learning and teaching process, and how teachers should be prepared for the 21st century education. During the interviews, when I felt the need for clarification while listening to interviewees' responses, follow-up questions were thrown. On average, the interviews took

about one hour. All the interviews were recorded and I transcribed the recorded audio files verbatim. However, those elements which would not impact the content of the interview were removed: repeated use of the word 'uhm', short pauses, and interviewer's affirmations or agreements in the middle of the interviewee's response.

4.2.3 Data Analysis: Foucauldian Critical Discourse Analysis

Having formed the SMART education archive, I now turn to how the archive was analysed. To critically and closely read the texts, I devised Foucauldian CDA, an analytical framework, which is the amalgamation of genealogical examination of Foucault and textual analysis of Fairclough. The following paragraphs show how the combination, as a framework, examined the textual data in light of the theoretical framework of this study and the rationales under this methodological decision.

4.2.3.1 Genealogical Examination

This research investigates teacher subjectivity constructed in SMART education discourses to understand the contingent power relations in the current education and society. Also, I have defined teacher subjectivity as 'a version of what teachers do in order to fulfil one's constructed identity at a particular moment of history' which is the unexpectable result of endless processes of power relations. Therefore, I exercised Foucault's schematic four-part framework to shed light on the version of teachers shaped by SMART education discourses through an interrogation process. The process consists of a set of requirements for teacher subjects: 1) substance, 2) mode of subjectification, 3) regimen, and 4) telos (Clarke, 2009; Fendler, 2010).

The four-axis, as a whole, allowed me to illuminate a certain teacher subjectivity to fit in SMART education discourses. Firstly, I focused on 'substance'. The focus can be understood in the form of analytical question: what part of the teacher subject is supposed to be changed to fit in SMART education? In reading various texts, I paid attention to what is both implicitly and explicitly stated as a norm for teachers to develop. Secondly, I focused on the 'mode of subjectification'. The second topic can be understood as another analytical question: for what reason this change should happen? In relation to this question, I closely read the texts to identify the reasons for teachers to develop themselves or by means of someone else. Thirdly, I focused on 'the regimen'. It can be referred to as 'self-practices'. It lends the third analytical question: what should teachers do to fit in SMART education? I captured the stated practices that teachers are supposed to do and practices which teachers (should) have been doing or will do while I was scrutinising the texts. Lastly, I focused on 'telos', the endpoint, or the ultimate goal. It constitutes the last question: what a model teacher or a perfect version of teacher might look like? To answer this question, I went through an inductive process. I drew the findings of the previous analytical questions and identified where the findings lead, an endpoint of teachers. I came up with a specific version of teacher by connecting the findings.

To be clear, the employment of the four-axis framework of formation of the subject proposed by Foucault does not mean that it is the only truthful way to investigate the formation of subjectivity. Employing the framework intends to be provocative as possible just as Foucault theorised subjectivity as a way of being provocative, not as a way of attacking ugly truth (Fendler, 2010). Further, I chose to be explicit about how I analysed the texts. By demonstrating the use of the framework, I hope to guide future researchers who might use this framework in studying teacher subjectivities shaped by technology-related dominant discourses in education. For example, when Matthew Clarke (2013) introduces Stephen

Ball's influential study, "The teachers' soul and the terrors of performativity", he summarises Ball's study by using the Foucault's framework (see Clarke 2016, p.231) which I found it very concise and informative. Given that this research aims to open up a discussion to forge *the new imaginations* of teacher subjectivities for the *futures* of education, the explicit use of Foucault's framework seems reasonable in both theoretical and practical sense of this thesis.

4.2.3.2 Fairclough's textual analysis

While Foucault's examination sheds light on the specific contents of texts which guided the analysis process, I complimented the process by adding an additional analytical layer taken from Fairclough's textual analysis. The decision to do so supports the theoretical considerations of this thesis. As Herzog (2018) claims, language is always already part of power that shapes what the subjects can want, do, or express (p.115). It resonates with the theoretical perspective of power of this research that "power only exists in action and it is coming from everywhere" (Foucault, 1991; Foucault, 1996). Therefore, the investigation of language use in the texts can support Foucault's examination because power exercises its influences not only on knowledge, rules, norms but also on 'language at use' in the world (Gee, 2011, p.ix, cited from Tight, 2019, p.164). In collaboration with Foucault's examination, the examination of language use illuminated how SMART education discourses shape the formation of each axis of the framework (i.e. substance, mode of subjectification, the regimen, telos) by dissecting language uses of the text data.

Fairclough (2003) offers a brief manifesto for the CDA research programme which introduces important venues for the examination of language use. In the manifesto, he suggests 12 points of investigation and the relevant analytical questions under each point (see

Fairclough, 2003, p.191-194). The following is the summary of his suggestion for the possible venues in implementing discourse analysis:

- Social events: Which event(s) is(are) being talked?
- Genre: What types of genre is involved in the text?
- Difference: What is the orientation to 'difference' in the text?
- Intertextuality: What are the voices included? How are they included?
- Assumptions: What is(are) the assumption(s)? Is(are) it(they) existential, propositional or value assumption(s)?
- Semantic/grammatical relations between sentences and clauses: How are the relations between sentences and clauses in both semantical and grammatical sense?
- Exchanges, speech functions and grammatical mood: What are the statements doing? How are they doing it?
- Discourses: What discourses are drawn upon in the text? What do they do in whole in the texts?
- Representation of social events: What elements of represented social events are included or excluded? Which one is the most prominent?
- Styles: What styles are drawn upon in the text, what do they do in total?
- Modality: How strong is the author(s)' commitment?
- Evaluation: Is there a certain value being evaluated? How are they being evaluated?

I reorganised the points of investigation in consideration of the definition of discourse: a set of statements that legitimatise and/or problematise certain ideas of a particular subject (Mills, 2004). To legitimatise/problematise, a text must include or exclude certain ideas (e.g. voices, assumptions, evaluations, questions) in a particular way (e.g. listing, quoting, doubting, devoting) so that text can achieve its goal. In that regard, I set a basic principle to investigate 1) what is(are) included/excluded, 2) how the element(s) is(are) included, 3) what the included is doing in the text. The principle was applied in combination with the four-axis framework. For instance, when I identify a statement in a text related to 'regimen' or 'self-practices' which teachers are inscribed to do, I extracted the basic principle and investigated the relevant language use such as social events (what social events are being introduced in the

text?), difference (what is being described as different and how the author describe the difference?), assumption (what assumptions are included?) modality (what modal verbs are used in the text?).

In fact, when researchers critically analyse texts, they often examine language use in an implicit way without describing analytical focuses (see e.g. Curtis, 2014; Fendler, 2006; Lee, 2018a). Lynn Fendler calls it 'close and critical reading' (see Fendler, 2006, p.311) or a group of researchers would label it as 'a branch' of 'discourse studies' (see Gee, Paul & Handford, 2012). For example, Lynn Fendler (2006) examines 'linguistic moves' between two texts about 'community'. She examines how the original text (Lorde's original text) is rephrased in another study (Guarasci and Cornwell's text) by pointing out some points about language use. She writes:

> The thrust of Lorde's original text is "recognizing," "exploring," and "using"
> human difference to make creative changes. In contrast, Guarasci and Cornwell's
> *appropriation* seems to suggest that we need to "break *the barriers*" of difference
> and begin to "see connection". In Lorde's text, difference is a source of strength,
> "*a springboard*"; in Guarasci and Cornwell's text, difference is a "barrier" to be
> broken. This *is a subtle but profound alteration in meaning*. (emphasis added,
> Fendler, 2006, p. 311)

In her study, she shows that there is a significant (but seemingly subtle) difference between the original text and the other one. She shows that 'difference' is "appropriated" in Guarasci and Cornwell's text by inclusion of an assumption through the choice of metaphor. She analyses that *the underlying assumption* of the second text is represented through the identification of *semantic relations* inflicted by the use of *metaphor*: "the barriers" are things to break, "a springboard" is a thing that one can step on to go further which is "a subtle but profound alteration in meaning".

In this regard, the use of Fairclough's textual analysis allowed this research to capture 'the subtle but profound alteration' which is the work of power relations. The principle and the points of Fairclough's analysis not only fits into the theoretical framework of this research in the light of the definition of discourse, but also explicitly helps researchers to add another layer of analysis (i.e. language at use) regarding what and how to analyse. This makes me argue that the contingency and the subtlety of power relations were able to be included in the analysis of the documents.

I am aware that discourse analysis could be performed in different ways (Powers, 2007). In particular, I am also aware that there is a group of researchers who read texts with the same tools provided by Fairclough in a different way. They are called 'critical realists' who situate power in the dialogical framework based on analytical dualisms revolving around causal relations between 'structure and agency' (see e.g. Fairclough, 2018; Symonds, 2019). By taking the critical realist's idea, this research could have analysed how a certain structure created by SMART education discourses formed certain versions of subjectivities (i.e. agency) by identifying a trajectory of power relations and could have offered a desirable destination for the better future (Block, 2018; Curtis, 2014). However, as discussed previously in Chapter 3, the theoretical concept of power in this research is based on 'contingency' which literally rejects any predetermined mechanism of power. Further, it is not the intention of the current research to identify 'some causal relations' between SMART education discourses and a certain teacher subjectivity. With these considerations in mind, the following section turns to the philosophical background of this research and situates the methodological choices in poststructuralism.

4.3 Philosophical background: poststructuralism

It was mentioned earlier that the methodological choices (i.e. Foucauldian CDA) of this research are mostly inspired by Foucault. It was also mentioned that I took those choices to reconceptualise the teacher subjectivity shaped by SMART education discourses. In particular, when I explained the data collection and the analytical processes, I highlighted that the concept of 'subject' and 'power' proposed by Foucault led me to make those decisions. In this section, I discuss the theoretical basis of those choices. I consider how the methodological framework can be situated within philosophical tradition while connecting the philosophical basis to the methodological choices. I take critical realists' CDA and their concept of power to clarify 'poststructuralism' and 'Foucauldian CDA' in this research.

4.3.1 Situating the methodology in poststructuralism

To be clear, I have no intention to categorise Foucault as a standard philosopher who belongs to a certain philosophical tradition. How Foucault is understood can be easily seen by how researchers see him. Sara Mills acknowledges that Foucault is not easily categorised as one who belongs to any distinguished philosophical stance (Mills, 2003). Penny Power (2007) relates Foucault to Critical social theory, Anti-foundationalism, Postmodernism and Feminism. When Lynn Fendler (2010) discusses Foucault's philosophy, she considers his philosophy within historical context. She goes to relate him to Marxism, Poststructuralism, Postmodernism, Phenomenology and more (see Fendler, 2010, pp.14-24). It is obvious that Foucault's philosophy has a wide spectrum.

Bearing the wide spectrum that Foucault's philosophy has in mind, I intentionally limit the discussion about Foucault's philosophy within the boundary of poststructuralism to discuss the theoretical basis of the methodological choices. Indeed, I could have included

postmodernism as another philosophical background. For example, in her PhD thesis, Strickland (2008) takes postmodern epistemology to perform a genealogical examination based on rhetorical analysis about undergraduate mathematics courses. However, I strategically decided to choose poststructuralism.

Modernism in philosophy can be seen as a movement sustained by a belief in the advancement of knowledge and human progress, made on the basis of experience and scientific method (Peters, 1999, p.123). In this regard, this research, *as a whole*, could be called *postmodern research* as far as this research is concerned to refute the taken for granted assumption that 'technology in education innovates old and inefficient education'. However, I paid more attention to poststructuralism. Given that poststructuralism refers to rejections of the major claims of structuralism, my methodological choices could be more clearly positioned by contrasting my methodological choices to those claims. Further, I can explicate what it means to be 'Foucauldian' in comparison to critical realists' ideas which can be considered as structuralism. Lastly, this thesis might respect Foucault given that postmodernism was clearly rejected by himself as his philosophical label since he wanted to see the other version of modernity inspired by a French author Baudelaire whilst valuing the uses of reason (see Foucault, 1984a).

I acknowledge that poststructuralism cannot be simply reduced to a set of shared assumptions, a method, a theory, or even a school (Peter, 1999, p.130). The complex nature of poststructuralism may have been the reason for researchers to define it in some limited ways. For instance, Michael Peters (1999) gives an inclusive definition by saying that it is best referred to as a movement of thought embodying different forms of critical practice (p.130). Lynn Fendler (2010) defines poststructuralism by mentioning what it does not include which is a tactic to provide the simplest description, "a theoretical approach that follows from structuralism but rejects the major claims of structuralism (Fendler, 2010,

p.19)." Sara Mills (2004, p.146) takes both the inclusive and the complementary set approach when she defines poststructuralism as "a disparate group of theorists who worked to question the fundamental bases of structuralism". Then, it seems to be reasonable to consider what the major claims of structuralism are.

4.3.2 Connecting the methodology to poststructuralism

The proposed methodological framework rejects three broad features of structuralism that poststructuralism disagrees (see Fendler, 2010, p.19):

1) An underlying layer of meaning that is timeless and universal.
2) The dichotomy of structure and agency.
3) Rational coherence in the form of totalising claims.

Rejecting timelessness and universalness. I stated that 'subject' is either significantly or partly (but never completely) shaped by the contingencies of power relations while it is being said in various ways depending on contexts. Indeed, the definition of subject I used in this research represents poststructuralists' stance that 'subject', as the object of knowledge, is constituted by institutions while they are being inscribed as a certain subject (Mills, 2004). Thus, this research denies the structuralists' claims about the existence of 'timeless' and 'universal' layer of subject: subject as the individual self with agency and control over itself (Mills, 2004, p.30).

Second, the concept of power (i.e. power that is contingent) of this research rejects the structuralists' position. It questions the universals. To capture the contingency of the particular power relations in the current society, I archived various types of texts collected from the government, a national research institution, news agency, schools, and a regional education office in relation to SMART education discourses at a given period. Then, I

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analysed the collected texts to see how SMART education discourses shape a certain subjectivity of teacher subjects by asking the genealogical questions (see the previous section) at this given time, not for forever and after. Thus, the methodological choices support that it is not possible to establish any universal and timeless truth of the teacher subjects. Instead, the choices advocate that it is only possible to understand a certain form of subjectivity within specific historicity.

Rejecting the dichotomy. Previously, I mentioned that the purpose of this research is to identify the contingent power relations in SMART education discourses. If power is contingent, it is logical to suppose that the power would allow the structure where power itself is imprisoned to be changed. Thus, it is not a logical decision to situate power in a predetermined framework just as a group of Critical Realists (CRs) do, unless one intends to provide a clear destination for a disconcerting reality. This second point that poststructuralism rejects can be best addressed in comparison to the critical realist (CR)s' approach.

CRs seek a richer understanding of the relationship between structure and agency and the resulting power relationship (Symonds, 2019). CRs admit that power necessitates changes and this lead CRs to understand that a world is structured and changing (Banta, 2013). Within the structure, CRs' goal is to offer accounts of institution where corrupting forces are not supposed to be active and this leads them to suggest humanitarian claims to change the world (Cutis, 2014; see e.g. Fairclough, 1993). To provide the humanitarian destination for the subjects of study, they pinpoint the exact trajectory of power for a particular causal mechanism to take effect and to result in the empirical trends which exist in the related contextual conditions (Banta, 2013; Curtis, 2014; Fletcher, 2016; cited from Symonds, 2019). The basic assumption is that homogenous events happening over time may be related to preceding but different combination of events and thus there must be persisting tendencies

within social entities to generate events (Banta, 2013). Based on the assumption, it is possible

for CRs to trace the trajectory of power since they have the systematic view of power in a

form of linear and causal relationships consist of individual language events and structure of

discourse. In their analytics, they might employ various ways of discourse analysis to

examine the language uses in texts just as I did to perform Foucauldian CDA. However,

unlike Foucauldian CDA, they would seek 'causal relations' between target discourses (i.e.

structure) and language uses which bring about a certain teacher subjectivity (i.e. agency).

(see e.g. Symonds, 2019, p. 94).

Just as Foucault was not bothered to define *what power is* and sought to identify the subtlety

of power in relation to *what it does* (Fendler, 2010), I devised the methodological framework

(i.e. Foucauldian CDA). It is only designed to capture what power is doing to teacher subjects

and to free our imaginations which does not require any systematic structural framework of

power. Therefore, the methodological choices in the current study can be safely positioned in

poststructuralism as far as Foucauldian CDA rejects the dichotomy of structure and agency

and causal mechanism for the analysis of the collected texts.

Rejecting totalising claims. With regard to the 'totalising claims', this research has no

intention of providing rational coherence in the form of totalising claims. Instead, it intends to

demystify the totalising claims which make it difficult for us to imagine different views about

all human enterprise and particularly matters of the future education. As Rose (1999, cited

from Fendler, 2006) writes:

> To analyse, then, is not to seek for a hidden unity behind this complex diversity.
>
> Quite the reverse. It is to reveal the historicity and the contingency of the truths
>
> that have come to define the limits of our contemporary ways of understanding
>
> ourselves, individually and collectively, and the programmes and procedures
>
> assembled to govern ourselves. By doing so, it is to disturb and destabilise these

> regimes, to identify some of the weak points and lines of fracture in our present
>
> where thought might insert itself in order to make a difference. (pp.276-277)

In line with Nicholas Rose, I scrutinised a set of 'rationally coherent claims' about SMART education which are totalising the positive aspects of SMART education in order to elevate SMART education to the new paradigm for the future education. I archived the set of those claims (i.e. SMART education discourses) and devised a set of analytical questions to show the other aspects of the construction of the totalising claims (i.e. the weak points and lines of fracture). The methodological choices in Foucauldian CDA are to understand the complex historical relations that come together to constitute SMART education discourses. Therefore, it can be said that the methodological choices are *poststructural*.

4.4 Ethical considerations

This section delivers major as well as minor procedures I took in order to conduct trustworthy research. In the beginning, I report ethical considerations regarding interviews. I describe how I gained consents from the interviewees and secured their anonymity. I add more details by visiting small but important steps which improved the integrity of the data collection process. At the latter part of the section, I outline employed strategies which increased reflexivity of this research.

On interviews. Ethical considerations are mostly related to the interviews I conducted. As far as the interview concerned, this research followed Lancaster University Faculty of Arts and Social Sciences ethical procedures. After this study was granted ethical approval, I took Lancaster's guidelines. However, as Webster et al. (2014) suggest, I considered ethics throughout the study to cope with potential ethical dilemmas. The main ethical considerations

were: securing informed consent from the interviewees; ensuring confidentiality and anonymity for the participants and their institutions (Cohen et al., 2011; Ritchie et al., 2014). The major ethical considerations were mostly concerned with gaining informed consents and protecting the anonymity of the participants (and their institutions). As the ethical guidelines of Lancaster University suggest, I provided the information about the research when the participants were first contacted (i.e. the regional supervisor, teacher educators) or were introduced (i.e. teachers and school managers). I used email or talked to them in person by giving out the Participant Information Sheet (PIS). Especially, when one participant appointed the next interviewee, I gave out the printed PIS and gave time to think before one participates. Then, I scheduled the interview. I gained the informed consents from all the participants (see Appendix 1). Before conducting interview, I gave a brief overview of the interview: the research topic; the research aim; overall questions in the interview; estimated time for the interview process (see Appendix 1). I also notified that they have the right to withdraw at any time: before having the interview; during the interview when they have any kind of issues; and after the interview up to 2 weeks without giving any reason. When a participant signs on the form, I went through each item in the consent form which includes what they agreed to and how the collected data will be processed, stored, and published. Ensuring anonymity of the participants and their institutions was another important ethical issue. Even though there was less of risk which might harm the participants' or the institutions' reputation, several measures were taken to not to cause any unexpected ethical disputes. First, the participants were given pseudo names. Second, the institutions in the city were also anonymised (e.g. School A, B, C, D). Despite these measures, I had to find a way to protect the regional supervisor's anonymity since there is only one education office in the city. Therefore, I did not provide the exact time of visit for the data collection (e.g. 201*). I also did not provide the gender and length of teaching of the regional supervisor.The person

in charge of SMART education in the education office is regularly transferred to schools or

other departments. In that way, I was able to protect the anonymity of the participant. The

interviews transcribed into the texts contained no identifiable features of the participants; any

reference to the institutions' identifiable characteristics were deleted.

There were also relatively small but important action points based on the ethical

considerations: I explained the significance of the research which my research can contribute;

I notified the participants that the interview will be audio-recorded; I made sure that I

protected the collected interview data by setting password both in the device as well as in the

software and by putting into the secured space (i.e. locked filling cabinet); I provided a

humble incentive to express my gratitude for spending their time which was promised before

conducting the interview; the participants were notified that the interviews will be presented

in a conference or published in an article, a book, a thesis.

