

**A potential affordance or an obligation? : teachers'
perspectives on mobile learning in second language
acquisition**
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ABSTRACT

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The rising role of mobile technologies draws people's attention to its use in the educational field. This qualitative case study is an exploration of how mobile learning affects language learning from teachers' perspective by addressing how teachers conceive mobile learning and position its role in practice. The data includes interviews with three experienced language teachers focusing on their conception and their practices in Finland. Thematic analysis was used to analyse the teachers' conception of both second language teaching and learning and mobile learning and what they have experienced and practiced with the use of mobile technologies. The findings suggest that all participants connected the affordances and constraints of mobile learning to their pedagogical thinking in order to implement the technology in language learning. The discussion addresses the meaningfulness of mobile learning is augmented by the teachers, but not the tool itself, and the need of identifying the pedagogical purpose behind the implementation of mobile learning.

Keywords: mobile learning, mediation, affordance, SLA

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1 INTRODUCTION

The impact of the inventions of digital devices and the effect of COVID-19 caused the extensive use of technology-based learning around the world. Approximately 80% of the people in the world have the accessibility to smartphones (Turner, 2022). Technologies and the internet outside schools are widely used among children and teenagers (Carrier, 2017). The integration of technologies into curricula is commonly found since the role of those devices and children's lives are intertwined (Carrier & Nye, 2017; Rikala & Kankaanranta, 2014) and so, since 2015, the Finnish education curriculum has started to include the ICT and digital learning (Finnish National Agency for Education, 2022). Students need to learn to wisely and safely use technologies, as well as, using technologies to learn.

One of the technologies which is present in education is mobile learning. Mobile devices and mobile learning served as supplementary schooling tools at both informal and formal levels (Engzell, Frey, & Verhagen, 2021; Kizilcec, Chen, Jasińska, Madaio, & Ogan, 2021). For learning, the use of mobile learning fosters learner agency (Sintonen, Ohls, Kumpulainen, & Lipponen, 2015). Rikala & Kankaanranta (2014) added that creativity, involvement and motivation are targeted with the use of mobile learning. However, in 2007, Dieterle, Dede, and Schrier (as cited in Dashtestani, 2016) mentioned that it was challenging to implement mobile learning in second language learning as it hindered collaboration and communication among them. There is much divided opinion within the educational field. Instead of going along with either side, this enquiry into the implementation of mobile learning in real-life has arisen in order to understand the meaningfulness of introducing mobile technologies in language education. In other words, to fill in the gaps in the research about digital learning, this investigation addresses how teachers blend mobile technologies meaningfully into real-life practices.

On the other hand, Rikala and Kankaanranta (2014) noted the implementation of this ubiquitous tool does not solely mean the use of mobile

devices in learning but the ways to apply it in pedagogy with the support of educational theory. There is currently a lack of theory-based, rigorous research on the implementation of mobile learning in language education, especially second language acquisition. The utilisation of mobile learning in indoor classrooms for assisting language learners has rarely been elaborated on in research. The researchers seldom pinpoint classroom learning, which consists of communicative and collaborative learning in mobile learning (Sánchez Prieto, Olmos Migueláñez, & García-Peñalvo, 2014). Most of the previous research focused on the self-regulated effects of mobile learning since it satisfies learning at an individualised level and gives learners the freedom in learning whenever and wherever. The motives of this study are to contribute to the conversation about this pedagogical hot topic by analysing and discussing the subject matter from a different point of view with a specific theory – the sociocultural theory, which emphasises social interaction for internalisation and self-regulation for the meaningful learning process (Lantolf & Thorne, 2006; Wells & Claxton, 2002; Swain, 2000). The framework guides the study towards different cultural, social and historical situated learning and teaching which brings interesting insights into the approach that not only one way in which mobile learning can be developed nor the language education.

The research interest is not only about the implementation of mobile learning but also about the Finnish education system. As Finnish education is recognised as the best in Europe due to the result of the OECD's Programme for International Student Assessment (PISA), it arouses the curiosity of grasping the teachers' thoughts in their profession. An opportunity is offered to unfold the Finnish education from a language teaching and learning perspective (Ennserr-Kananen, Kilpeläinen, Saarinen, & Vaarala, 2023), that is, its success in PISA, though exploring the research topic from the teacher's perspective. That is the teachers' conception of mobile learning and how they recognise mobile technologies in language teaching and learning. Specifically, teachers are given a high degree of freedom and trust in their profession in the Finnish society (Finnish National Agency for Education, 2022; Moate 2021) which adds to

adopting the sociocultural theory that mobile learning is used in the ways influenced by society and culture. The next section provides a more detailed definition of mobile learning.

2 MOBILE LEARNING

2.1 The definition of mobile learning

Unlike computer assisted learning, the term mobile learning remains new and abstract due to the variation of implementation and the inequality of accessibility. Mobile learning is defined as the use of seamless digital devices (Kyllönen, 2014) and a learning process made by learners with the use of mobile technologies which supports them to learn anywhere and anytime (Rikala & Kankaanranta, 2014; Chu, 2013). On the other hand, O'Malley et al. (2005, as cited in Rikala & Kankaanranta, 2014, p. 3) described the learning process with mobile devices "is not at a fixed predetermined location or learning", such as classrooms, but happens across contexts. In other words, using mobile devices to learn allows learners to explore, understand, apply, and consolidate knowledge within and out of classrooms and even during the switch in both physical and virtual worlds. For example, to learn English, learners can use tablets to find the meaning of English vocabulary in their spare time. As well as, they can use their smartphones to scan QR-code in different corners of the schools to find different English vocabulary related to the school context. Sánchez Prieto et al. (2014) mentioned collaborative learning was supported by the mobile technologies used in the classrooms by utilising the connectivity and communication capabilities of mobile devices combined with the qualified design of didactic activities based on an appropriate pedagogical approach, such as involving interaction between users and digital device and facilitating person-to-person communication in both physical and virtual settings.

With the rapid development of technologies and its use in education, a number of researchers have contributed to the conversation about technologies in education for decades. In the beginning, the questions about educational technologies focused on what advantages and disadvantages for the policy-maker and administrative decisions and after that, it is about the pedagogical practices and the features of mobile devices (Booton, Hodgkiss, & Murphy, 2021;

Kaarakainen & Saikkonen, 2021; Lämsä, Hämäläinen, Aro, Koskimaa, & Äyrämö, 2018). According to Carrier (2017), technologies can be divided into three categories, that are: input technologies (for presenting ideas to learners), interactive technologies (for making interaction with materials and peers using the target language), and portable technologies. This study expands these categories into the use of mobile learning in language education. As Sharma (2017) mentioned, the pedagogical perspectives immersed in the implementation of digital learning are a contributing factor to its success. That is to say, the direction of research on this digital learning has moved onto the task design and implementation (Kaarakainen & Saikkonen, 2021; Cutrim Schmid & Whyte, 2018) the 'how' questions regarding the use of mobile learning for language pedagogy need to be further developed.

2.2 Mobile learning in the Finnish context

The qualitative research into this topic less focuses on the sociocultural perspective on language pedagogical use of technology than does research into the ways of using mobile learning. Investigating the rising role of mobile devices in language pedagogy from a specific perspective contributes to the conversation about technology and education while this perspective is used in the Finnish society in which the advantage of