On reflexivity. I must admit that I, as a teacher, as a researcher, and as a subject, have been

(at least) partly shaped by various power relations. Certain unidentified discursive power

formed by those power relations could have influenced this research to some extent just as

everyone and everything included in the research have been. Thus, I applied 'a critical

perspective to my own knowledge claims' to step aside from those permeating influences of

power (Kendall & Wickham, 1999, p. 101). To view my own work critically, I tried to be

reflective of my position as someone who had taught and studied at the public schools. Also,

I often revisited my own assumptions. When I was developing my arguments, I tried to

pronounce those assumptions clearly as possible rather than implicitly inserting them.

The critical perspectives also came from the others. As is suggested by Malcolm Tight

(2019), I invited my PhD colleagues to share my analysis and to discuss with them. Also, I

presented my findings in international conferences to hear how others would think about my

apresented a brief version of this thesis when my department invited distinguished

researchers in June 2019. The invited speakers and the audiences gave meaningful feedback which allowed me to rethink the concept of power and helped me to develop my research design. Most importantly, the thoughtful insights, critical feedback and continuous supports of my supervisor were the key in being confident about the reflexivity of my research. Overall, these personal, academic, and institutional supports helped me to be more critical of the phenomena regarding SMART education discourses as well as my own identity as a researcher.

4.5 Conclusion

In this chapter, I have discussed the methodology which guided the study of power relations in SMART education discourses. The methodology was strategically designed to investigate the constructed teacher subjectivity that SMART education discourses (at least) partly shaped as well as to illuminate the unseen power relations at this historical juncture. By aligning the methodological choices in Foucault's theoretical basis (i.e. poststructuralism), I was able to argue that this research (at least) theoretically and methodologically captured what power has been doing in SMART education discourses and that there is a need to imagine different versions of teacher subjectivities. Foucauldian CDA allowed me to show the contingent power relations and the subtle but significant influences without violating the characteristics of power: power can only be understood by its actions and 'structured rules for power' might distort what can be seen due to its contingency.

5. Findings: Substance of the SMART teacher, Compatibility

5.1 Introduction

In order to answer to the first research question of the thesis (i.e. how the smart teacher is constructed in SMART education discourses?), this chapter is devoted to the first genealogical question:

What part of the teacher subject is supposed to be changed?

I argue that the 'compatibility' of a teacher in relation to varying demands from the external environment can be considered as the 'substance' of the teacher subjectivity in SMART education discourses. Before I discuss the compatibility directly, I illuminate a new belief system being installed given its importance. The new belief system consists of a set of taken-for-granted assumptions intended to increase the compatibility of education itself in the ever-changing society.

In the next section, by drawing 'teacher competence for SMART education (here after, TCS)' as the representation of compatibility from the official texts, I investigate its definition and constituting elements as well as the underlying assumptions. In particular, I focus on the ways in which TCS favours elements facilitating the adapting process for implementing SMART education while it excludes other possible components enabling teachers to critically engage with SMART education.

5.2 Installing a new belief system

The first chapter of *SMART education Implementation Strategies* (MoEST, 2011a), 'The shift of education paradigm', shows the development of an implied argument in the three sections in the chapter:

> The surrounding environment of education has been changed. In line with the
> change, there are some achievements, but there are still tasks to be done. To
> complete the tasks, we need to take the way (i.e. SMART education) to be a great
> country.

I came up with this argument given that all texts imply and are oriented to dialogue in a broad sense (Fairclough, 2003, p.109). What I mean by 'an implicit argument' is that the argument is not explicitly stated with subjects and verbs. This is a common discursive strategy of governmental discourses, called 'nominalisation' (Fairclough, 2003). It refers to "the conversion of a verb into a noun-like word, and semantically of a process into an entity (e.g. "people destroy things" becomes "destruction"; Fairclough, 2003, pp.143-144)". It is a resource for generalisation of particular events and series or sets of events (Fairclough, 2003, p.144). It is also a useful resource in making discourse more technical and scientific (Fairclough, 2003).

In the argument, three underlying assumptions can be identified:

- There is a right version of learning and teaching depending on social environment.
- The current education is problematic.
- SMART education is effective.

The identified assumptions need more attention not only because TCS (or the compatibility of teachers) would not make sense without the assumptions, but also they play an important role as one of the many factors that are related to technology integration (Kearney et al., 2018; Roblin et al., 2018; Tondeur et al., 2017). In the following paragraphs, I examine each section in the chapter to investigate the assumptions.

The environment changes. In the first section, 'a part' of the first assumption is sketched by completing a view that social environment has changed. Various social changes are stated presumably to support the assertion that 'the paradigm of education has shifted (i.e. the title

of the first chapter of the government paper)'. It puts forward four headings covering changes in various social sectors (MoEST, 2011a, pp.1-3):

- The continuous development of digital convergence environment

- The expansion of market in convergence contents education

- The acceleration towards creative learning society with ICT

- New social demands due to socio-economic changes

The headings represent 'the changing social environment' and pave the way for the first assumption that "there is a right version of learning and teaching depending on social environment". They seem to be discursively designed to highlight the 'new', 'continuous', 'expanding' and 'accelerating' trend in the overall social environment as the indicators of the new paradigm. The trend is reinforced by 'piles of ostensibly value-free, objective, pseudo-scientific facts and predictions (Fairclough, 2003, p.115)' in the chapter (see MoEST, 2011a, pp.1-2).

The lists emanate from different discourses and work together to constitute SMART education discourses. Particularly, a set of discourses which constitutes 'social environment change discourses' can be identified: 'governmental discourse' from the cited institutions, 'market discourse' from the words related to sales and 'digital culture discourse' from Google, Twitter and YouTube. Further, the sources of the listed knowledge and the use of big numbers (e.g. 20 million smart phone users, 50 million tweets, 83,222 students, 2245.8 billion won) create greater synergy with the reported trend by increasing its credibility and intensity. In addition, the slippage between fact and prediction and the other discursive strategies (i.e. listing, mentioning big numbers, citing credible knowledge sources) have another discursive effect; SMART education discourses illustrate the future as if they existed in the here-and-now (Fairclough, 2003).

In the meantime, the text promotes an unreliable claim. Under the third heading, 'the acceleration towards creative learning society with ICT', it is stated that creativity is being expressed through collaboration and publicised shared knowledge. It supports the claim by naming a few websites and referring big numbers. However, the websites drawn in the text (i.e. Wikipedia, Twitter, YouTube, Naver KnowledgeiN[1], Cyworld) cannot be simply exemplified as proofs of 'creative learning society' as well as innovative learning behaviours given the doubts raised by researchers (see e.g. Madge, Meek, Wellens & Hooley, 2009; Manca & Ranieri, 2013; Manca & Ranieri, 2015; cited in Lee & Lee, 2019a). Furthermore, the places where knowledge is believed to be produced need more than the big numbers. Mere big numbers cannot verify those channels as the site of knowledge construction (Lee & Lee, 2019a). It is because the quantities could also indicate the intensity of the production and circulation of 'unreliable information'.

The achievements and the tasks of our education. In this section, the first assumption is completed by 'incompatibility' of the current version of education in relation to the changing social environment. Further, the completion of the first assumption seamlessly slips in the second assumption that "the current education is problematic". To see it more closely, 'the achievements and the tasks of our education', various problems of the current education are mentioned. It seems that they express the needs for the innovation (i.e. SMART education) which form 'the problem part' and prepare for 'the solution part' as in the 'problem-solution' relation (Fairclough, 2003).

Before stating problems, it puts forward six headings which list the achievements of Korean education and the implications (see MoEST, 2011a, pp.3-4). The former parts of the headings

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[1] Naver KnowledgeiN is a knowledge exchange service between users in which users upload question and answer spontaneously. Naver is the biggest portal site and KnowledgeiN is the combination of 'knowledge' and 'a person'

create the summary of accomplishments of Korean education. According to the headings, Korean education has been successful in fostering competent learners (i.e. excellent ICT ability, high academic achievement), strengthening 21st century values (i.e. creativity, character, diversification), building infrastructure (i.e. the educational informatisation) and expanding educational welfare. However, it seems that the achievements are 'still' not enough. There is something wrong with Korean education. In that regard, the list of the achievements is reconceptualised as the prop for a call demanding actions to deal with the following problems (see MoEST, 2011a, pp.3-4). The summary of the problems takes an interesting semantic relation. It contrasts 'what is desirable' with 'what is not'. The desirables are mainly what have been changed: '21st century talent', 'the reinforced autonomy', 'the widened options', 'the spread of education informatisation' and 'the expansion of educational opportunities'. The latests and the compatibles. The undesirables are mainly what have 'not' been changed: 'cramming education', 'the current education information system' and 'the polarisation'. The olds and the incompatibles. Just as the lists of facts and predictions about social changes constitute SMART education discourses, the list of problems seems to constitute both 'positive change' discourse and 'negative status quo' discourse in SMART education discourses.

The incompatible status quo of the current education let SMART education discourses bring up several needs as the last step before presenting the solution, SMART education (MoEST, 2011a, pp.3-4).

- Need to create educational achievement by putting in continuous efforts along with the 2009 curriculum revision, creativity and character education which have been strengthening and the admissions officer system that is settling in
- Need to make continuous efforts to improve lessons in classrooms that meet diverse educational needs of students

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- Need to establish an education strategy that maximizes consumer satisfaction by making the most of advanced smart technologies

- Need to strengthen efforts to support creative learning/teaching based on interest as an inducement

- Need to design a new paradigm for establishing educational welfare

This list of the necessities demands a new paradigm and it becomes rigorous criteria. The new paradigm should go along with recent changes (e.g. the curriculum revision, the admissions officer system) and improve lessons in classrooms; consumers should feel maximized satisfaction; smart technologies should be actively utilised; students should feel interest in learning while keeping their high academic performance; education services should meet the diverse needs of students. The marginalised class should have access to educational opportunities.

The overwhelming requirements do not stand on its own. It is mediated with the facts and the predictions about previous achievements. The employed discursive strategies (i.e. nominalisation, the slippage between facts and predictions, bombarding facts and predictions based on the authority of big numbers and famous institutions) bridge between the reality of the current status of education and the daunting requirements to be met. For instance, by drawing Programme for International Student Assessment (PISA) result, the achieved competitiveness of Korean students is appealed to. In addition, the scheduled dramatic change in college admission is inserted with big numbers (e.g. 36,063 students in 118 universities) which is assured by the Ministry of Education. These discursive strategies ease the concerns about the feasibility of the new paradigm along with the previous accomplishments. It is interesting to note that the achievements of Korean education (e.g. PISA result, the national budget spent on educational information infrastructure) are conceptualised as the venues where the problems of the current education are revealed, as the

needs for more effective education are identified and as the hopes for the upcoming solution (i.e. the third assumption: SMART education is effective) all at the same time.

The way to the great talent-abundant country. The third section, 'the way to the great talent-abundant country: SMART education', SMART education is introduced as 'the solution':

> **SMART education** is **an intelligent and tailored learning system** including educational environment, contents, method and assessment which is the driving force in innovating the education system for enhancing the 21st learner competences (emphasis from the original text, MoEST, 2011, p.5).

The definition of SMART education can be regarded as a statement of fact (Fairclough, 2003). According to the definition, it 'is' a system providing various solutions across education environment, contents, method, and assessment (recall the 'solution' part as in the 'problem-solution' relation). Further, it 'drives' the current education system to innovation aiming at enhancing 21st competences. With regard to the third assumption, SMART education can be called as effective as long as the word 'effective' is a characteristic which produces the result that is wanted (Oxford Learner's Dictionary).

The assumption that "SMART education is effective" can be seen more clearly with the acronym, 'SMART'. As introduced in Chapter 1, 'SMART' stands for 'Self-directed', 'Motivated', 'Adaptive', 'Resource free' and 'Technology-embedded'. Under each initial, the government paper states what solutions SMART education offers. In the section, the long list of the requirements is successfully addressed with SMART education in which the problems of the current education are all eliminated.

The cramming education has no place to stand in SMART education. Students produce knowledge and learn by themselves while interacting with online evaluation system. In a classroom where students produce knowledge, the old learning and teaching methods of

classroom lessons which centred on transferring subject knowledge do not have a place (i.e. Self-directed). Low motivation of Korean pupils is no longer the issue in SMART education. SMART education motivates the learners by letting them experience, reorganise knowledge while solving problems (i.e. Motivated). The separated, dispersed, and unequal education information system goes through evolution (i.e. Adaptive). In SMART education, any student can access to the education service that is integrated and full of contents accessible whenever and wherever based on an individual's level and aptitude (i.e. Resource-free). All these are available thanks to the technology (i.e. Technology-embedded).

Now it is clear that the three assumptions constitute a significant part of SMART education discourses. As the belief system of SMART education, they promote a view that 'social/educational environment has changed' rendering the current education as no longer compatible anymore. This discursive effect of the belief system leaves very limited choice for teachers but to take SMART education which is promised to solve every problem caused by the incompatible education. Even though the belief system itself accompanies questionable facts and predictions, those doubts are not heard and excluded.

5.3 Teacher competence for SMART education

TCS is explicitly stated as the part on which teacher subjects are supposed to work in SMART education discourses. The following analysis shows that TCS is not so much the part, but is more 'the core' and 'the whole' of teacher subjects. In *Smart Education Teacher Competence and Training Program Development for Smart Education* (KERIS, 2013), TCS is described as follows:

> Here, teacher competence for SMART education is defined as "***the essential characteristic*** required to teacher who practices ***effective*** education in order to

foster 21st century core competence and for the ***innovation*** of education heading

towards the ***future*** education". This basic characteristic takes a quality which

integrates knowledge, skills and attitude that have been conceptualised

separately. In addition, it illuminates the ***necessary teacher competence*** for the

effective ***innovation in education*** by expanding the meaning of SMART

education through the visions and the aims for ***the future education*** that is liable

to be ***limitedly*** understood as ***the educational uses*** of the cutting-edge technology

such as smart device (p.1, emphasis added)

According to the definition in the excerpt, TCS is defined as 'the "essential" characteristic' of a certain type of teachers. This 'one', 'accepted' and 'standard' point of view regarding TCS is promoted by 'a high degree of abstraction and generalization based on its authority' (Fairclough, 2003, p.141; Tight, 2019). The essential characteristic is connected to a certain group of teachers who are practicing a certain type of "effective education". The connection is strong. By using the word "required", it is implied that TCS is 'a responsibility', 'a necessity' or even 'an obligation'. The reward of having TCS is not small. Those teachers with TCS would be entitled to be called as being 'effective', 'innovative' and 'futuristic'. Given that the effective education has two aims (i.e. fostering 21st century core competence, innovating education), the essential characteristic of teachers seems to be not satisfied with current education and targeting "the future" not 'now'.

TCS is not only the core but also 'the whole'. Besides the declarative mode of verbs rendering a statement as a fact (e.g. takes, illuminates, is), the authorisation is exercised by 'relationship of difference' (Fairclough, 2003). The authorisation can be stated as 'a tendency towards creating and proliferating differences between objects, entities or groups of people' (Fairclough, 2003, p. 88). In the inserted text above, "knowledge", "skills" and "attitude" should not be "separated" in conceptualising TCS, but they should be conceptualised as "the

quality" integrating the three domains. Similarly, just as TCS integrates knowledge, skills and attitude, SMART education should not be understood in a "limited" way. Instead, it should be understood as the "expanded" version of meaning (i.e. more than the educational uses of technology). While the text is establishing the 'true nature' of TCS and SMART education, each term takes the expanded meaning instead of the limited one.

What I mean by 'TCS is the whole of teacher subjects' shall become clearer when one looks at the constituting elements of TCS which are stated in *Smart Education Teacher Competence and Training Program Development for Smart Education* (KERIS, 2013):

> Teacher competence for SMART education is categorised into fundamental competences domain and practice competences domain which consist of 13 competences, and 61 performance indicators (p.1)

As seen in the numbers of competences and the related indicators, the areas upon which components of TCS stepping are wide. They encompass problem solving ability, interpersonal skills, openness to change, technology use, ethical responsibility, commitment, contents knowledge and many more (see the definitions of the competences in the Table 5.1 below). Consequently, it would be quite difficult to suggest any other essential competences that TCS potentially lack without which one cannot be regarded as an effective teacher. In this sense, it seems that TCS is intended to be 'the complete package' for a teacher so that they can cope with not only changes caused by 'the development of technology' but also 'any possible changes' in the future.

Domain	Competence	Definition
Fundamental competence	Creative problem-solving	The ability to analyse and identify a given problem by finding new ideas or concepts or by using various methods of thinking, and to establish and apply appropriate solutions to solve it.

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	Social ability	The ability to interact effectively with others for problem solving, creating new outputs, learning, and proficiency
	Flexibility	The ability to actively embrace diversity in a diverse society and make the diversity feasible for the common good.
	Technology literacy	The ability to select and utilise various technologies for the collection, interpretation, utilisation, and creation and to implement ethics in ICT
	Ethics	Accuracy and integrity of actions in which objectives, values, methods, outcomes and expectations are consistently reasonably conducted
	Passion	A loving and devoted attitude in performing one's duties as a teacher
Practice competence	Understanding future education	The ability to understand the concepts of future education and smart education and apply them in the real world of education
	Contents expertise	The ability to understand the subject areas of one's responsibility, including the entire educational system, and to continuously develop expertise
	Building relationship with learners	The ability to build bond of sympathy based on positive communication with learners
	Instructional design and development	The ability to design a suitable learning environment and develop necessary materials by comprehensively considering the purpose of education, core competencies, contents, methods, and technology
	Building learning affordance	The ability to effectively organise and utilise the physical environment of the classroom, learning activities, and social relationships of the members, thereby creating meaningful learning experiences
	Evaluation and reflection	The ability to analyse learners' achievements and the performance of various educational activities and to make reasonable use of the results

	Building collaborative relationship with community	The ability to establish links with institutions, organisations, and resources outside the school to expand the teaching-learning arena and to play a role as a member of the community

Table 5.1 Constituting elements of TCS

Here, I propose a view in which I argue that the conceptualisation of TCS represents the compatibility of teachers. It is to point out what the complete package excludes. TCS renders teachers be efficient at altering themselves in accordance with the changes outside. In order to be compatible, there should be at least two groups of competences: 1) a group of competences allowing teachers to interact with 'external change' and 2) another group of competences allowing alteration to occur in the system. The competences in the first group would let teachers interact with the external changes happening in a society or for the future. The competences in the other group would let alteration occur in teachers' knowledge, skills, attitude and their practices. From this view, 13 competences can be reorganised as can be seen in the table below.

Category	Competence
External	Creative problem solving, Social ability, Flexibility, Technology literacy, Understanding future education, Building collaborative relationship with community
Internal	Ethics, Passion, Contents expertise, Building relationship with learners, Instructional design and development, Building learning affordance, Evaluation and reflection

Table 5.2 Reorganised competences

The perspective can be narrated with a probable scenario. If a teacher who is equipped with TCS were engaged in a given problem brought by some changes in the society, she would

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actively search for new ideas or concepts (i.e. creative problem solving; building collaborative relationship with community). She might interact effectively with other members of the society or in the school to solve the problem while respecting diversity of individual cultures (i.e. social ability; flexibility). She is likely to select and utilise various technologies flexibly (even if using technologies is not her strongest skills) because she believes that students need to be familiar with this new literacy for the future (i.e. technology literacy, understanding future education). The teacher would 'take', 'interact with', 'select', 'utilise', and 'believes' what is outside her boundaries.

Having recognised the external sources for the alteration, it is time for her to alter her knowledge, skills, attitude and practices (i.e. the core and the whole). She would happily and passionately design her lesson and apply the new ideas, concepts, technologies as she believes this is the best way to teach (i.e. ethics, passion, instructional design and development). She would reflect, evaluate her lesson and find out her subject knowledge or teaching practices need to be updated as well as the way in which she builds relationship with her students (i.e. building learning affordance, evaluation and reflection, contents expertise, instructional design and development). The teacher would 'design', 'apply', 'reflect', 'evaluate', and 'believe' in relation to what is now inside her boundaries.

This alternative view on TCS based on the notion of 'compatibility' resonates with 'receptivity', a characteristic of 'smart discourse'. As the basic quality of smartness, receptivity refers to a limited but dynamic interaction between an item and its environment (Crook, 2016). It is dynamic but limited since the item would keep 'changing some property of itself in relation to the varying properties of its context' (Crook, 2016, p.8). For example, dampers in buildings and bridges can allow them to react to seismic activity and thereby they are sometimes called 'smart structures' (Chopra & Sirohi, 2013; cited in Crook, 2016, p.8). Just like the dampers, 'smart teachers' with TCS would be able to 'react' to, for instance,

technology innovation in the society or to the upcoming changes in education and the society by altering their knowledge, skills, attitude and practices. TCS has little to do with 'counteract' or 'reject' (see section 7.3.3 for further discussion).

5.4 Conclusion

The analysis has shown that teacher subjects are inscribed to work on their compatibility by changing their core and the whole (i.e. knowledge, skills, attitude and practices). In the meantime, the other possibilities for the core and the whole of teacher subjects were ruled out. In the second half of this chapter, the analysis has illuminated that a set of underlying assumptions are installed as the new belief system in SMART education discourses. It was discussed that they emphasise flawless compatibility of SMART education system in relation to the external environment. Various discursive strategies are identified in the 'problem-solution' semantic relations based on a recognition that the paradigm has shifted.

6. Findings: Mode of subjectification and Regimen

6.1 Introduction

This chapter continues to answer the first research question; it consists of 'the mode of subjectification' and 'the regimen' of the constructed teacher subjectivity in SMART education discourses (the telos is discussed in the next chapter, see section 7.3.1). In comparison to the previous chapter, this chapter draws mainly on interview texts. By doing so, I document real voices of teachers as well as other stakeholders (e.g. school managers, teacher educators) in Sejong city and provide the analysis with regard to the following genealogical questions:

> *For what reason teachers need to change themselves to be compatible?*

> *What should teacher subjects do to fit in SMART education?*

I put forward two key words: (1) survival, (2) self-authenticate. They can capture the key elements of the two axes of teacher subjectivity in the best possible way. These key words are taken to address the complexity of the constructed teacher subjectivity instead of providing coherent explanations regarding why it is constructed in such ways. In the following sections, I focus on discursive strategies (or features) of the textual data. The strategies are analysed at various levels based on the discussed analytical points while evaluating what and how component is included in the constructed teacher subjectivity (e.g. social events, genre, difference, assumptions, intertextuality, discourses, modality; see section 4.2.3 for detailed explanation). I also pay attention to what is excluded resulting from the focused interest on a component in SMART education discourses.

6.2 Mode of subjectification: Survival

I argue that 'survival' can be considered as 'the mode of subjectification' of the teacher subjectivity in SMART education discourses. It means that teacher subjects are told to be 'fit' (i.e. compatible) in order to 'survive' in relation to the changes of social environment as in 'survival of the fittest'. By drawing on interview texts, I show two broad reasons for teacher subjects to be compatible with SMART education: (1) for survival as a teacher against the changes, (2) for their students to be prepared for the survival in the future. Specifically, this section delivers the complexity of mode of subjectification by considering different types of survival resulting from the contexts in which teachers are situated and perceptions about their roles.

6.3.1 Survival as a teacher

In SMART education discourses, teacher subjects seem to be incited to change themselves in order to survive as a teacher. Changing oneself to survive as a teacher means that teachers care about their compatibility while comparing themselves to the changing social environment in which they are situated. In the interview texts, teachers recognise their surrounding environment and their roles in it.

6.3.1.1 Not to be left behind

Survival, as one of the reasons, can mean 'keeping pace with others' and 'doing something to not to be left behind'. The 'others' can be pupils or colleagues who teachers can commonly observe what they do and compare what is observed to themselves. If what is observed says that everyone is moving forward and if what is compared tells everyone is moving except me,

it would create the need for a teacher to do something and move forward just like everyone else.

By pupils. Hansol (a teacher, 13 years of teaching experience) observed that her pupils are faster than her in terms of absorbing new technologies. From that recognition, she accepted that what she is facing with is "the stream of this era" which is irreversible and inevitable. She joined the fast-moving trend to move along with it. The threat is not students' quick uptake of new technologies but the fast-moving society which gives her feeling that she might be left alone.

> **Interviewer**: If that was related to what you have found valuable, was there anything difficult for you?
>
> **Hansol**: In fact, since it was the beginning of SMART education and my phone was the old version (i.e. not using smartphone), so…a bit…I felt a little bit that children are moving faster, and I am slower.
>
> **Interviewer**: What were you slow at?
>
> **Hansol**: You know, things related to dealing with machines. Children seemed to be faster at absorbing. And…so…a bit…
>
> **Interviewer**: So…You are saying that you felt a bit of pressure…and it was difficult…I mean, you are saying that you found it difficult when students learn faster about dealing with devices…
>
> **Hansol**: Not really, I was proud of them rather than I found it difficult. I thought, 'Ah! I'd better follow the trend. Since this is the stream of this era, it shouldn't be the case that I stay still and fell behind.' I think I was like that.

In direct translation, she uses the expression '도태되다[dotae dweda]' which means 'being culled'. The expression is mentioned in a 'passive voice' indicating the receptive nature of her statement. Semantically, 'being culled' means that one's 'existence' or 'life' is removed for its weakness, inferiority or worthlessness. In that regard, the trend is understood as the process of social selection by which the fitter or the fittest survive while the others who do not adapt to SMART education left behind. She did not have any other choices but to follow the trend to save herself from the recognised social selection process culling certain teachers who cannot keep up with the pace.

Jaewon (a teacher educator, 5 years of teaching experience) would agree with Hansol but in a slightly different tone. He thinks "teachers, to some extent, should accept things that should be accepted". The things that teachers need to keep up with does not have to be "the latest" in relation to "the stream of this era". The key is not to be "left 'far' behind" since it could be "the problem". His tone is somewhat modalized as can be seen from the expressions such as "to some extent", "not to be left 'far' behind" and "not the latest". In other words, the degree of certainty and necessity of his claim are moderate. His comment, however, does represent the recognition of the irresistible trend, the acceptance of SMART education and unwillingness to being left behind.

By colleagues. The recognition that incites teachers to change themselves can be made by observing colleagues. Those colleagues as 'the representatives' of "the stream of this era" seem to motivate other teachers around. They demonstrate that SMART education is feasible and produces good effects giving the impression that 'I have to do something just like them' or 'I can do SMART education as well just like they are doing it'. Even teachers who initially were not into SMART education can come across a chance to think one more time about SMART education.

Interviewer: In your opinion, what would be the main motivation when teachers make a decision to implement SMART education in their classroom or say, "I'll take a course"

Hoon: Well, you hear about things by happenstance. To be honest, recently, in our school, well, in Jiyoung's (a teacher educator in school A) classroom, I read a news article and heard about her lesson which connected to the vice CEO of Microsoft via screen… I think I was motivated by such things. I mean…I thought there are people doing their jobs with passion and I can't just stay here. I mean…I think I was motivated by myself while seeing such things.

Hoon (a teacher, 2 years of teaching experience) heard and read about one of his colleagues' lesson in which a classroom in a city in South Korea is connected to a highly ranked businessman in the US. The lesson impressed Hoon and gave him a sense that there are 'people who do not stay where they are' and passionately move forward. His perception 'left no option' for him but to devote to SMART education (what he does will be covered in the next section).

If Hoon can be said as the one who is strongly influenced by the presence of the skilled SMART education practitioner (i.e. Jiyoung), the way Hannah (a teacher, 4 years of teaching experience) is influenced seems to be moderate.

Interviewer: Have you not been doing it even though you have interest or because you have no interest?

Hannah: Um…In fact, at first I didn't have it. I was a little bit interested as I see the other classrooms implementing SMART education this year […] I didn't know about it much and had some fear in making the first attempt. But I've tried and thought that I could apply it at least for higher grade students seeing my colleagues because it would be difficult for lower grade students to deal with (the

digital devices) and I found out that there are more various things than I thought.

[…]

She used to have 'no' interest in SMART education. She even had "fear" of implementing SMART education. Now, she seems to be less fearful with it. She is influenced by her colleagues despite the intensity of the influence is somewhat less than Hansol, Jaewon and Hoon. She still limits the usefulness of SMART education to students in higher grades by mentioning potential difficulty for lower grade students in dealing with devices. Unlike the others, she does not relate her motivation to her survival in a literal sense. However, broadly, she seems to be in line with the others on the point that she recognises social changes, their cascading effects in education, and their significance giving a sense of obligation (e.g. "certainly", "necessary", "must") with a small portion of uncertainty (e.g. the use of "?" at the end of statements).

> **Interviewer**: Considering your experiences in relation to SMART education, how does SMART education find you? How do you think about it? How would you define it?
>
> **Hannah**: Ah…SMART education. I…um…in accordance with the changing society. Yes. It's the part which teachers are supposed to be equipped with competence? […] I mean, since the society is getting changed, so, it's certainly necessary in education, like in primary education, and thus, it's the thing that now teachers by themselves must learn it?

As shown in the excerpts above, teachers seem to subscribe a view that there is 'the stream of this era' that is inevitable. Regarding the stream, they are threatened by the danger of being left behind (or being culled). While the degree varies, participated teachers perceive that their pupils and colleagues are moving forward relentlessly and they believe that they need to work on themselves to keep up the pace of observable changes.

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6.3.1.2 To stand tall

In relation to the fast-moving trend or so called, 'the stream of this era', survival can indicate the 'authority' of a teacher. For those teachers who think it is important to show professional signs to their pupils, broadcasting one's incompetence would be the least desirable (see Shor, 1996, p.20). It shall be a fearful experience if a teacher stands in front of her pupils without having necessary knowledge or skills. In that regard, Jiyoung (teacher educator, 20 years of teaching experience) expresses her anxiety:

> […] These days... in fact, that's what I'm most afraid of. I break out in a sweat when I stand in front of my kids with what I'm *not skilful at*. When such time comes, it's really… every second and every minute...wah...I really *want to sink through the floor*, but, um...in fact, we're not skilful at *21st century civilization*, whether it's a device or something else but our kids are. […] (emphasis added)

Jiyoung seems to hold a view that legitimate teachers need to know something worth learning, know how to teach in order to reassure students of her competence (Shor, 1996). Given her teaching experiences and expertise in SMART education (this will be partly demonstrated in this section soon, and further details in the next section), it is assumable that she is familiar with most of the knowledge or skills required in the curriculum especially in relation to what has not been changed.

There is a invisible but strong border between her and 21st century civilization. When she mentions that she "wants to sink through the floor", she relates such embarrassing moment to "21st century civilization" which is positioned as the foreign culture rendering her saying repeatedly "not skilful at". In her mind, there is inherent difference between her pupils and 'us' (most likely herself and the other teachers who were born in 20th century). She is

essentially not skilful and not prepared as far as "21st civilization" is concerned. In contrast, her pupils are not like her. They are 'inherently' skilful at 21st civilization as the digital natives who have grown up in the digital age and are fluent in utilising digital devices without efforts.

Consequently, teachers would change themselves to be confident in front of their students. This point might be the reason why Hansol "keeps making efforts" despite "no one forces her to do so" and the tendency that "teachers in her age" would not do so.

> **Interviewer**: No one forces you to do so, right?
>
> **Hansol**: Of course not. No, it's spontaneous. Normally people in my age wouldn't do so. People look at me, like that I'm *weird*. I think so. Um…I just, to *be confident* to my kids, I want to *stand tall*.
>
> **Interviewer**: So, you don't think such behaviours are not proud.
>
> **Hansol**: No. Teachers who do not make efforts. Teachers should make efforts…I think 'one shouldn't just *stay in their comfort zone*'. Teachers who make efforts. (emphasis added)

She does not want to lose her authority as a respectable teacher by "staying in her comfort zone" even though other teachers might think that she is "weird". She wants to "be confident" and "stand tall" in front of her students. With regard to the conceptualisation of teacher as 'facilitator' in the government policy paper (see section 5.2.2), it is meaningful that teachers also still want to be 'the authoritative SMART education experts' who know something worth learning and who knows how to teach what is supposed to be taught.

6.3.1.3 To satisfy customers' needs

Survival as a teacher can mean something else when it is viewed from the market-oriented perspective. In that perspective, teachers' survival would be dependent on the satisfaction of their pupils in response to their needs.

> It's the teacher's choice. ***100%***. It can't be made mandatory or compulsory. But ***one thing***, it is likely be the case in which one ***cannot help but to*** do it by the needs of students because ***the era is changing***. […] Again, it can be ***a little bit inconvenient*** for teachers if they don't know this part since children are so used to it. It's the right thing to do it as how children want it to be. If children like western foods, it's the right thing to supplement ***nutrition*** in western style. If it is Korean food, then in Korean style. […] So, what should teachers do? It is ***effective*** to do the lesson in accordance with ***the taste of customer*** […] (emphasis added, Suhyun)

Three discourses can be identified in the excerpt: 1) a discourse prioritising professional choice of teachers, 2) a discourse prioritising consumer's needs, 3) a discourse highlighting social changes. With regard to the first discourse, it is entirely the choice that is supposed to be made by teachers whether they implement SMART education or not. For "100 percent". However, the freedom of teachers cannot be on their own because of "one thing". The one thing overrides the importance of the former. Here comes the second discourse. Suhyun uses an analogy in which pupils are considered as "customers". The analogy has the significant discursive effect. It is because that teachers automatically become 'cooks' as in entrepreneurs of restaurant business. Teachers, as a service provider, "cannot help but to" fulfil their obligation which is to satisfy "the taste of customers". In other words, teachers are bound to

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provide enough "nutrition" in whatever style their customers ask under the notion of "effective" education business. Further, what customers ask is not just small preferences, but it represents "the changing era" (i.e. the third discourse) by which choices based on individual and professional experience is outweighed. What teachers must endure is likely to be more than "a little bit of inconvenience" if they decide their teaching strategies on their own.

It should be considered, however, that the student-as-consumer perspective might have some dangers. For instance, it might place learners outside the knowledge production process which is the first and the foremost characteristic of SMART education (Bunce et al., 2017). It is because that consumers take passive role which is to receive products that is pre-determined (Symonds, 2019). It lacks consideration regarding what students can provide for the process of knowledge production during the interaction with their facilitators (i.e. teachers) other than their needs about SMART education. Further, it also brings about the possibility of eradicating pre-established professional practices of teachers by letting teachers be complicit to pupils' needs or to the pressure coming from the changing era.

To summarise, the closer look of interview texts has unpacked that survival as a teacher includes (at least) three layers:

1) Keeping up pace with the changes happening to their surroundings (i.e. pupils, colleagues) to not to be culled

2) Keeping up teachers' authority in front of their students

3) Keeping up the quality of education service as service providers for the satisfaction of pupils (or customers)

I now turn to another layer of survival. This survival is not for the sake of themselves It is rather more altruistic since teachers care for students' survival in the future.

6.3.2 Helping survival of students

In SMART education discourses, teacher subjects seem to be incited to change themselves in order to help their students for the survival in the coming future. Unlike the previous reason (i.e. changing oneself to survive as a teacher), this layer of survival has little to do with teachers' own survival, for example, as an owner of a restaurant that provides education service. Rather, teachers care about students' 21st competences (or their compatibility) so that their pupils can live on in the future without anticipating any rewards. Interview texts below will testify that teachers believe their mission is to make sure that students can be equipped with necessary survival skills in the future. Perceived difficulties of such task will also be shown that are coming from teachers' limited capacity.

Yuna (a teacher, 4 years of teaching experience) predicts the future as a "much more innovative" world and a world where technology would be "more developed". It would be also the future where SMART education is needed for students so that they "can live". Although SMART education is "necessary" for living in the future, there might be some problems for students if SMART education is not implemented to the students. It seems ironic, though, that the 'innovative' and 'more technologically developed' future might not afford certain citizens just because someone is not prepared for the future by SMART education. That version of the future seems to be 'not innovative' but rather 'under-developed'.

> **Interviewer**: […] Are you planning to take training courses that are related to SMART education afterwards?
>
> **Yuna**: Again, it's because I think SMART education is *necessary* in the future. And it's because the future in which the students I'm teaching are going to live is

much more innovative and the technology would be *more developed*, so I need to teach them so that they *can live* in that future. […] (emphasis added)

While the set of taken for granted assumptions can be clearly seen (see section 5.2), she recognises a responsibility to work on SMART education not for herself but for the sake of the students' futures. At the same time, the recognised responsibility creates a chasm between SMART education and herself. As can be seen in the excerpt, it is because that SMART education positions teachers in "difficult" situations because it reveals weaknesses of teachers in relation to technology use.

> **Interviewer**: […] What does SMART education mean to you?
>
> **Yuna**: Though it's the essential education for the future, so far…um… a bit *difficult* and, a question mark?
>
> **Interviewer**: The future…What do you mean by 'question mark'?
>
> **Yuna**: I mean, since I think my professional expertise *has not prepared* enough to do SMART education, it's a little bit difficult… particularly, in the case of female teachers, they [or we] are *clumsy at controlling some devices*, since they live a bit far from machines. In that regard, a bit. Yes. There are some difficulties.
>
> **Interviewer**: It's difficult. You mean, 'can I do this?', like this sort of question, you think like that? "Nevertheless, I should keep doing it".
>
> **Yuna**: Um. Nevertheless, I should keep doing it but it's difficult? (emphasis added)

Yuna states that her expertise "has not prepared" and feel difficulties in implementing SMART education. She resorts to 'gender discourse' by commenting 'clumsiness of female teachers at controlling machines' and 'the distant relationship' between female teachers and

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machines. Given that SMART education signifies 'technology-embedded' education ('T' as in SMART education), gender discourse translates female teachers inherently into the unprivileged. This might be the reason she says the word "difficult" repeatedly (this point will be discussed in detail in the next section). SMART education seems like 'burden' as much as it represents a responsibility of teachers.

In line with Yuna, Paul (a teacher, 6 years of teaching experience) recognises the responsibility as well as the distance between himself and SMART education. Paul relates the "really necessary competences in the future" to SMART education. Paul thinks that those teachers who can foster such competences of pupils are "definitely in need". In comparison to Yuna, Paul's commitment to the prediction for the future is stronger considering the modal markers (i.e. "really" and "definitely").

> There is a colleague who is interested in SMART education and applies SMART things in our school. I often visit his classroom and see students holding up tablet PCs and *making some power point presentations*, *making plans* for tasks *independently* and actually implementing them, *reflecting* problems rising from the implementation, *making plans again* and things like this, I thought, 'ah, these, *these are really the necessary competences* in the future'. […] I thought, 'ah, *I wish I could do this*, but *can I really do this*?' By the way, I think teachers who can foster competences such as problem-solving ability, solving problems by using creativity are *definitely in need*. (emphasis added, Paul)

However, when it comes to his own competences as a teacher in relation to SMART education, the stance he takes toward SMART education does not show the high degree of confidence (e.g. "I wish", "Can I do really this?"). Interestingly, the psychological distance between SMART education and Paul is generated and gets bigger out of his observation made in the colleague's classroom. As stated in the excerpt, the colleague's classroom and

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pupils are understood as the embodiment of ideal SMART education (e.g. "these are really the necessary competences in the future"); students are 'Self-directed' enough to work "independently", 'Motivated' enough to "make plans again" after going through "reflection", 'Adaptive' enough to be "making some power point presentations" as a way of producing knowledge, 'Resource-free' and 'Technology-embedded' enough to work only with their digital devices. However, rather than what he sees creates strong motivation for SMART education, it deepens doubts as to his own competence (e.g. "Can I really do this?"). For Paul, SMART education is conceptualised as 'the unreal' which renders him think that it is not feasible in his classroom. The more SMART education produces ideal effects in a real classroom of the expert smart teacher, the farther the psychological distance to SMART education gets.

The analysis has shown that teacher subjects are inscribed to change themselves for two reasons:

1) To survive as a teacher

2) To help survival of students in the future

The analysis shown in this section has allowed us to see the coexistence of discourses which favours certain teachers who hold authority in SMART education and which favours teachers who work as facilitators. In addition, consumer-oriented discourse has been identified as problematic in relation to SMART education rendering confliction between learners' roles. (i.e. product consumer versus knowledge producer). With regard to the latter, teachers are positioned as the one who fulfils a responsibility for their pupils' survival in the future by implementing SMART education. While this responsibility is recognised by teachers, the distance between SMART education and teachers is also identified rendering the responsibility burdensome which reveals their weaknesses. This contradictory nature among discourses will be further discussed in the next chapter (see section 7.2.2).

6.4 Regimen: Self-authentication

I argue that 'self-authentication' is considered as 'the regimen' of the teacher subjectivity in SMART education discourses. 'Self-authentication' means that teacher subjects choose to prove themselves as the one equipped with the competence for SMART education (see section 5.2). By drawing interview texts and research reports, I show that teachers are supposed to develop their professional competence and to perform SMART education. In particular, this section illuminates the intensity of SMART education represented in the series of 'the self-practices' dominant in space and time.

6.4.1 Developing professional competence

In SMART education discourses, it seems that teachers are supposed to develop themselves 'ubiquitously' while taking 'comvolunsory' teacher trainings. What is meant by 'ubiquitously' is that teachers are developing themselves literally anywhere, anyhow, anytime. 'Comvolunsory' is a coined term in this thesis to describe that decisions made by teachers to develop themselves are situated somewhere between 'voluntary' and 'compulsory'.

6.4.1.1 Ubiquitous trainings

At school The most common place for professional development would be 'school'. In such place where there are teachers who are good at SMART education in combination with well-equipped environment for SMART education, trainings can take place in a more accessible way.

> **Interviewer**: Well, then, do you think that the *environment* and your curiosity give you a certain motivation which makes you do SMART education?
>
> **Yuna**: Yes, since it is equipped from an environmental point of view and our school provides support such as teacher training programmes…
>
> **Interviewer**: Did the school provide training support?
>
> **Yuna**: Yes, they let us take Software education (i.e. computing education) such as trainings. […] and applications that are necessary for SMART education or trainings for utilising smart devices.
>
> **Interviewer**: Who does do that?
>
> **Yuna**: There are *many talented teachers* in our school like Chanwoo and chief A. They provided *many trainings*. (emphasis added)

Yuna gets motivation from her environment just as Hoon is influenced by Jiyoung (see section 5.3.1 for details). The word "environment" refers to 'the environment suitable for SMART education' (Yuna). Her curiosity is furthered into self-practice by participating in training programmes. It would be relevantly convenient for teachers to take part in a training at the school in which "many trainings" are provided by those "many talented teachers (i.e. their colleagues)" along with the infrastructure built in the school.

Along with the fact that well-equipped environments are set up in every school in Sejong, Hoon's training experience shows that such schools where there are "many talented teachers" can function as regional teacher training institutions for SMART education which expand accessibility for professional development. It is important to note that those schools as training institutions can be active even during weekends and attract teachers from the other schools.

Hoon: The most recent impressive training was the one held in our school. There was a training in our school taught by Jiyoung and it was about Google and a few Microsoft programmes. […]

Interviewer: Was it all provided by the school?

Hoon: This school prepared all the things. They took the applications and teachers applied for the programme.

Interviewer: How many teachers did submit the application?

Hoon: About thirty teachers…

Interviewer: Then, teachers from all the other grades…

Hoon: Teachers from the all the other schools…

Interviewer: You mean, teachers from the other schools came to this school?

Hoon: Yes. Teachers from the other schools came to this school.

Interviewer: Then, what other trainings have you taken? Other than the training at this school?

Hoon: There is no other training programmes I took except this one. I think this was the biggest.

Interviewer: I guess then this training was implemented more than once?

Hoon: Yes. I think it took several days.

Interviewer: Several days…did you take this on weekends?

Hoon: Yes. (emphasis added)

Hoon states that he has participated in a training programme held in his school on weekends. The programme was mentioned as 'the most impressive and biggest training experience' for him. He does not say that it was rather unnecessary or absurd for teachers to take trainings on weekends. Furthermore, the programme was not only for the teachers working in his school but also for teachers working from the other schools which might not have skilled teachers in SMART education. Even though it was held on weekends and taught by Jiyoung alone, there were about thirty teachers who intended to develop themselves in relation to SMART education.

Beyond school. It is not just at school where teachers get the opportunity to develop themselves. The opportunity is spread across society. The Education office manages teacher educator communities (e.g. SMART education leading teachers, digital textbook leading teachers), universities provide training courses for both beginner teachers and advanced teacher educators, IT companies (e.g. Facebook, Microsoft) administrate communities for teachers and national research institutes (e.g. KERIS) provides training courses.

> **Interviewer**: What would be your efforts to develop your technology utilising capacity on your own?
>
> **Jiyoung**: I took *tons of trainings* and I do community activities.
>
> **Interviewer**: Community? What do you mean by community?
>
> **Jiyoung**: Yes, there is a community of innovative educators supported by Microsoft which is called 'MIEE'. There are activities nationwide on Facebook and there are some offline activities in the community and I search trainings and take them a lot *without a break* while doing activities such as the tasks of a SMART education leading teacher. (emphasis added)

Jiyoung is referred to 'a teacher with passion who does not stay in a same place' (Hoon) especially when she searches for and takes "tons of trainings" "without a break". As an enthusiast, she puts herself in a web of professional development points. The points for professional development are spread in the whole society and encompass online and offline activities. As the above excerpt states, she acts as a member of three different communities supported by technology companies like Microsoft, Facebook and a public institution like Sejong city Education office. It is remarkable that SMART education is being supported by a variety of institutions in the society and thus it would not make sense if someone says that there is a lack of opportunity to develop herself to improve her competence for SMART education.

> Regarding digital textbooks, advanced training is administrated by KERIS. We let
>
> teacher educators go and take the course. […] The advanced training is
>
> nationwide, so to speak. I mean, since the best practices of teacher educators in the
>
> whole country are presented, they would think 'ah, that would help' and so it will
>
> be helpful when they see those. I ***constantly*** guided them to share what they saw
>
> in the teacher educator community. Even though I'm not sure how much they have
>
> shared, at least I'm sure that it was very active in the primary school teacher
>
> educator group and perhaps not in the middle school teacher educator group.
>
> (emphasis added, Suhyun)

Institutions cooperate to provide teachers with trainings for SMART education. Suhyun states that 'digital textbook leading teachers' were allowed to attend the nationwide-level training offered by KERIS which usually needs cooperation from the schools where those teacher educators originally work. The effects of the cooperation are clear. Teachers who attended the training had been "constantly" told to share what they have learnt with their own community members. It thus means that a small number of participants can spread what is

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regarded as the best so that the whole members can spread what is shared to their colleagues in their own workplaces.

At home. While institutions seem to increase the accessibility for teachers to take SMART education trainings at a group level (i.e. a group of participants), home plays a role as a place for professional development at an individual level. Unlike trainings taking place at the institutions which are supposed to be planned and implemented by officials and teacher educators, individual professional development at home can literally take place at any time after work.

> In my case, my personal life and professional life are greatly ***integrated***. Since my wife is also a teacher, me and my wife talk about school ***a lot*** after work even though there are some teachers who don't talk about school at home. Conversation works since I'm interested in this and my wife also majored in computer education. So, we keep talking about this and such routine itself, day by day, was the process of my development. Particularly, I think I haved taken really ***a lot*** of trainings by myself. You know, I didn't have a tablet PC nor VR. Since there are such devises at school, I once brought it home and tried this and that. Though it can be seen that I'm playing with it installing this and that, I can teach only after I try them out. (emphasis added, Joseph)

As the text above shows, the boundary between Joseph's personal and professional life is blurry. He talks about SMART education, installs new applications and plays with new devices at home. It means that his professional development in relation to SMART education is extended to his personal life. In addition, it is interesting that his professional development is supported by his partner as well as the available devices in his school allowing him to do "a lot" of self-trainings. Even though Joseph mentions that the two lives (i.e. the personal and

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the professional lives) are "integrated", his personal life could have been merged by SMART education.

6.4.1.2 Comvolunsory trainings

As the above paragraphs suggest, various trainings that teachers and teacher educators take are often more than simple obligations or free choices; they can be understood as the obligation to the extent that it leaves no choice for teachers but to take the training courses regardless of personal preferences. At the same time, 'the decisions are up to teachers to the extent that teachers' autonomy is highly respected and they cannot be forced to take SMART education trainings' (Yoonha, Suhyun).

> In fact, by the way, using computer or cellphone makes my eyes sore and I still prefer to write with my hand instead of typing and all. I mean, I'm sort of reluctant to put smart technology in my life. (Soyoung)

> To tell you the truth, I'm not interested. […] it's not that I like SMART education particularly. […] I did SMART education as I was told to do so and children like it. But I didn't like it. (Hana)

> To be honest, I still favour writing in analogue fashion even though I lecture OneNote and all. Even though I know that it's convenient, it doesn't come into my ordinary life since I did not use such softwares when I was young. So, I keep forgeting functions and like that. (Jiyoung)

In the excerpts above, there seems to be a discrepancy between professional requirement and personal preference. All three teachers express that digital technology does not go well with their personal lifestyle. Soyoung mentions that using digital technology makes her eyes sore. Hana states that she does not like SMART education and prefers handwriting instead of

typing just as Soyoung and Jiyoung do. Jiyoung says that she does not use what she lectures about in her daily life despite its convenience. In contrast to the previous finding that SMART education teacher trainings are permeated to personal and private time and space, professional choices available to individual teachers do not seem to be wide open, if not 'limited'.

> **Interviewer**: It seems that you have taken quite a few SMART education trainings so far, haven't you?
>
> **Soyoung**: It should be more than about *100 hours*.
>
> **Interviewer**: Could you tell me the reason you have taken 100 hours with a little bit of more details?
>
> **Soyoung**: […] well, digital tablet PCs were supposed to be distributed to every student originally. It was like that for a while. You know, after three to four years, these devices are the same as cellphone which go bad after using two years. It is financially not possible to change them. So, there maybe about 60 devices now in this school. […] things are different now. Since such devices are not being used in every classroom and you know, the theme of Sejong city is 'SMART'. I felt that I should do something. (emphasis added)

It seems clear that personal preference cannot exempt teachers from the recognised needs and necessary actions for professional development. Soyoung has taken more than "100 hours" despite she does not prefer SMART education (see section 6.4.1.1 for Jiyoung's efforts in detail). She has spent her time in developing her competences not because she favours SMART education but because she recognises a responsibility as a teacher in Sejong city. Those are 'comvolunsory trainings'. Indeed, no one has forced her to do so and it was her voluntary decision. However, I call them the compulsory trainings given the recognised

responsibility of teacher of which one cannot avoid. As she states later in the interview, SMART education is "a thing she should get close but also a thing she does not want to be close by".

6.4.2 Performing SMART education

In SMART education discourses, teachers are supposed to 'perform' SMART education. Firstly, it is taken for granted that teachers 'demonstrate' SMART education performance in an open class while not showing teaching practices with which they are familiar. In the meantime, teachers are supposed to 'delete' so called 'traditional education' in their teaching practices. In comparison to SMART education, traditional education and its components (e.g. textbook, chalks and talks) are positioned as the outdated which needs to be eliminated. Lastly, teachers are supposed to 'check' their teaching practices as well as their TCS (see section 5.2.1) to make sure that they are practicing 'good' education. Teachers are encouraged to measure themselves in order to better themselves as a good SMART education performer.

6.4.2.1 Demonstrating SMART education

Teachers are supposed to 'demonstrate' SMART education in special occasions. It is taken for granted that teachers choose to show their lessons by designing the lessons with SMART education in the events like an open class. In an open class parents, colleagues, school

managers and other invited guests come to visit the classroom and watch how actual

education takes place (see section 7.3.2 for further discussion).

> **Yoonha**: They think like this. "No way, it's possible to teach students *just as fine*
>
> without using *those* ICT devices." Even though they think like that, they use such
>
> things when there is an open class *after all*.
>
> **Interviewer**: So, what is it, *the external gaze*? Such…
>
> **Yoonha**: They *can't help but to* notice it in open class. To be honest, it would not
>
> be an exaggeration to say that *all* teachers' lessons are SMART education in open
>
> class. (emphasis added)

In the dialogue, deputy headteacher Yoonha talks about 'old teachers' who she believes, hold

a negative view about SMART education. There seems to be some psychological distance

between them and SMART education given that they reckon that they would do "just as fine"

in their teaching without using "those" devices. However, they do not seem to be fine as far

as an open class is concerned. They "cannot help but to" include those ICT devices "after all"

when there is an open class just like "all" the other teachers.

> Obviously, to certain teachers who use it well and who are experienced, SMART
>
> education would give students experience by using SMART education in that way,
>
> but *normally*, I guess there is almost no one who utilises SMART education in
>
> such a way even though equipment is prepared. I would say *about five percent*?
>
> So, I also sort of want to do it but I found it difficult and my sense of challenge
>
> has dropped a little bit. (emphasis added, Jiwon)

There is an interesting contrast between 'daily lesson taught with SMART education by 5

percent of teachers' and 'open class taught with SMART education by 100 percent of

teachers'. Regarding the transition between the two, it is of worth focusing on "the external

gaze" which exists in an open class. It is so powerful that the old teachers (recall that I could not recruit any old teacher as a participant) 'cannot help but to' do SMART education not to mention the rest of the teachers.

> In most of cases, the biggest motivation in implementing SMART education would be 'open class' including myself. I guess most of the cases would be to show the lesson to parents. […] I can show some differences compared to what parents used to see It could be like this. By using it, I can assure parents that their children are going to be better in 21st century. (Paul)

> The old teachers think that there are certain people who recognise a teacher who doesn't use such things is left behind the era. (Yoonha)

The gaze represents certain expectations for education as well teachers; an expectation of parents that the education should be useful for their children's prospects and an expectation about teachers that they are not to be left behind and to keep up with the social changes. While what the gaze represents is in line with the mode of subjectification (see section 6.3), it is identifiable that SMART education is taken for granted as 'something that is worth showing' by the teachers. It implies that what teachers normally do would be deemed relatively less worthy of demonstration.

> **Interviewer**: […] Do you or other chief teachers order them to do SMART education in open class?

> **Yoonha**: No way, we don't do that. I think it's probably because that teachers look for something to show others in an open class.

It should be clearly mentioned that the gaze is neither external nor coercive. Rather, it can be understood as the recognition internalised by teachers, influencing them especially when they make professional decisions for an open class. Nevertheless, it is not deniable that the effect

of the gaze on open class dominates the teachers' choice. Just as the personal preferences of teachers could not affect in the professional development domain as far as SMART education concerned, teachers' professional decision for an open class seems to be exclusive only to SMART education.

6.4.2.2 Deleting traditional education

The exclusive right SMART education holds in an open class might imply what teachers are supposed to do correspondingly: they are supposed to 'delete' traditional education. It may be the reason that traditional education is referred to as 'inefficient', 'inferior' or 'unattractive', which is to be replaced by SMART education. Indeed, there is a stark contrast between a group of words describing SMART education and a group of words connoting traditional education (recall 'relationship of difference' in section 5.2.1)

> […] Especially, in case of science class, you know, the universe chapter. There is something like constellation. […] Chanwoo is really good at that. I mean, he really makes it *fun*. […] When Skywalk is used, constellations are rendered something like a 'hologram'. It's particularly difficult to teach constellation. You know, teachers used to roll a planisphere *back in the days*. […] Then, really, this SMART education is really *the best fit*. What we can approach the students with that can make students *really* have fun in science class seems to be constellation and the universe. […] Chanwoo does that really well. He bought the 'Skywalk' application. It *gets really diversified*. […] So, students *like it a lot*. Seeing is *better* than hearing. You know, to be honest, it's not to memorise like "this is this, this is that" everyday. Such things like constellations in the east side of the sky, constellations can be observed in different seasons, Cygnus and those sort of things. We used to teach like *a fool*. It's difficult for teachers. Meanwhile, pupils

can just find it. There's *everything* in Skywalk and on the screen of a tablet PC. *Amazingly*. The effect is *enourmous* when one use such apps. Yes. It certainly becomes a tool for *giving motivation*. […] (emphasis added, Hansol)

In the excerpt, Hansol chooses words such as "fun", "the best fit", "gets diversified", "like it a lot", "better", "everything", "amazingly"", "really", "enormous" and "giving motivation" to describe the positive sides of SMART education. In other words, SMART education is conceptualised as 'the optimum'. In the meantime, the ways teachers used to teach "back in the day" (i.e. planisphere, memorising constellations) are described as the 'inferior' methods which "a fool" would take. Compared to what SMART education represents, 'traditional way of teaching' seems to be disqualified; constellations are not supposed to be memorised and not to be taught with the planisphere (see section 5.5.4 for its look) in the presence of SMART education. Even though the application (i.e. Skywalk) and the planisphere requires observation, only the former gains the position of 'the better (i.e. seeing)' and the latter consequently gets the position of and 'the inferior (i.e. hearing)'. Further, the potential advantage of the previous way of teaching (i.e. using the planisphere) and the possibility for the co-existence of the both teaching methods are excluded.

> As I told you before, children like it. Pupils' attention is *higher compared to the traditional way of teaching* when I do SMART education and if it works well as I intended. Since I think it's quite *effective*, I tend to take trainings while expecting that. (emphasis added, Paul)

> […] Since utilising SMART education allows us to input *real*, *motivating* and *diverse* materials *instantly compared to textbooks* which have *very limited* materials inside, for the sake of teachers who prepare for lessons and for the sake of pupils, yes, I think it much more *efficiently* motivates. (emphasis added, Chanwoo)

> What should I do? Even though I hope to teach many lessons which give *fun* and *move* students, recently I see more often that pupils' eyes are *glittering* when there is such *popping* SMART education *than ordinary textbooks*. So, I take many trainings as I want to do lessons utilising tablet PCs, cellphones or computers but still it's difficult. (emphasis added, Hana)

This inequal discursive conceptualisation can be seen elsewhere in SMART education discourses. Just as Hansol does, all three teachers in the excerpt choose positive words when they talk about SMART education. SMART education connotes "higher", "effective", "diverse", "instant", "real", "motivating", 'fun", "move", "glittering", "popping". The more SMART education is exalted and talked about, the less there is a chance for "the traditional way of teaching" and "textbooks" to be appreciated; when there is a need to highlight the superiority of SMART education, they are mentioned only after comparative prepositions such as "compared to" or "than" implying 'the relative inferiority'. Moreover, it is identifiable that teachers choose to take SMART education trainings to cope with student's learning motivation which consequently rules out the possibility for trainings for smart use of textbooks (see e.g. Chen & Chao 2008; Lim et al., 2021).

6.4.2.3 Self-checking SMART education performance

Performing SMART education is not just to demonstrate SMART education on special occasions or to delete traditional education. It can also mean that teachers are supposed to 'check' teacher competence for SMART education (TCS) by themselves. In order to explore this dimension, I draw on a research report published by a national research institute (i.e. KERIS). 'Self-check' consists of a series of actions: 1) assessing teacher competence for

SMART education, 2) comparing the current result with other teachers and prior assessment results, 3) understanding oneself, 4) selecting the relevant training programme.

> The online assessment tool for teacher competence for smart education diagnose teachers' fundamental competences and practical competences using 6-point Likert scale. Teachers are required to answer the current performance level as well as perceived level of importance for each item. […] (KERIS, 2014, p.65)

Teachers are invited to an online website in which they are asked to answer to 61 items designed to measure 13 components of TCS (see section 5.2 for the details). In relation to the finding that TCS is conceptualised as the core and the whole, measuring the components with 6-point Likert scale implies that every part of an individual teacher is to be quantified based on thorough examination. Further, it is noteworthy that individual teachers are required to separately measure their current performances and perceived level of importance for each item.

> When diagnostic tool developed through this study is used, it allows to illuminate the difference between the current performance level and the level of importance that are perceived by a respondent and to calculate the priority among competences that are to be developed based on these data. (KERIS, 2014, p.51)

The purpose of the 'diagnosis' is clearly stated in the text above; it is to give 'a prescription'. The gap between the current performances and the level of importance creates the needs for individual teachers to develop what is identified as 'competence that is to be prioritised'. While the prescription is given to teachers recommending that they work on the certain competences, there is no convincing explanation addressing why the gap should be filled in. It is just taken for granted that every competence should be developed based on the importance of TCS (i.e. the core and the whole). The gap must be filled in no matter why. In

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this process of professional development of teachers regarding TCS, 'individual preferences' or 'pre-established professional strength' of teachers is not in the consideration. The inserted data of individual teachers can 'illuminate' the difference between themselves and the other teachers' results or the prior assessment results of themselves.

Competency	Performance level	
	myself	others
1. Creative problem solving	1.25	4.0
2. Social ability	3.1	3.7
3. Flexibility	3.6	3.8
4. Technology literacy	4.6	4.45
5. Ethics	3.5	4.68
6. Passion	3.75	4.75
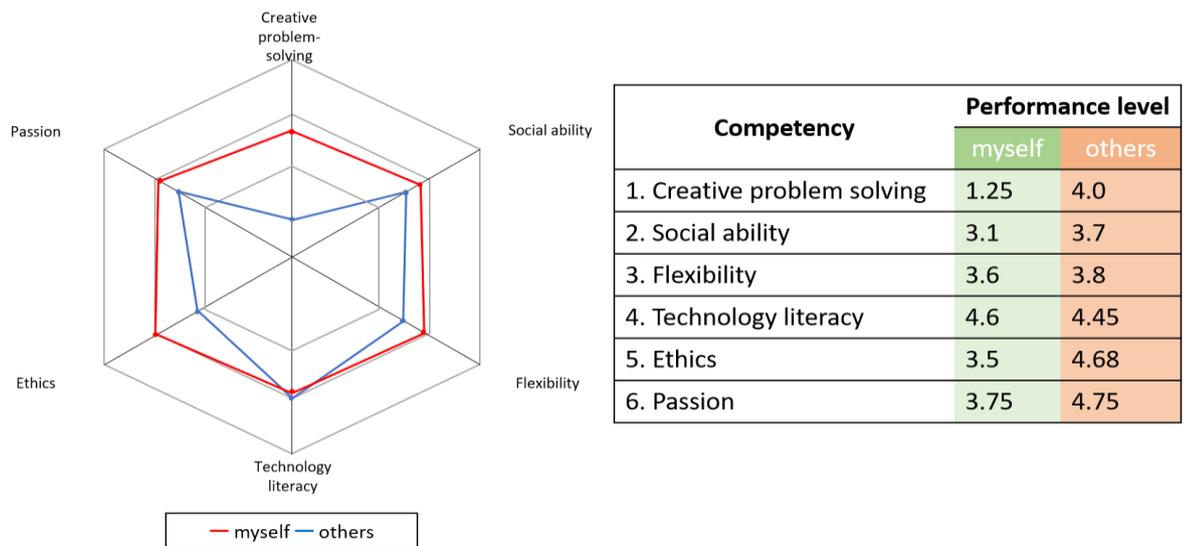
Figure 6.2 An example of diagnosis result screen (KERIS, 2014, p.47)

[…] The tool, then, provides assessment results in terms of comparison with others and comparison with prior assessment result of him/herself. When comparison with others is selected, teachers can set the options for school level, subject, gender, teaching experience, or location. The assessment results are provided using visual chart with text feedback. […] Teachers can diagnose their competence level in order to **understand themselves** and **select training programmes** that fits to their needs. (emphasis added, KERIS, 2014, p.65)

Just as the gap between current practices and the perceived importance does, the gap between individual teachers' result and the various groups of other teachers' results (e.g. school level, subject, gender, teaching experience, or location) creates the needs for teachers to work on it. Further, given the gap is displayed in a radar chart (see figure 6.2), the needs would be more

intensified especially when the gap is bigger. Considering 'the gap' is the beginning point where teachers recognise the needs for the professional development, the whole process of 'understanding oneself' and 'choosing the right programmes' seems to be based on 'what is lacking'.

> Growth can be measured *autonomously* by implementing self-assessment after a certain experience such as a specific research class or activities in the teachers' research association or by diagnosing on a quarterly or annual basis (emphasis added, KERIS, 2014, p.54).

> Researchers and educational administrators can *monitor* changes in teacher competence for SMART education and can *trace* and *administrate* the changes of the competence based on demographic characteristics and the changes can *ultimately* be *utilised* as the foundational data in forming a policy (emphasis added, KERIS, 2014, p.58)

Lastly, it must be mentioned that teachers are supposed to self-check not only for themselves but also for the management of teachers as a population. As is seen in the excerpt above, teachers are accordingly supposed to check themselves both regularly (i.e. quarterly or annual basis) and occasionally (i.e. after specific experiences) to measure their growth. In the meantime, teachers' data will be "monitored", "traced" and "administrated". "Ultimately", the data will be "utilised" as the means for forming policies which will target individual teachers as well as various groups in the teacher population. It is important to note that the data produced by individual teachers simulate the entire population of teachers once the database is fed by the majority of teachers.

In this section, the analysis has shown that teachers are supposed to take part in professional development trainings which seem to be available without limits of time and space. The opportunities for professional development are so comprehensive that it would be almost

impossible for teacher subjects to say that there is lack of support as an excuse for their

inactive involvement. This section also has shown that teachers are supposed to develop their

competence based on the recognition of their responsibility in the place where they are

working regardless of their personal preferences. In the later part of this section, the three

meanings of 'performing SMART education' have presented. As far as 'an open class' is

concerned, teachers choose to demonstrate SMART education for the sake of their audience

(e.g. parents), convincing their children are being properly educated. In the meantime, it has

been identified that traditional education is conceptualised as 'the inferior education' which is

to be deleted or replaced by SMART education. Lastly, teachers are encouraged to check

themselves so that individual teachers can manage themselves while they are being ultimately

administrated by the data they produce as a population.

6.4 Conclusion

In this chapter, I have described how 'smart teacher' is constructed in SMART education

discourses by answering to the two genealogical questions regarding mode of

subjectification, regimen. Teachers are inscribed to change themselves for the survival of

their pupils and their own as well while maintaining their authority as a teacher in the

relentless social and educational changes (i.e. mode of subjectification). They are positioned

to authenticate themselves by making 'comvolunsory' efforts to develop themselves

anywhere, anytime and anyhow while demonstrating SMART education in front of people,

deleting traditional education and self-checking one's performance (i.e. regimen). Before

concluding this chapter, I again highlight that the key words and the detailed description of

each theme must not be regarded as 'the truth' of the aspects of teacher subjectivity. Instead,

they are meant "to surprise us with an awareness" that could make us uncomfortable with what we—as the members of our society—have been involved in (Fendler, 2010, p.64).

7. Discussions

7.1 Introduction

Having explored the subjectivity of teachers constructed in SMART education discourses, now I turn to the other two research questions of this thesis:

> *To what extent and in what ways are SMART education discourses similar/different from the previous dominant discourses in education in the society?*
>
> *What is the significance of the findings for concepts and theory associated with teacher subjectivity, SMART education discourses, and power?*

These two questions are intended to elucidate the unique power relations seen in SMART education discourses that creates the teacher subjectivity reported in the previous chapter. Discussing the unique power relations is required to show the contingency represented in SMART education discourses and thus to argue that the specific power relations can be changed so that people can imagine a different possibility for SMART education and can inspire different futures in relation to technology use.

With regard to the second research question, I examine the identified discourses that are related to SMART education discourses. I investigate what dominant discourses are drawn and how they are appropriated in forming up the axis of the teacher subjectivity. In the meantime, I review how SMART education discourses are similar/different in relation to the embedded or connected discourses. As to the third research question, I describe the ways in which the power relations shape the field of possibilities by considering it in relationship with telos (i.e. the ultimate form of the smart teacher) and by drawing on various modes of power that Foucault identified. I address that the field of possibilities are saturated with sets of

techniques, existing architecture of education and apparatuses. In particular, certain imbalances arising in different contexts (e.g. teaching practices in an open class, taking training opportunities) are considered rendering the way of construction somewhat absurd. Lastly, I point out the potential dangers of the current power relations.

7.2 Discourses in SMART education discourses

This section is devoted to the second research question:

> *To what extent and in what ways are SMART education discourses similar/different from the previous dominant discourses in education or in the society?*

In the previous chapter, I have shown that SMART education discourses include various discourses. I revisit some of the discourses and see how those discourses are drawn and appropriated in SMART education discourses and what they do. Meanwhile, I elucidate that SMART education discourses are a unique congregation which might not be inevitable but be problematic and contingent.

7.2.1 Discourses revolving around teachers' compatibility

I have described that the compatibility of teachers (substance) sets up a new belief system consists of three underlying assumptions:

- There is a right way of learning and teaching depending on social environment
- The current education is problematic.
- SMART education is effective.

Each of these assumptions represents dominant discourses in education as well as in the society: paradigm shift discourse, social and education problem discourses, panacea discourse.

The first assumption is in line with 'compatibility discourse' which prioritises the compatibility of certain contents, methods, evaluation or assessment for learning and teaching in relation to a social environment. The discursive effect of compatibility discourse is clear: it can undermine what is recognised as outdated ways (e.g. using blackboard and chalks) of learning and teaching very easily. The discursive power of the discourse would be even more persuasive if a social environment "continuously" changes due to "technological development" as well as "socio-economic changes" (see section 5.2.2). The outdated way would not have a place to stand.

Compatibility discourse attracts another popular discourse, 'paradigm shift discourse'. Kyungmee Lee (2018) points out that paradigm shift discourse has been popular and circulated since the early 2000s in online higher education. The writer argues that it began with the interactive features of the internet that are focused as an innovative form of learning space. The author contends that the discourse deploys a few legitimating rhetorical devices (e.g. repetitive favourable word uses, see ibid., p.63) to conceptualise the discursive construction as the true current environment (Lee & Lee, 2019b). She claims that the discourse promotes a view that the environment has 'completely' and 'fundamentally' changed by saying the "paradigm has shifted" (ibid.). In that regard, paradigm shift discourse embedded in SMART education discourses triggers greater discursive power of compatibility discourse as it dramatically increases the degree of the necessity of the change.

The second assumption attracts a variety of discourses that are arising from so called 'new' social needs and a few tasks for the problematic current education. The new social needs are coming from, for instance, 'aging population discourse' and 'youth unemployment discourse'

which ask for individualized education services and urge to take a chance to boost economy. With regard to the adjective, 'new', it should be noted that those social problems and discourses have been the major social issues for more than a few decades in South Korea—since the 1970s for the aging population issue (The Chosun Ilbo, 3rd March, 1976), since the late 1990s for the youth unemployment issue (The Chosun Ilbo, 14th May, 1998). The discourses create considerable discursive effects in relation to SMART education; given that they are understood as the serious social events that are widely accepted as important and problematic not just in South Korea, but also in many other countries (see e.g. Choi, 2016; Simmons et al., 2014), the significance of any solution would be of high value or be highly necessary.

In relation to the tasks for the current education, they are mainly related to 'incompatible status quo of the current education', 'anti-cramming education discourse' which criticises cramming education, 'outdated classroom discourse' which legitimises a view that classrooms have rarely been changed, 'low learning motivation discourse' which agrees that students have low learning motivation, 'social class discourse' which prioritises a view that polarisation of education opportunities and accessibilities is lingering. While the needs and the tasks are extensive, there is a commonality between the invited discourses: they are supposed to be 'fixed' once and for all by SMART education.

The third assumption represents 'panacea discourse'. It supports a belief that SMART education would provide solutions to all the social and educational problems that are stated in the above paragraphs. Panacea discourse and its relation to the problem discourses can be better understood with 'technology fix discourse'. Sean Johnstone (2017) argues 'technology fix discourse' has long been standing for some nine decades (i.e. since the 1920s) in North America. He states that the discourse itself can be understood as a kind of 'industrial discourse' which shows great confidence in societal progress via engineering solutions. Just

as panacea discourse, technology fix discourse is also rooted on a belief that technology always provides the most effective solution to modern social, cultural and political problems (ibid.). The author summarises a few claims of technology fix discourse (ibid., p205):

- Social problems of modern society are caused, and ultimately solved, by technological change.

- Rational technological change of environments can produce new social behaviours rapidly.

- Conventional solutions–notably economics, politics and social initiatives such as education–are ineffective.

- Only technically competent people, by redesigning physical environments, are equipped to solve modern social problems.

It seems clear that most of the claims stated between the late-1910s and early 1930s are notably similar to the claims that consist of SMART education discourses in 2010s. For instance, the first and the second claims indicate that technological change can cause social problems in the modern society and affects social behaviours. They represent the same relationship between SMART education and the new social needs and the tasks for the problematic current education in SMART education discourses (e.g. aging population discourse, youth unemployment discourse). Also, regarding the fourth claim, the strong seek for technologically competent people can be seen in both sides (e.g. teachers with TCS or students with 21st century competences in SMART education discourses).

The third claim seems to have an interesting point to discuss further. It says 'conventional' solutions (i.e. economics, politics and education) are 'ineffective' when it comes to solving social problems. However, education in the 21st century (i.e. SMART education) is ostensibly advertised as the way to solve political, economic and educational problems as can be seen from the slogan: "SMART education, the way to a great talent-abundant country" (MoEST, 2011, p.5; see section 5.2.2 for detail). For the past some nine decades, technology

may have permeated to many (if not all) conventional areas as the alphabet, 'T', as in

SMART education, stands for 'technology-embedded'. In that regard, SMART education

might be indicating that there are no 'conventional' solutions anymore. Technology fix

discourse might be already embedded everywhere tearing down boundaries between the

conventional and the technological.

So far, I have identified that teachers' compatibility as substance of the constructed teacher

subjectivity in SMART education discourses draw on multiple discourses: paradigm shift

discourse, social and education problem discourses and panacea discourse. It is also

highlighted that they increase the discursive power of SMART education discourses as they

interact with one another while each discourse itself effectively supports SMART education

by exercising its own discursive power within the relationship. Having explored discourses

related to substance, now I turn to the discussion regarding discourses constituting mode of

subjectification, 'survival'.

7.2.2 Discourses revolving around survival

I have shown that there are multiple layers in the meaning of 'survival': as in 'the survival of

the fittest' against the stream of the era, keeping one's authority in a classroom in front of

pupils and survival as an entrepreneur of an education business, each of which represents

social (not Natural) Darwinism discourse, traditional authority discourse and consumer

discourse. These discourses need to be examined in detail.

7.2.2.1 Survival of the fittest

Regarding survival of the fittest, I have mentioned that teachers are aware of 'the stream of the era' which is regarded as irresistible or inevitable. I also have mentioned that they are struggling to not to be left behind (or be culled) by their pupils or colleagues who are moving along with the stream. In the same vein, SMART education discourses show that teachers develop themselves for their pupils' survival in the future. On this point, I draw on Lee et al. (2010)'s article in which they discuss 'East Asian Social Darwinism discourse' based on the Korean context in relation to English Immersion Policy. It is important to take a look given the underlying assumptions, the discursive strategies and effects are similar to those of SMART education discourses.

'East Asian Social Darwinism' can be better understood by starting from its root, 'Social Darwinism'. It sets 'survival of the fittest' as a prime universal within the social order (ibid., p.342). Also, it advocates a mechanism of 'evolution' that is based on 'a model of competition' over limited resources (ibid.). On this point, the appalling discursive effect of Social Darwinism in SMART education discourses can be detected from what teachers recognise, accept and do not (or cannot) question. The social order can justify the deprivation of the survival chance when a person or a group of people is not competitive enough and cannot keep up the pace with the changes in the society.

While Social Darwinism takes individuals as the basic unit of the survival game, East Asian version of Social Darwinism takes nation or race as the unit of competition over, for instance, natural resources (ibid.). It requires unconditional obedience of the ill-informed commoners to the competitive upper-class people and sacrifice to the group one belongs to under the banner of the survival (ibid.). In the Korean context, historically, East Asian Social Darwinism has produced a significant discursive power to the extent that a claim is positioned as the truth. 'Absorbing what is symbolised as modern, western or American (equivalent of rational, civilized and developed) is critical for the survival of the country

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(ibid.)'. In this regard, SMART education discourses clearly include a characteristic of East Asian Social Darwinism discourse given that SMART education aims to build "a great talent-abundant country" (MoEST, 2011, p.5) by incorporating 'modern technology' in education to be successful at the global competition.

Just as SMART education discourses include Social Darwinism and technology fix discourse, Lee et al. (2010) point out East Asian Social Darwinism as one of the main factors of 'English Fever' represented in English Immersion Education policy in South Korea. Briefly, the English Immersion Education policy aimed to implement the plan to teach English in all elementary school grades and to promote the new focus on oral language proficiency in English (Park, 2009, cited from ibid.). It triggered the establishment of "English villages" by local governments where "a great number of native speakers of English have been hired as villagers of the English-immersion towns" (Park, 2009, p. 53, cited from ibid.). The authors counter a limited understanding that 'English fever' is rooted in South Korea's traditional/Confucius fever on education and illuminate fundamental assumptions fuelling the fever (ibid., p.339):

- The world is a battlefield
- English is a key weapon for survival
- Without English, Korea will lose and perish

The assumptions are notably similar to what is identified as the reason for developing teachers' professional competence in SMART education discourses. The fundamental assumptions fuelling the fever for SMART education would read as follows:

- The world is a battlefield which is constantly changing due to the development of technology
- SMART education is a key weapon for 'our' survival
- Without SMART education, 'we' will lose and perish

Notice three things: 1) I intentionally put 'our' and 'we' to indicate that the presence of East Asian Social Darwinism which interprets 'survival' in a collective term, 2) SMART education puts forward the national competitiveness as the main slogan 3) the presence of panacea discourse when SMART education is regarded as the key tool for the survival (see section 6.2.1). Even though teachers do not directly talk about the survival of Korea in the global competition, SMART education discourses seem to have been successful at making teachers to subscribe to the fundamental assumptions as they not only believe that the world is inherently competitive but also care about their pupils' survival in the future as well. The discursive effects of the discourse are considerable; they limit possibilities for a different world view and other means for survival for the pupils and the country. In other words, they would not allow throwing certain questions such as "Is the nature of the global world competitive?", "If SMART education is a necessary means of success in the global competition, what about other successful nations and individuals in the global world that/who do not pay attention to SMART education?", "Is the only end result either to perish or to survive the future competition?", "Must Korea join in this competitive (or combative) battle?" (Lee et al., 2010, p.338). Consequently, those teachers and students who are not competitive enough do not have many choices but to jump on to the stream of the era by developing themselves so that they can fit in, so-called, the 'new paradigm' of education, SMART education.

7.2.2.2 Traditional authority of teacher

It might be of merit to remember that SMART is an acronym and 'S' stands for 'Self-directed' which promises the following as the solution for the problematic current education:

[S]elf-directed

(**Knowledge producer**) The change in role of students from *knowledge receiver* to *knowledge main producer* that of teachers' changes from *knowledge transmitter* to *facilitator* (mentor). (Italics added, MoEST, 2011, p.5)

As can be seen from the excerpt, SMART education clearly positions teachers as "the facilitators" who are supposed to help learners produce knowledge so that they can be "the knowledge producers". It does not consider students as "the knowledge receivers" and teachers as "the knowledge transmitters". Thus, it can be said that SMART education discourses include 'partnership discourse' which emphasises the collaborative relationship between teachers and pupils. However, as shown in the findings, it is stated that teachers put a lot of efforts to develop themselves in order to "stand tall" (Hansol) in front of their pupils (see section 5.3.1.2). It indicates that SMART education discourses, one of the latest discourses which favours the adoption of cutting-edge technology, accompany one of the most traditional discourse in education, 'authority of teacher discourse'.

In this regard, the existence of the authority discourse seems to be contradictory. This is because teacher authority can be understood as the opposite side of SMART education. On this point, Eloise Symonds (2019) provides an insightful analysis regarding the two discourses (i.e. traditional authority discourse and partnership discourse) after she carried out two case studies at two universities in the UK interviewing lecturers and undergraduate students. It should be acknowledged that her research is based on the Higher Education context and implemented in the UK. However, these changes against the older professionalism have been global agenda and tend to be equally applied to schools, colleges and universities (Ball, 2003). Thus, it seems legitimate to consider her arguments mainly to be inspired by the dynamic between the two discourses.

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The author describes that the traditional relationship between teachers and learners is perceived as 'unavoidable' or 'natural' which is difficult to break down (Symonds, 2019). She writes that despite the partnership model is encouraged in both universities, the participants were hesitant to accept the model in practice (ibid.). She points out that the participants' prior experiences in educational contexts are likely to be the factor which is systemically formed and constitutively perpetuated by (but not limited to) institutions, curriculums, academics and learners (ibid). She also adds that 'reciprocity', a core characteristic of partnership approach, is a complicated agenda under the current architecture of education in which academic staffs take final responsibility for some high-stake issues.

In this regard, the co-existence of traditional authority discourse and partnership discourse in SMART education discourses can make sense; even if teachers are positioned as the partners, teachers are still supposed to develop themselves as they take responsibility to be knowledgeable in terms of the real classroom context. They need to have the necessary knowledge, skills and attitude that are related to technology use (e.g. Teacher Competence for SMART education). By doing so, they can fit both in SMART education and in traditional education models in which they might feel either comfortable or pressured while meeting the all responsibilities coming from both discourses (e.g. acting as a knowledgeable authority; coping with young learners' deference and reliance; customising teaching methods based on learners' demands).

7.2.2.3 Teacher as an entrepreneur of education business

As one of the findings, I pointed out that consumer discourse is embedded in SMART education discourses; customer takes a superior position when it is engaged with professional freedom of teacher and it is strengthened by a discourse highlighting social changes

especially when teachers are obliged to serve customers' taste (see e.g. Suhyun's interview text in section 6.3.1.3). This specific construction of the discourses needs to be discussed from the perspective of partnership discourse to illuminate how SMART education discourses draw on market-oriented education and the other discourses as the reason for teachers to update by themselves.

Partnership discourse encourages both teachers and students to work together to produce knowledge. It indicates that a certain level of dynamic must be going on between the two. However, teachers would be regarded as the passive agents who cannot contribute to diversifying the knowledge production procedures when teachers "cannot help but to [do SMART education]" (Suhyun) because pupils are asking as the customers. The significance of what pupils ask would be even greater if what is asked is the representation of the irresistible trend of the changing era. Consequently, teachers as the owners of the education business must eradicate at least some part of their pre-established professional practices that are not compatible with SMART education being complicit to pupils' needs or the pressure. As Lundström and Holm (2011) report, it shows that consumer discourse can easily eliminate the discursive power of the professional choice of teachers. It should be noted that this 'unavoidable' relationship between the discourses might end up with the direct violation of the partner relationship between a teacher and students, which is characterised as the essence of SMART education.

In the same vein, it should also be considered that consumer discourse might have some dangerous discursive effects on learners at the same time. For instance, it might place learners outside the knowledge production process, which is the first and foremost characteristic of SMART education (Bunce, Baird, & Jones, 2017). The reason being is that consumers tend to take a passive role given that they would not actively participate knowledge production activities and would not take risks of failures as the result of the activities (Symonds, 2019).

It is likely that they prefer to receive certain service products that are already processed and guaranteed by the service providers (i.e. teachers) when they purchase the service. It lacks consideration regarding what students can provide for the process of knowledge production during the interaction with their facilitators (i.e. teachers) other than their presumed needs for SMART education.

This specific construction of the discussed discourses implies that consumer discourse is significantly pervasive although public education does not ask for monetary remuneration by students and public-school teachers in Korea hold permanent position regardless of the level of students' satisfaction. In the literature, this tendency has been reported that the metaphor which puts students as the consumers is one of the most wide-spread images along with the triumph of capitalism in this industrialised world (see e.g. Gross & Hogler, 2005; Laing & Laing, 2016). Further, the examination of the construction reveals that consumer discourse tactically promotes the acceptance of SMART education discourses by highlighting the responsibility of teachers as the service providers while suppressing, masking or hiding the equally important partnership between the two.

I have identified that the various discourses are constructed as the constitutive of the mode of subjectification, survival. What is significant is that (East Asian) Social Darwinism discourse embedded in SMART education discourses limits the other possible versions of the world by limitedly defining it as the competitive one. Also, I have shown that SMART education discourses incite teachers to develop themselves by drawing seemingly contradictory discourses; traditional authority discourse and partnership discourse, consumer discourse. It was identified that the related discourses produce a certain discursive power which renders 'unavoidable' or 'cannot help but to do' situation for teachers to take a responsibility to accept SMART education or to develop themselves. Having explored discourses related to

the mode of subjectification, now I turn to the discussion regarding discourses constituting regimen, 'self-authentication'.

7.2.3 Discourses revolving around self-authentication

Previously, I explained that teachers are encouraged to authenticate their compatibility by demonstrating their SMART education competence in an open class, eliminating their old-fashioned teaching practices (i.e. traditional education) or by measuring their competence while taking trainings ubiquitously and 'comvolunsorily' that are widely spread both online and offline. Here, I see the presence of managerial discourse and traditional teaching discourse that are embedded in what is inscribed as the regimen for teacher subjects. In fact, the findings of this thesis resonate with Stephen Ball's (2003) article in which he discusses the effects of education reform:

> Within this ensemble, teachers are represented and encouraged to ***think about themselves as individuals*** who ***calculate*** about themselves, '***add value***' to themselves, ***improve their productivity***, strive for excellence and live an existence of calculation (emphasis added, p.217).

Regarding the effects, it might be worthwhile remembering a series of practices that teachers are supposed to do to "think about themselves" in relation to SMART education (which is also an education reform). Teachers are encouraged to manage their competence for SMART education on their own "as individuals" by "calculating" their performance regularly and by using an online assessment tool. Further, they are supposed to "add value" or "improve their productivity" by taking training courses for their professional development.
From this series of actions, it seems that SMART education discourses include 'managerial discourse'. Managerial discourse prioritises efficiency, output or productivity through the

systems of surveillance, regulation and accountability in decentralised or autonomous manners (Lynch, 2014; Nichols & Grifith, 2009; Resnik, 2011). Since managerial discourse takes the neo-liberal idea that the market is the archetype of a society which produces cultural value, it promotes the more efficient managerial regimes and their techniques to resolve any social problems or social changes including those of in education (Huang, 2020; Lynch, 2014).

Under the regime of managerial discourse that has only one exit, 'fabrication' takes place as the aftermath (e.g. the measurement of SMART education competence and the following professional development trainings, the vilification and the deletion of traditional teaching). According to Stephen Ball (2003), to the extent the regime requires thorough surveillance, subjects or organisations can deflect the gaze by being even more deliberate and sophisticated in producing representational artefacts. The writer states that the more the regime of performativity desires to be transparent, the opaquer results it is likely to get. In that sense, the tension between transparency and opaqueness can be described as 'resistance'. However, he also shows that it is 'capitulation' to the extent that persons or organisations participate to produce what is required. Ultimately, the commentator argues that the act of fabrication oscillates between existence and nonexistence since fabrications are produced purposefully in order to be accountable for inspection or appraisal (i.e. surveillance). Here, the point has little to do with 'being truthful' but has more to do with 'being effective' (ibid.). Certainly, this is one of the points where the managerial approach is criticised: "authenticity is replaced entirely by plasticity" (Ball, 2003, p.225). Researchers contest that managerial approach undermines the importance of humanistic values or ethical concerns (see Clarke, 2012; Donnelly et al., 2020; Lynch, 2014; Mooney Simmie & Moles, 2020). Since it is concerned with observable performance or available resources (e.g. budgetary constraint), the other

important values such as trust, integrity and solidarity with others are subordinated to regulation, control and competition (Lynch, 2014, p.5).

One may criticise the inhumane aspects (e.g. rigorous regulation, control and competition) of managerial discourse in SMART education discourses. However, it should be reminded that SMART education discourses are not managerial discourse. Managerial discourse would be deployed only when SMART education discourses seek to efficiency, output or productivity in promoting and regulating SMART education. This means managerial discourse would not be activated in some other cases. Those who advocate SMART education may counter such criticism by referring to other texts that can be found in SMART education discourses. They would showcase humanistic values required to both teachers and students (remember some components of TCS). They are supposed to develop 'a loving and devoted attitude (i.e. passion)', 'the ability to build bond of sympathy with learners (i.e. building relationship with learners)' and 'the ability to build up relationships as a member of various communities (i.e. building collaborative relationship with community)'. Besides, the supporters of SMART education would disprove the accusation by saying SMART education would never be an oppressive force which push teachers to change themselves and eliminating other possibilities. Rather, the proponents would argue it is "100 percent" up to teachers (Suhyun) regarding whether they decide to take on the series of practices except that "they have no choice but to do so" (Suhyun). For these reasons, it is a tricky task to pinpoint a vulnerable point of SMART education discourses given their multi-faceted and elusive nature.

I do not argue that the identified discourses are the exhausting list of the discourses in SMART education discourses. Instead, I have provided a perspective in which one can see the contingency of the construction of SMART education discourses throughout this section. In particular, I have shed light on the embedded or related discourses in SMART education discourses along with their discursive strategies and effects. It has been identified that certain

discourses create synergy as they attract one another, strengthening SMART education discourses. In the same vein, some discourses are appropriated in order to facilitate the adoption of SMART education even though they bring about some contradictions especially when they are compared side by side. Meanwhile, other discourses are excluded without having a chance to be mentioned. Having explored a variety of discourses seen in SMART education discourses, I turn to the power relations producing the specific teacher subjectivity, 'updatable software'.

7.3 The dangerous discursive construction of teacher subjectivity

This section is devoted to the last research question of this research:

> *What is the significance of the findings for concepts and theory associated with*
> *teacher subjectivity, SMART education discourses, and power?*

Based on what I have discussed, this section pays attention to the power relations seen in the construction of SMART education discourses in relation to the identified teacher subjectivity. First, I present that teachers are characterised as 'updatable software' by imagining the perfect teacher based on the previous findings. Next, I argue that various modes of power are identifiable in the conceptualisation of the perfect teacher and they seem to be rigidly shaping the field of possibilities.

7.3.1 Telos: Updatable software

In this sub-section I devote to the last genealogical question before continuing the discussion:

> *What might a perfect version of teacher look like?*

The smart teacher in SMART education discourses is regarded as 'updatable software'. This represents the smart teacher who is positioned as more like 'software' that can be updated 'thoroughly', 'constantly', 'ubiquitously' and 'autonomously' instead of 'a human-being' which may not satisfy the four conditions. To be clear, 'telos' refers to the constructed teacher which SMART education discourses may be eager to produce. Also, it does not refer to individual teachers who have appeared in the previous chapters or teachers who are mentioned in this chapter. It is to describe the imaginary (Strickland, 2008, p.111). In the following paragraphs, I present a probable set of actions that is expected to the smart teacher in comparison to an improbable set of actions by drawing news articles, the interview texts as well as the findings from the previous chapters.

7.3.1.1 Thoroughly updatable software

To begin with, the smart teacher as an updatable software would change herself 'thoroughly'. The change includes her knowledge, skills and attitude as well as teaching practices and even her belief system.

> May 1st, 2015, in a class of an elementary school in Seoul, *paper textbooks* are nowhere to be seen on the teacher's table or on the pupils' desks. Instead, ther are *tablet PCs* (portable electronic devices with wireless Internet and PC functions) or *laptop PCs*. When the class begins, a teacher says, "press the science textbook app (an application programme)" instead of "open the textbook." As soon as the app runs on the tablet PC, the text of the textbook studied last time appears on the screen. Students zoom in on their electronic notebooks in which they entered the explanation of the teacher and check the key points again. They also open a video about frog dissection and solve the questions recommended by the teacher according to the student's level (emphasis added, The Chosunilbo, 2011).

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As the inserted text states, the new version of teacher would not use textbooks but would use "tablet PCs" or "laptop PCs" and relevant applications. Her knowledge and skills are all about those digital teaching practices. She would be capable of listing useful applications for various topics as well as remembering their functions. She would be skilfully managing her class wherein SMART education is applied. However, she would have no interests in creative uses of "paper textbooks" or in how to use chalks and the blackboard pedagogically and innovatively. Indeed, there is no place for textbooks, chalks, the blackboard in her classroom. These changes made by this software like teachers are likely to be based on a belief that "textbooks have very limited materials" (Chanwoo) or that traditional way of teaching is 'inferior' (see section 5.4). These beliefs are only a part of a new belief system of the smart teacher. The model teacher has 'installed' the new belief system and talks about her opinions confidently in which the system operates (see section 5.2).

> Teacher Kim pointed out 'collective intelligence (the result of intellectual ability gained through cooperation)' as the biggest effect of SMART education. "Smart classes allow real-time communication between teacher and students, between students and students so all students can take a certain role individually and take part in the class. As a result, even *a child who has never been able to present his or her opinion in ordinary classes can express his/her opinion* in smart classes as much as possible." Teacher Cho said, "For example, if you utilise the 'street view' function of a map application when there are some contents related to relics in social studies subject, it allows to experience somewhat similar to a real site visit. In science class, you can experience dangerous experiments indirectly through video clips. SMART education is the effective tool for giving motivation for both students and teachers." (emphasis added, The Chosunilbo, 2013)

As teacher Cho says in the text above, the model teacher would strongly believe and confidently assert that SMART education 'is' effective. The constructed teacher would do SMART education based on a belief that it performs a miracle: "a child who has never been able to present his or her opinion in ordinary classes express his/her opinion". He would not pay attention to the counter argument that "it just depends on how teachers present methods to students rather than on the effects of SMART education tools" (Hansol). Being absorbed in such unquestioned beliefs about SMART education, the thoroughly updatable teacher would use an application to simulate the real experience in his classroom. He would not visit the real site to see the relics and would not take risks to do the dangerous experiments. This smart teacher would eradicate these traditional approaches because they are too far to visit or too dangerous to implement such experiments.

7.3.1.2 Constantly updatable software

The smart teacher as an updatable software would keep updating himself in response to the continuous changes in the society. This means that the imagined teacher never gets behind by the social changes no matter what conditions the constructed teacher is in; this updatable software would keep up with the changes every minute and second as long as he is in charge of his role as a teacher.

> I think I'm trying to show my students new technology regularly. As other teachers would do, it is important not to be unaware of ***newly emerging technologies*** such as ***VR***. These days, there are a lot of new cultures such as ***AI speaker***. If I don't use them, I can't talk about them to the students, because I don't know. So I thought it was important that I try to use them...(emphasis added, Joseph)

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The smart teacher would react to new technologies. Just as Joseph does, the model teacher would update his teaching practices inventory for "newly emerging technologies". This imaginary teacher would do so to talk about, for instance, "AI (i.e. Artificial Intelligence) speaker" or "VR (i.e. Virtual Reality)" devices to the students so that they can be prepared for the survival in the future (see section 5.3).

> […] I think in a way that we are too dependent on videos or computer graphics. Let's say, I sometimes explain verbarlly when I teach social studies. It doesn't seem appealing to pupils. I mean, I've really tried storytelling and role-play without video materials and with the interactive whiteboard closed and it seems that lecture based teaching is not appealing. Yes, it seems so since students are too stimulated by visual materials. (Jaewon)

The smart teacher would also react to the changes of her pupils. As seen from what Jaewon does in the excerpt, the constructed teacher would always observe whether their teaching practices are effective teaching methods or not. It is partly because this imaginary teacher thinks themselves as a service software (see section 5.3.1.3). This imagined teacher takes for granted that pupils are customers whose needs must be satisfied while the learners are utilising the model teacher as up-to-date educational software. Accordingly, she would update herself by updating her practices when the learners do not seem to be interested due to the influences of the social changes (e.g. learners who only reacts to visual materials).

> […] To be honest, recently, in our school, well, in Jiyoung's classroom, I read a news article and heard about her lesson which connected to the vice CEO of Microsoft via screen… I think I was motivated by such things. (Hoon)

> […] I sometimes ask, "where does that?", when I see a teacher using a good thing

in let's say an open class and I collect materials by learning by ear and by ***putting in the leg work*** for instance asking "why don't you give me some ***good sources***?" when I come across experienced teachers. […] I select a few things that I or teachers can apply them always and generally in a class and I ***practice*** them until I get used to them by repeatedly applying them. (emphasis added, Chanwoo)

This observing software would update itself when it detects new pedagogical changes around it. In the excerpt, Hoon found out that Jiyoung connected her classroom to a big technology company in the USA which motivated him to take part in SMART education trainings (see section 5.3.1.1). It means that the model teacher as a software would activate itself in response to the potential threat that it might be left behind and culled out by the changing era. In addition, the smart teacher would be vigilant in order to capture any noticeable changes in relation to SMART education. She would "put in the leg work" asking for "good sources", especially to her fellow smart teachers. She would make sure to "practice" what is collected until it becomes the newly acquired TCS.

Since there are saying that such things like software (i.e. computing education) and digital textbooks would ***keep coming in the curriculum*** or in the society, I thought that 'I might be left behind if I do not learn this' and 'such abilities ***will eventually be needed***'' and so I used to ***take quite a lot of trainings***. (emphasis added, Jiwon)

The smart teacher would update itself when there are changes (or when it is believed to be there will be some in the near future) in the curriculum due to the social changes. Let alone the fear of becoming an outdated software, he would "take a lot of trainings" as a preparation for the changes "in the curriculum which keeps coming". This imagined teacher would not hesitate to develop any kind of ability as far as it is related to SMART education. It might be because it "will be eventually be needed".

Lastly, as a software, these sets of actions would have no expiration date. The smart teacher will 'keep updating its teaching methods until the last day of the earth' (Juwon). In addition, this imagined teacher would neither be overwhelmed by the relentless changes such as the new technology, new needs, new pedagogy, and new curriculum nor does she tired of updating herself whether she is in her 40's, 50's or 60's. She will always be remaining passionate and interested in developing her SMART education expertise.

7.3.1.3 Ubiquitously updatable software

This passionate model teacher would ubiquitously update oneself. It implies that she is always surrounded by a web of opportunities for professional development. The web of opportunities is so extensive that the model teacher would be able to put efforts to update herself anywhere, anytime and anyhow. In fact, this imagined teacher's life is all about update in relation to SMART education.

At her school in the afternoon, she would take a SMART education training course which is lectured by her 'talented' fellow teachers (Yuna). At times, she would spend time downloading various applications and trying them out while preparing for her lessons in her classroom (Yuna). When the model teacher gets home, she would explore the internet searching for new pedagogical changes spending a few hours at every night (Joseph). Sometimes, she would bring new digital devices from her school to home and test them out while installing a bunch of applications and playing with them (Joseph).

On weekends, the smart teacher would still be busy as a member of various communities run by private companies (e.g. Microsoft, Facebook), public institution (e.g. a regional education office, KERIS) or a group of certain individuals who are interested in SMART education. He would take 'tons of' trainings in such communities and share his expertise to colleagues after

the trainings (Soyoung, Jiyoung, Suhyun). This model teacher would learn more by consolidating what is gained while he makes training materials and teaches his colleagues (Mingoo).

Occasionally, the model teachers would take part in a nation-wide training course designed for the group of more advanced smart teachers as a representative of the region (Suhyun). She would spend several days in a university or in a government institution learning the uses of digital textbook while watching exemplary open classes. After taking the course, the model teacher would again share what he saw and learnt using both online and offline channels.

7.3.1.4 Autonomously updatable software

The smart teacher as an updatable software would autonomously update himself. Autonomous update means that this imagined teacher would develop himself without being forced to do so. The process of autonomous development includes self-checking his SMART education performance and deleting certain outdated practices.

The model teacher would follow the maxim, "if you know your enemies and know yourself, you will not be imperilled in a hundred battles ". To know oneself, she would assess her teacher competence for SMART education (i.e. TCS). To assess, she quantifies herself by using, for instance, 6-point Likert scale (see section 5.4.2.3). She answers 61 items measuring, for instance, flexibility, ethics, creative problem-solving, contents expertise, instructional design and development (see section 5.2.1 for the whole list). Later, she would see how her TCS looks like and find out which area is weaker by looking at the result which is visualised in a radar chart. She would also compare her achievements to the other teachers (e.g. other female teachers, teachers in the same age, teachers in the same city or in the other cities, teachers in the other school level) which can be identified in the radar chart as well.

She would make sure that she traces her own TCS points so that they do not go down and that she works on them to increase the points.

The constructed teacher would delete the outdated teaching practices as a part of the update process. The outdated teaching practices refer to so-called 'traditional education' which is limited, inefficient and inferior. She would stop using paper textbooks in her class. Instead, she would replace them with digital textbooks as paper textbooks have limited materials (Chanwoo). She would not use chalks and the blackboard in the classroom (Yoonha). Without video materials shown on the screen of the interactive whiteboard, she would not do the storytelling or role-play as they would not be efficient in gaining learners' attention (Jaewon). In science class, she would stop using a planisphere, a portable device showing a map of which stars are visible in the night sky at any given time (see the left in figure 6.1). She also would not let students memorise constellations while explaining what stars can be seen in the east sky. She thinks that it is foolish (Hansol). Instead, she would use 'Skywalk', a stargazing application which shows stars in the night sky (see the right in Figure 6.1). She would just turn on the application and let her students find out which stars are visible and how constellations look like while manipulating the application.

Figure 7.1 A planisphere (left) and a screenshot of Skywalk application (right)

Telos of the smart teacher seems to be somewhat different from 'a human-being'. It cannot afford a teacher who does not want to change his entire professional expertise, who can be slow as one grows old and be exhausted in catching up the latest technology, who wants to keep his private time on his own at least in the comfort of his own house. Rather, the imagined teacher would perfectly fit when most of us put it as an updatable software which is made of 'a few codes' not of 'bones, flesh and soul':

1) Update thoroughly: change your knowledge, skills, attitude and belief system

2) Update constantly: be alert to the changes you can observe

3) Update ubiquitously: change yourself no matter where, when, how

4) Update autonomously: check yourself, compare with others and delete what is outdated

7.3.2 Power relations and telos of the smart teacher

By taking teacher subjectivity as the effects of certain power relations, it was previously discussed that various discourses are drawn and appropriated in SMART education discourses. However, it is still unclear how the formation of SMART education discourses has been conceptualised as unavoidable. Thus, I draw on various modes of power (i.e. sovereign power, disciplinary power, pastoral power and bio-power) and the telos of the smart teacher together in order to understand the complete nature of the field of possibilities. To begin with, it has less to do with 'sovereign power' which oppresses its subjects by law or penalty as is seen in the findings; teachers are never forced to adopt SMART education in any form. Rather, it has more to do with the other modes of power (i.e. disciplinary power, pastoral power and bio-power, see section 3.3.3 for the details) and they play important roles in shaping the 'unavoidable' field of possibilities.

First, disciplinary power is evident in telos of the smart teacher that the constructed teacher would be 'autonomously' and 'constantly' updatable subject. The significance of an open class would explicate this point better. Kyutae Kim (2010) views classroom as the place where disciplinary power is prevalent. The author comments about the significance of an open class in the context of Korean education when he writes:

> Teachers **have to** open their instruction on a specified date to **instructional leaders** and **colleagues** from April through May. They are also required to conduct the "**satisfaction survey**" of their instructions to students and **parents** in June. In this sense, teachers are inspected by students and parents; therefore, they are revealed to **the gaze** of senior leaders, peers, students, and parents. (emphasis added, ibid., p.74)

As the excerpt states, teachers "have to" open their classrooms annually to "instructional leaders", "colleagues", "parents". Moreover, especially in Sejong city, the audience could include special guests such as officials, politicians, journalists, and teachers from abroad. The presence of disciplinary power in an open class is clearly indicated in the concept "gaze". Earlier in this thesis, I have stated that disciplinary power analyses, breaks down its object and normalises what is observed (see section 3.3.3). In that regard, teachers' performances are analysed by "the gaze" and recorded in "the satisfaction survey". Accordingly, since teachers are aware of the gaze, teachers 'autonomously' discipline themselves based on the norm 'continuously' by demonstrating SMART education or by taking part in SMART education trainings even without the presence of direct order from the audiences.

It might be argued that this annual open class is the evidence to prove the existence of sovereign power given that teachers "have to" open their instruction. Regarding this possible argument, I acknowledge that sovereign power might be involved in SMART education discourses to the extent that it provides a venue in which teachers must demonstrate their

performances. One should keep in mind, though, that teachers do not have any official obligation to do SMART education in an open class. Originally, it is the teachers' voluntary decision regarding 'what to teach' and 'how to teach' in an open class. In that regard, a testimony that '100 percent' of teachers take SMART education in an open class no matter how they think about SMART education, proves a point that disciplinary power in SMART education discourses effectively normalises teachers teaching practices very strongly at the 'unavoidable' level of intensity rendering the voluntary decisions of teachers 'comvolunsory'.

Before moving on to the next discussion, I now focus on the fact that teachers have the official obligation that they "have to" open their instruction at least once a year. It shows the flexible deployment of SMART education discourses does not aim to replace the previous architecture of education. In other words, power relations are not always restrictive and have more than the binary relationship (i.e. comply with or refuse; see Thompson, 2003, p.120). The flexible deployment constructs the teacher subjectivity based on the older one, or around by proliferating, innovating, annexing, creating and penetrating in an increasingly detailed way in order to regulate teachers in an ever more comprehensive way (Foucault, 1978, p.107).

In fact, this tendency was already identified earlier in this chapter. Teachers develop themselves to maintain their authoritative position by showing their proficiency in dealing with, for instance, new digital devices. Such motivation is surely on the opposite side of the objectives of SMART education that aims to innovate the traditional role of teacher as the authority. This traditional motivation of teachers who still seek to hold the authority identity is very likely to be engaged in an open class as well where teachers adopt SMART education as a tool to display their authority. In sum, SMART education discourses deploy flexible discursive strategies by using the pre-established teachers' obligation in institutions and the

traditional identity of teachers as the prop and the anchor to inscribe its power as the unavoidable and to shape the field of possibilities.

Second, pastoral power is identifiable in the telos of the smart teacher that the imagined teacher would be 'ubiquitously' updatable subject. To discuss this point, panacea discourse needs to be revisited from the perspective of pastoral power. Pastoral power is activated when it protects and cares for the individuals based on rational knowledge about its subjects (see section 3.3.3 for details). In SMART education discourses, it would be activated based on the knowledge about teachers (e.g. teacher competence for SMART education) to protect and care for the survival of individual teachers as well as the entire education and the future of the Korean society.

Given that panacea discourse promises to solve grave concerns in society and education through SMART education (see section 6.2.1), it would be the top priority of the state to increase the accessibility for the professional development of teachers to the maximum level. Since there is no harm in expanding the training opportunities and only the benefits coming from the increased SMART education training accessibility, they can easily be distributed to every possible point where trainings can take place (e.g. home, school, university; see section 6.3.1.1) so that teachers can be ubiquitously updatable. The extensive opportunities can be rephrased as the field of possibilities which is 'unavoidably' saturated with the ubiquitous chance for professional development in relation to SMART education. Thus, it can be said that pastoral power in SMART education discourses proliferates without the limitation of space and time.

Academic commentators who study the effects of pastoral power report a similar trend in conjunction with certain educational imperatives (see e.g. McCuaig, 2012; McCuaig, Öhman & Wright, 2013; Nielsen, Dalgaard & Madsen, 2011). For instance, Louise Anne McCuaig (2012) studies 'care discourses' in the Australian education context by analysing them

through Foucault's pastoral power lens. The author witnesses 'the ubiquity' of care that has come to saturate contemporary school mission statements, policies and initiatives (see ibid., p.3). Care, in this case as well, accompanies the similar discursive effect of panacea discourse in SMART education discourses when it is characterised as the provision of a safe and supportive school environment for quality learning. She points out that care has seamlessly extended to schools and teachers to complement, enhance or act as substitutes for the often-suspect practices of parental care and training of apprentice citizens (ibid., p.872). This resonates with the spread of the chances for professional development in SMART education discourses that has proliferated to everywhere just as the ubiquity of care discourses.

Third, bio-power is distinguishable in the telos of the smart teacher that the perfect teacher would be a 'thoroughly' updatable subject. To explore the significance of bio-power, I draw on East Asian Social Darwinism discourse, traditional teaching discourse and managerial discourse which I have discussed in the previous section. Bio-power has the major concerns in fostering life and disallowing life to be in peril. Further, it can create 'the techniques, technologies, experts and apparatuses for the care and administration of the life of each and all' (Rose, 2001, p. 1; cited from McCuaig, Öhman & Wright, 2013, p.791). It seeks to eliminate anything that can be a threat to the survival of the population. In SMART education discourses, bio-power would be activated when it detects potential threats that can impact negatively on the success of teachers, students, education and the country in competition resulting in the systematic deletion of the threats.

With regard to this point, I have discussed that East Asian Social Darwinism discourse in SMART education discourses promotes a view that incorporating modern technology into education is essential for the survival of the country in the battlefield-like world (see section 7.2.2.1). Consequently, bio-power utilises both managerial discourse and traditional teaching discourse. In order to effectively eliminate the problematic education and set up SMART

education, bio-power initiates the systematic deletion process by operating a management system. The process, first and foremost, takes teachers as the target population. The systematic deletion process for problematic teachers calls upon 'the perpetual circulation of knowledge, confession and pastoral guidance and correction' (Blake, 1999, p.80). Based on the constructed knowledge which defines the compatible teacher in relation to SMART education (i.e. TCS), teachers are encouraged to change themselves 'thoroughly'. TCS is the core and the whole of teachers: teachers' beliefs, knowledge, attitude as well as their practices. Teachers, as the subjects of the management system, are located in a cycle which has the specific purpose, 'a thorough change'. To be changed, they are supposed to self-authenticate by demonstrating their performances in an open class; quantifying themselves in an online website based on performance indicators; thinking about themselves as individuals with the measurement result; calculating their compatibility while comparing with other groups of teachers; improving their productivity while taking SMART education training courses that are ubiquitously available (see section 6.3.2.3). Within these collectives of 'the techniques, technologies, experts and apparatuses for the effective care and administration, traditional teachers cannot exist. The field of possibilities is fully saturated by juridico-discursive obligations, disciplinary techniques, pastoral advice under the influence of bio-power. At the same time, the values that can be found by traditional teachers or teaching are thoroughly erased.

The intensification of bio-power identified in the process of producing 'compatible teacher subjectivities' has been received scholarly interests (see e.g. Chiang & Trezise, 2020; Phillips & Nava, 2011; Wallace, 2019). In line with what I have discussed so far, the researchers who study bio-power in education commonly point out the system of the managerial (or neoliberal) regime and the conceptualisation of certain (often ineffective) teachers as the threat to a population (e.g. students). For instance, Maria Wallace (2019) observes a

neoliberal reform movement in which teacher effectiveness is evaluated by teacher observation scores and student achievement scores on standardized tests. Just as teachers are supposed to authenticate themselves within the collectives of institutional regulations in SMART education discourses, science teachers in Louisiana are also situated in a set of institutional regulations through observations and teachers' output (i.e. students' test score). The author relates that to a Foucauldian insight that teachers are confined in a constant circulation of 'docility' rendering the bodies not only 'analysable (i.e. the disciplinary domain)' but also 'manipulatable (i.e. the biopolitical domain)' which can be subjected, used, transformed and improved (Foucault, 1970). The insight of the writer resonates with the subjectivity of teachers and 'the increasingly rigid forms of power relations (Thompson, 2003, p. 113)' in SMART education discourses.

I have shown that the various modes of power identified in telos provides a fruitful perspective in which one can take a sneak peek at the power relations in SMART education discourses; the modes of power not only shows that power is widely spread but also that power relations produce the collectives of institutional regulations reshaping the field of possibilities to the point that they create a version of reality. In the reality, teacher subjects are managed both as the individuals and a population which are supposed to be monitored and normalised autonomously, constantly, ubiquitously and thoroughly.

7.4 Conclusion

In this chapter, I have stepped into seemingly organised but coarsely articulated discourses by analysing them based on a few of the analytical criteria (i.e. what/how is included/excluded). Also, I have examined the power relations revolving around telos, the ultimate form of

teacher subjects in order to make sense of how SMART education discourses shape the field of possibilities. It was shown that various disparate elements are inter-related within technologies of disciplinary, pastoral and bio-power attached in architectural forms, functional measurements and procedures, relations of hierarchy, strategies of motivation and mechanisms of reformation or teacher trainings (Ball, 2003). Even though I was not able to fully disentangle every aspect of SMART education discourses and every detail of power relations in them, the answers to the research questions allow me to argue that the subjectivity reported is unique, sometimes contradictory but at the same time unavoidably constructed. It urges us that they and us altogether need to work to fashion ourselves in order to be freer.

8. Conclusion

8.1 Introduction

This chapter begins by signposting the aim of this research in the light of a gap found in the literature. I demonstrate the antecedent approach in addressing the aim. Next, I summarise the findings of this research and discuss the significance to teachers, education, and the society. Based on the findings, I move to the discussion where I show the contribution to new knowledge and provide suggestions for teachers, teacher educators and policy writers. Lastly, I conclude this thesis with reflexive thoughts about the limitations of this research and some useful ideas for future research.

8.2 Research objective

The broader aim of this study was to problematise taken for granted notions of good education in this era that emphasise the essential role of technology in education. In the same vein, I sought to demystify the urgent and important missions for contemporary teachers that they should know how to utilise various digital technologies in the name of effective and timely education. By challenging the unquestioned notions and missions from a critical perspective, I intended to devise a space where one can freely rethink their version of good education and good teachers at this historical juncture.

The systemic review of the academic literature exposed a few limitations when it comes to critical understanding of teacher subjectivity in relation to technology use. Limitations revolve around imbalanced academic practices which puts more weight on 'practicality' over 'criticality'. Most academic works suggest that teachers' unsatisfactory professional competences be medicalised, report that teachers showed better performances and positive perceptions after taking ICT-related trainings, and state that teachers' personal identities

turned into a more professional one favouring technology use. Accordingly, a lack of critical considerations concerning power relations stands out on the matter of teachers' subjectivity and technology use.

Acknowledging the importance of the scholarly efforts to innovate the education system and to educate those teachers who cannot or do not follow the trend, I proposed an alternative approach. The approach helps us to understand the current status of a certain teacher subjectivity. I situated this study in the Korean education context focusing on SMART education, an education technology initiative. The theoretical framework of the new approach is comprised of Foucault's theory of discourse, power and subject in order to conduct an examination of what power 'produces' rather than of what power 'restrains'. The theoretical tools enabled this research to archive SMART education discourses and to devise Foucauldian Critical Discourse Analysis in which I deconstruct a version of the smart teacher represented in the dominant discourses. Based on the Foucault's four-part framework illuminating the 'substance', 'mode of subjectification', 'regimen' and 'telos' of teacher subjects, I presented a number of key findings and furthered the discussion as to the significance of the findings.

8.3 Research findings

Regarding the 'substance' of teacher subjectivity in SMART education discourses, teacher subjects are inscribed to work on their 'compatibility'. Such works need to be done by changing their knowledge, skills, attitude and practices that are necessary in using technology as their core and the whole. Moreover, a set of assumptions is installed as the required new belief system, which promotes the flawless compatibility in relation to the changing environment while excluding critical thinking or proactive behaviours that might influence the surroundings. A few discursive strategies were identified which promote technology-

related 'solutions' in response to 'problems' that are raised by the 'shifted' paradigm of which the word 'shifted' increases the degree of the urgency in relation to the changes. As to the 'mode of subjectification', teachers are told to fit into SMART education for their own and pupils' 'survival'. The detailed look of survival as a teacher in the ever-changing environment unravelled multiple layers of its meanings. It means keeping up pace with the ever-changing surroundings (e.g. colleagues, pupils) to not to be culled as in 'the survival of the fittest'. It also means the authority of teachers needs to be sustained in front of their pupils by being proficient in using new digital technologies. Lastly, it has to do with teachers' efforts in order to assure the quality of education service to a decent level as service providers for the satisfaction of customers (i.e. pupils). While these layers seem to be resolved without frictions in SMART education discourses, the embedded discourses contradict the basic notion of SMART education given teachers are defined as facilitators and students as the main knowledge producers who should be in charge of learning processes.

Concerning the 'regimen', teachers choose to prove themselves as compatible with SMART education, which I called 'self-authentication'. To illustrate the unique characteristics of teachers' behaviours in relation to professional development, I coined a term: 'comvolunsory' trainings. It indicates that teachers' participation in ICT-related pedagogical trainings are quite complicated. It is hard to simply say that their involvements in professional trainings are imposed as obligations or that their choices represent personal preferences. Especially since the field where teachers are situated is so saturated with ICT-related pedagogical trainings, they could take the trainings ubiquitously and continuously. The excuse that there is a lack of support in terms of training opportunities is rendered almost impossible. In performance wise, teachers choose SMART education in an open class as an opportunity to convince their audiences (e.g. parents, school managers) that their children are being properly

educated in the 21st century. Lastly, teachers are encouraged to check themselves based on a

performance evaluation matrix and to take pertinent actions to make up what is lacking.

With regard to the telos of the smart teacher, 'updatable software' is conceptualised as the

ideal form of teacher subjects as the imaginary. The smart teacher as an updatable software is

made of four codes. First, the smart teacher updates 'thoroughly'. The smart teacher would

change their knowledge, skills, attitude and even belief system in order to fit in SMART

education. Second, the smart teacher updates himself/herself 'constantly'. This is not a one-

off effort. Rather, it should be a constant cycle of self-update requiring teachers to be alert to

the changes all the time. Third, the smart teacher updates ubiquitously. Without the

boundaries of space and time, the smart teacher would change herself no matter where, when

and how. Lastly, the smart teacher updates herself 'autonomously'. She would check herself,

compare with other teachers and delete what is outdated without being forced to do so.

By taking the four-axis framework in tandem, it was shown that SMART education

discourses is the complex of seemingly organised but coarse articulation of disparate

discourses. The disparate discourses reinforce the specific teacher subjectivity as 'updatable

software' with various technologies of power such as disciplinary, pastoral, and bio-power

despite the drawn discourses sometimes contradicting each other. This 'contingent'

construction of SMART education discourses creates the 'rigid' web of possibilities where

teachers are rendered as 'analysable' and 'manipulable' subjects. Thus, the danger of the

current subjectivity is reported; the smart teacher does not seem to be smart to the extent that

the imagined teacher lacks time and a space where one can freely engage with external

environments, constitute themselves and imagine other versions of the future education.

To address the significance of the research findings, the contemporary mode of existence for

teachers (i.e. updatable software) needs to be highlighted in terms of its dangers and

limitations. SMART education discourses might exclude equally legitimate possibilities

while creating the unavoidable field of possibilities. Further, given that SMART education discourses consist of multiple discourses, it is likely that SMART education discourses carry potential dangers or limitations originating from the individual discourses as well as those of SMART education discourses itself. Here, I do not intend to thwart the intransigent power relations identified in the deployments of the institutional regulations or in the construction of SMART education discourses. Instead, I would like to point out the potential dangers to open up a new discussion about a new mode of existence for teachers.

I have presented that substance of teacher subjectivity is centred around the 'compatibility' of teachers. By drawing on a characteristic of 'smartness' represented in smart discourse, it was discussed that 'compatibility' conceptualises 'the smart teacher' as a teacher who is able to 'react' to technology innovation and changes in education and the society. Here, I focus on the reactive nature of smartness which is referred to as 'adaptive smart' (Crook, 2016). It seems that 'adaptive smart' —or arguably 'receptive smart' —lacks a further capacity for causing changes in the very environment that generates external events (ibid., p.6). Lacking such capacity could bring about a few after-effects which may arise from the one-sided relationship with its surroundings.

First, by intention or in effect, it can push away teachers from the equation of innovative education (Tessema, 2007). It could mean that innovative education would not begin from classroom. Those teachers might lack the capacity to make changes on their own without external stimulations. It is not likely that the receptive smart teachers would dare to take a risk in order to experiment with their new ideas which might go against what is accepted as the norm in terms of good education. In the same vein, it is likely that teachers who bravely challenge such norms would be criticised. In return, SMART education might lose a chance to be advanced by teachers. Even if SMART education does not go well due to personal or contextual reasons in classrooms, feedback from teachers would be scarcely heard.

Consequently, SMART education might be believed to exist only on special occasions such as an open class mainly to avoid the accountability and demonstrate teachers' compatibility. In the meantime, the value of traditional teaching would be incarcerated; teachers should not go near, touch, consume, experience, speak, show themselves, exist but in darkness and secrecy as far as traditional teaching is concerned (Foucault, 1978). It should be remembered that schools used to exercise their institutional power to limit or ban the use of every technology that SMART education promotes in a classroom not too long ago (Goodson et al., 2002; cited in Nowell, 2014). Also, it should be noted that it took a courage, patience and efforts for some brave teachers to explore the possibility of such practices when they had not yet been accepted.

Second, accordingly, it can be assumed that the reactive smart teachers would receive and store what is being thrown into their professional domain which often permeates their personal domain (recall the ubiquity of SMART education discourses). Indeed, teachers' bodies have been understood as a stage of various forces producing complexity and contestation as well as allegiance (Ball, 2013; McCuaig, 2012). Thus, it might seem to be natural that teachers are dealing with contesting identities. However, without facing or resolving the competing identities issue, the reactive smart teachers might not orient themselves in such ethical dilemmas (Wallace, 2019) regarding, for instance, when equally important values contradict each other in a classroom (e.g. when students with poor academic performance are less successful after the implementation of SMART education; when teachers are asked to produce knowledge together with students as a co-knowledge producer while being asked to follow the orders of students as the customers).

Third, the smart teachers would never be able to stay at a level of mastery. This means that even the experienced teachers can be deficient when it comes to SMART education and most of teachers would lack some desired quality to be called as the smart teachers (see e.g. section

6.4.1.1). SMART education itself constantly evolves with new technologies or new pedagogies keep coming out and demanding teachers to update themselves accordingly. This can cause a formidable aftermath other than that teachers are supposed to restlessly update themselves; as a target population, they are located in a complete management system. Once a few (if not all) teachers are recognised as outdated against the new demands from the external world for any reason, they would become the subjects who are incompetent and thus threatening the quality of education. In the logic of SMART education discourses, they must be managed accordingly in order to eliminate the risks.

This combination of individualisation (e.g. gaze to individual teachers' performance and competence) and totalisation (e.g. complete management system for teacher as a population) give birth to this subtle but severe micro-fascism of contemporary life of teachers (Thompson, 2003). In fact, what can be seen is the long-standing Western image of power seen in the Korean context as a means of grappling with the tension between individualising care and totalising control in modern forms of biopolitics which Foucault dwelled on (Pandian, 2008, p.86). This is dangerous as humans are perceived as cyborgs, as prosthetics, replaceable, manageable, produceable (Land, 2006). Once they are conceptualised as such resources, there would be scant chance for teachers to fashion themselves on their own while freely engaging with external environments and constitute themselves and imagining other versions of smart education. Here, the focus is not on making a return to a 'pure' human form nor on a condemnation of the new mode of existence for teachers constructed in SMART education discourses. Instead, the focus should be on 'escapes' from such constructions of teacher subjectivities and the unavoidable field of possibilities to be freer when it comes to designing our innovative and futuristic education.

8.4 Contribution to new knowledge and its implications to stakeholders in education

My intention in this thesis is to offer a critical view about a specific teacher subjectivity that is conceptualised in SMART education discourses. The offered view was carefully designed with an important factor, 'power', which has been neglected in the literature; the literature is tilted to the construction of practical knowledge that is useful in diagnosing and prescribing teachers' lacking digital competences, perceptions, practices or problematic status quo identities. With the findings as shown in section 8.3, this research closes the gap with an insight that the direction of teacher education toward the future is dangerous. Thus, the findings contribute to new knowledge as this study destabilises the dominant knowledge practices and opens up a space where one can think of new alternatives.

This study proves the value of historical analysis within a web of power relations on the matter of technology use in teacher education. This is a contribution to new knowledge which addresses a paucity in subjectivity studies of teachers. Not being absorbed to the discussions about neoliberal society and education, this research detected various modes of power in SMART education discourses creating the historically contingent teacher subjects who are supposed to constantly work on their technology-related compatibility ubiquitously and autonomously in order to survive. Thus, this thesis initiates a new kind of scholarly discussion regarding the newest version of teacher subjectivity in relation to technology use. Implications of this research are three folds.

First, for teachers, this research can inspire teachers to 'forge' their own self-identity by freely engaging with the external environments as well as their own perceptions, practices and beliefs. In other words, it encourages a form of resistance that can liberate teachers themselves from the reality where they think there is no choice but to engage with SMART education for inescapable reasons (e.g. not to be culled by pupils and colleagues, to

demonstrate their digital competences). The analysis of SMART education discourses proves the contingency of the rules, norms and knowledge that can be reformed in different ways. By being able to engage with the dominant discourses in a flexible way, this study might help teachers to avoid of having obsessive passion that can cause 'burnout' (Fernet et al., 2014). In addition, this thesis hints that teachers need to pay attention to 'the broader context' of the current education policy discourses. In a time of 'uncertainty' where we see the abrupt social changes caused by the rapid technological developments such as Artificial Intelligence or Virtual Reality, teachers are more and more governed by a data-driven system of performance putting teachers atomistic, a linear heuristic of preset codes, competency-based and standard frameworks in seeking for 'certainty' as can be seen in policy texts produced by the Organization for Economic Cooperation and Development (Mooney Simmie, 2021). In relation to this, I strongly suggest that teachers be as imagniative as possible to the extent that they can be 'risk takers' (see e.g. Mooney Simmie & Moles, 2020) instead of being 'evidence hunters'(see e.g. Ward & Quennerstedt, 2019) or 'fillers' (see e.g. Alderton & Pratt, 2021).

Second, for teacher educators, this study informs that the way ICT training courses are designed needs to be revisited. As the review of the academic literature and the analysis of 'substance' suggest, teachers are often regarded as problematic who lack certain characteristics (e.g. digital competences) that are to be improved by relevant trainings. Instead of taking teachers as updatable software which are rather more receptive not proactive, teacher educators might begin to reflect on their teaching routines.

Third, for policy writers, careful considerations regarding their own discursive practices are required. As found in the policy documents, promoting SMART education through the vilification of traditional education might (at least partly) influenced the deletion of harmonious coexistence of the two. Making a policy must be a difficult task and it might be argued that it is impossible to convince people without having discursive enemy like

traditional education. However, they need to notice that the representations they envisage in policy papers are not unrelated to changes in the society that might limit more innovative changes.

8.5 Limitations and Future research

I reflect on a few potential limitations of this study. First, my analysis shall not be effective when it comes to 'unconscious motives' and 'irrational drives' of human beings which play important roles in forming up a certain subjectivity (Clarke, 2013). By taking a theoretical concept, subject, from a Foucauldian perspective, this study focused more on 'reason' or 'consciousness' which are rather more predictable than the unconscious motives and the irrational drives. Likewise, certain important but uncovered aspects of human beings might have given this study more fruitful insights in understanding the findings such as the contradictory layers in the meanings of survival.

Second, the sources of texts that I collected in archiving SMART education discourses could have been more extensive. For example, I could have interviewed pupils or parents in order to document their perceptions regarding SMART education, which can differ from those of teachers and other stakeholders (e.g. teacher educators, school managers). Similarly, I could have included news articles published by different media companies that hold different views compared to the chosen media company. Wider variety of texts would enhance the speciality of the contingent construction of SMART education discourses. However, it is understandable given this study is conducted by a single researcher running data collection and analysis with limited time, budgets and human resources. Moreover, the archived texts served the aim of this research and functioned as the empirical proofs which are essential in claiming that there be different versions of the future education and other forms of the smart teacher who might look different from updatable software.

Third, the analysis process could have been supplemented by employing different methods. Since I went through the analysis manually, I might have missed some meaningful patterns in the texts and the context where the patterns are detected. As discussed in Chapter 4, discourse studies have many branches. Even though I had critical friends who reviewed my analysis and presented several times in international conferences, those measures were not helpful in widening the other possible readings of the raw data. In that regard, a corpus-based Critical Discourse Analysis might have been useful with a quantitative analysis tool (e.g. AntConc) which can automatically show grammatical and semantical tendencies in the texts in a more reliable manner.

Finally, since my research is situated in Korean society, it might be difficult to generalise the findings. I collected documents in a news media platform, a research institution, schools and an Education office in a city. Considering educational, political, economic and cultural diversity existing in a country, the archived texts and what is represented are likely to be different from those of my research even if someone in a different country collects the same types of documents. Hence, constructed subjectivities might look different depending on the contexts. On this point, I would like to emphasise that this research does not seek to generalise my findings. However, I cannot deny that I hope a critical discourse study about teacher subjectivities regarding technology use make people feel uncomfortable leading them to imagine different alternatives.

Several promising research projects might be developed from this study. Firstly, I encourage fellow researchers to take the analytical framework formulated in this thesis and to conduct subjectivity studies with a focus on education technology reformation initiatives in different parts of the world. Having been almost a decade since SMART education was first announced, the more developed technologies (e.g. artificial intelligence or Internet of Things) are actively discussed to introduce such technologies in education (see e.g. Roll & Wylie,

2016; Timms, 2016). If SMART education could be said as the successful precursor of pending education technology innovation movements, there is a need to be vigilant in identifying their potential dangers in order not to be absorbed by what dominating discourses. Second, I would be interested in a study which interprets my findings from a different angle. I acknowledged that subject does not take irrational or unconscious parts of human beings into consideration that may enrich our understanding about the formed subjectivity. Matthew Clarke (2013) takes 'psyche' which enables us to appreciate the omitted aspects in Foucauldian subject (i.e. the unpredictable underside of subjectifying power). Just as the author provides more fruitful interpretations about a teacher subjectivity presented by Stephen Ball (2003), I expect extended scholarly discussions about my research while agreeing Ball's comment that "in the analysis of complex social issues, two theories are probably better than one" (Ball, 1993, p.10, cited in Clarke, 2013, p.233).

Lastly, I would like to propose more extensive research regarding teacher subjectivities that used to exist in different times. This is inspired by what Foucault did in "The history of sexuality". By publishing three volumes, he examined the Victorian period, classical Greece, and the early years of the Christian era to show us that most of what many of us take for granted as sexuality would be historically unique (Fendler, 2010, p.92). Likewise, further research about different subjectivities shall be useful not only to strengthen the finding of this thesis that the teacher subjectivity is contingent but also to be inspired by the previous subjectivities in imagining the future subjectivities of teachers.

The End

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10. Appendices

Appendix 1: Interview PIS and Consent Form

<p align="center">Participant Information Sheet</p>

Dear Participant,

I am Sejin Lee, a PhD student in the Dept. of Educational Research at Lancaster University. I would like to invite you to take part in a research project about discursive effects of SMART education discourse on perceptions and practices of teachers in relation to SMART education.

Please take time to read the following information carefully before you decide whether or not you wish to take part.

What is the study about?

This research aims to understand the formation of such a gap between the technology-focused educational claims and the actual reality of teachers' educational practices. The study is situated in a specific educational context of promoting an idea of "SMART education" in South Korea. The main research question is "How are 'good teachers' conceptualised and constructed in 'SMART education' discourse and how do those conceptualizations shape teachers' perceptions and practices?" It will closely investigate a set of claims about technology, teaching, and teachers in the SMART education discourse and their construction, circulation, and influences on teachers' practices by collecting and analysing language use in various texts. The results will contribute to broadening our understanding of SMART education discourse, teachers' self-perception, practices. It is also expected to provide the other perspectives in making choices regarding technology-related teacher professional development.

Why have I been invited?

I have approached you because you have been engaged with SMART education as a stakeholder. Therefore, you are in a good position to be part of this study which aims to understand how a good teacher is conceptualised in relation to SMART education discourse. I would be very grateful if you would agree to take part in this study.

What will I be asked to do if I take part?
If you decided to take part, this would involve the following:

- i)   Participating in an interview, which will take about 30 minutes. You will be given open-ended questions, which will guide the interview moderated by the researcher. The interview will be audio-recorded and transcribed and anonymised.

- ii)   Your data will be interpreted by the researcher and could be asked to confirm the researcher's interpretation. Depending on circumstances, the follow-up interview can take place to clarify, to elaborate, or to understand what you meant during the interview.

Do I have to take part?

No. It's completely up to you to decide whether or not you take part. Your participation is voluntary. **If you decide not to take part in this study, it will not, and it cannot affect anything related to your work considering my position as a researcher.**

What if I change my mind?

If you change your mind, you are free to withdraw at any time during your participation in the study and within two weeks after you took part in the study, without giving any reason. If you want to withdraw, please let me know, and I will extract any ideas or information (data) you contributed to the study and destroy them. However, it is difficult and often impossible to take out data from one specific participant when this has already been anonymised or pooled together with other people's data.

What are the possible disadvantages and risks of taking part?

It is unlikely that there will be any major disadvantages for you by taking part in this study. I consider the psychological and social risks of participating in this research project to be minimal given that you are an adult working in a different institution. The interview questions do not include any sensitive topics such as the report of experience of violence or private part of life including sexual or private ethical decision making which can cause legal accusations or double victimization. The questions only ask your experience and relevant perceptions and practices regarding technology integration. Even though some might claim that it can still cause psychological distressing as the perceptions and practices can reveal personal information, I will avoid having this type of problems by explaining the right as a participant which you can withdraw during the interview or you can delete your data within two weeks after this interview.

This research tries to investigate the formation of the certain statements about rules, responsibilities, and knowledge (i.e. discourse) with regard to SMART education in South Korea. By exploring the perceptions and practices of teachers, this study wants to see the influences of the formation of the discourse. Therefore, it is not going to provide any perspective or latest information technology related pedagogies which all reduce the possible psychological stress. As the interview only asks about your experiences without judging those, it is hard to be stated that this research will produce any problematic influences on you.

Will my data be identifiable?

Your interview data will be processed as a fully anonymised format, which means your identity would not be directly revealed through the interview participation – and any biographical data asked in the beginning of the interview (e.g., gender, age, etc.) will be given an additionally careful and sensitive attention in order not to lose the anonymity of the participants through any publications.

The recruitment process is based on the nomination made by one participant hence it would be hard for a participant to identify a certain individual considering the size of the city and the number of whole teachers. If it is necessary to report the data from different groups of the teachers for comparative purposes, then I will make sure the teacher participants will include at least 3 to 5 teachers; this will prevent identification of individual teachers. Each interviewee will be given a participant code, which will be associated with the interview texts. If you are a programme manager, to protect your anonymity, the name of the city will be changed by giving it a different name in the publications.

How will my data be stored?

All collected data will be first anonymised and stored, in an encrypted form, on password-protected and encrypted laptops and on the University network. The audio recordings will be removed from the device on the day of recording and stored, in an encrypted form, on password-protected and encrypted in a tablet PC and on the University network. The tablet PC will be secured and located in the locked filing cabinet and will be under the surveillance of the researcher. In accordance with University guidelines, the researcher will keep the data securely stored for a minimum of ten years.

How will we use the information you have shared with us and what will happen to the results of the research study?

We will use the data you have shared only in the following ways:

The results of the research will be published as a doctoral thesis and will be submitted for publication in academic journals and be presented at academic conferences.

When writing up the findings from this study, we would like to reproduce some of the views and ideas you shared with me. When doing so, I will only use anonymised quotes (e.g., from the focus groups and the Moodle site), so that, although I will use your exact words, you cannot be identified in our publications.

What if I have a question or concern?
If you have any queries or if you are unhappy with anything that happens concerning your participation in the study, please contact: Sejin Lee (s.lee25@lancaster.ac.uk; +44 (0)7806724907)

If you have any concerns or complaints that you wish to discuss with a person who is not directly involved in the research, you can also contact: Carolyn Jackson (c.jackson2@lancaster.ac.uk; +44 (0)1524 592883; County South, Lancaster University, Lancaster, LA1 4YL, UK)

This study has been reviewed and approved by the Faculty of Arts and Social Sciences and Lancaster Management School's Research Ethics Committee.

Thank you for considering your participation in this project.

CONSENT FORM

Project Title: Reconceptualising a good teacher in SMART education
Name of Researchers: Sejin Lee
Email: s.lee25@lancaster.ac.ku

Please tick each box

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily	☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time during my participation in this study and within two weeks after I took part in the study, without giving any reason. If I withdraw within [two weeks] of taking part in the study my data will be removed.	☐
3. If I am participating in the interview I understand that any information disclosed within the focus group remains confidential to the group, and I will not discuss the focus group with or in front of anyone who was not involved unless I have the relevant person's express permission	☐
4. I understand that any information given by me may be used in future reports, academic articles, publications or presentations by the researcher/s, but my personal information will not be included and I will not be identifiable.	☐
5. I understand that my name/my organisation's name will not appear in any reports, articles or presentation without my consent.	☐
6. I understand that any interviews or focus groups will be audio-recorded and transcribed and that data will be protected on encrypted devices and kept secure.	☐
7. I understand that data will be kept according to University guidelines for a minimum of 10 years after the end of the study.	☐
8. I agree to take part in the above study.	☐

_____   _____   _____
Name of Participant   Date   Signature

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent_____ Date _____ Day/month/year

One copy of this form will be given to the participant and the original kept in the files of the researcher at Lancaster University

Appendix 2: Interview questionnaires

Interview Guide

These are two paragraphs in the box. One is an excerpt from a policy paper from a government policy paper and a news article. Please read the texts.

SMART education is the 21st century education paradigm which excavates and develops students' talents by innovating the education system such as educational contents, methods, assessment, environments utilizing Information Communication Technology and network resources efficiently in school education based on ICT to make all students global leaders. - 2011 The ministry of Education, Science and Technology department

Mr. Kim pointed out the 'collective intelligence' as the biggest effect of SMART education. "since it is possible to communicate between teacher and student, student and student in real time within the smart class, all students can take part in the lesson by taking certain individual roles. Thanks to this, a child who cannot even present his idea in the ordinary class can speak out one's opinion as many as the child wants." Mr. Cho mentioned that "after SMART education was introduced, the school site became more diverse." "For example, the map application 'Distance View' feature allows students to experience something similar to what students would find on-site when we have historical contents in social class. In science classes, we can experience some dangerous experiments indirectly by watching videos. Smart education is an effective motivator for both students and teachers." Chosunilbo 2013. Nov

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1) How do you remember SMART education back in time such as in 2012, 2013, 2014?

2) How do you think about the definition of SMART education made by the ministry?
3) How do you think about the claims made in the article by the teachers? Do you agree or disagree and why do you think so?

[For teachers]

Please tell me about your experience in relation to SMART education.
1) Have you tried to implement SMART education?
2) What were the results? How do you think about them?
3) If you have any difficulties what were they?
4) How many times have you attempted to develop your ability in technology use on your own? And what were they?
5) Why did you make that decisions?
6) What were your expectations about the courses?
7) Do you plan to take part in teacher training courses in the future?
8) Why is that?
9) What types of teacher training course do you prefer?
10) (For example: a course that provides you with materials that you can use it directly or a course mainly aiming at developing your understanding about SMART education which based on theory)
11) Why? Is it related to time poverty, multiple tasks or more important or urgent issues?
12) What do you think is the motivation of your practices or your decisions?
13) Why do you think you have the motivation?

[For teacher educators]

Please Tell me how you think to these questions.

1) Would you tell me how you became a teacher educator?
2) What are the experiences as a teacher educator that you want to share (e.g. valuable moments, difficulties)?
3) What have you been doing to develop your technology utilisation abilities and why?
4) What are the things that you hope for teachers when they take training courses?

[For school managers]

Please Tell me how you think to these questions.

1) How do you enact SMART education in this school?
2) How do you support teachers in terms of SMART education?
3) What are your observations in relation to SMART education?

[For a regional supervisor]

Please tell me about your experience in relation to SMART education.
4) What is the general trend of SMART education these days?
5) What do you think is the main point of the policy coming from the government?
6) How do you support teachers in terms of SMART education?
7) What are the main considerations when you design and enact TPD course in relation to technology use?
8) What do you think teachers need more with regard to the design of future trainings courses?
9) What do you think the differences between the teacher trainers and teachers? (their knowledge, passion, willingness)
10) What do you see among principals of the schools towards SMART education in terms of attitudes?

[Common questions]
Please Tell me how you think to these questions.

1) Considering your experience, what is SMART education to you?
2) Why do teachers need to use technology in teaching and learning? (external reasons/ internal reasons)
3) In which way do you think that teachers have to be prepared for the education in the twenty-first century?
4) How would you be prepared to be a 'good teacher' for the future?

Appendix 3: Interview participants

No	Pseudo Name	Working Place	Role	Length of Teaching	Gender	Note
1	Hannah	School A	Teacher	4 years	Female	She used to teach in the other part of the city which was not involved in the SMART education initiative.
2	Dongmin	School A	Teacher	4 years	Male	Began his teaching career in Sejong
3	Soyoung	School A	Teacher	5 years	Female	Began her teaching career in Sejong
4	Hoon	School A	Teacher	2 years	Male	He used to teach in another city.
5	Jiyoung	School A	Teacher Educator	20 years	Female	She has been a teacher educator in the city since 2014. She is one of the founding members of a teacher educator society which is managed by the regional supervisor.
6	Mingoo	School A	Teacher Educator	5 years	Male	Both used to work in other cities. They have been working as a teacher educator for one year. They were encouraged to apply for the teacher educator position by Jiyoung.
7	Jaewon	School A	Teacher Educator	5 years	Male	
8	Yoonha	School A	School Manager	27 years	Female	She used to be a teacher and a regional supervisor of Sejong city and has been managing her school for about 5 months.

9	Hana	School B	Teacher	4 years	Female	Began her teaching career in Sejong
10	Yuna	School B	Teacher	4 years	Female	Began her teaching career in Sejong
11	Paul	School B	Teacher	6 years	Male	Began his teaching career in Sejong
12	Sangah	School B	Teacher	2 years	Female	Began her teaching career in Sejong
13	Hansol	School B	Teacher	13 years	Female	She used to work in other cities and started to teach in Sejong since the beginning of the city, 2012.
14	Jiwon	School B	Teacher	3 years	Male	Began his teaching career in Sejong
15	Chanwoo	School B	Teacher Educator	10 years	Male	He used to teach in another city. He has been a teacher educator since 2014. He is also the core member of the teacher educator society.
16	Joseph	School C	Teacher Educator	4 years	Male	He started his teaching career in Sejong city and has been a teacher educator about a year
17	Juwon	School D	School Manager	35 years	Male	He used to be a teacher. He also worked as a regional head supervisor of Sejong city playing an important role in setting up SMART education. He has been managing his school at least more than three years.
18	Suhyun	Sejong City	Regional Supervisor	** years	*	She used to be a teacher. She has been working as a regional supervisor for

		Education office		236		several years. She has been supervising SMART education for some years.

Appendix 4: Ethics approval

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29th March 2021

Dear Sejin Lee,

Thank you for submitting your ethics application and additional information for Reconceptualising a good teacher in SMART education. The information you provided has been reviewed by Dr Kyungmee Lee and I can confirm that approval has been granted for this project.

As principal investigator your responsibilities include:

- ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- reporting any ethics-related issues that occur during the course of the research or arising from the research (e.g. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress) to the Research Ethics Officer (Dr Murat Oztok or Dr Natasa Lackovic).
- submitting details of proposed substantive amendments to the protocol to Dr Kyungmee Lee (spvr) for approval.

Please do not hesitate to contact your supervisor if you require further information about this.

Kind regards,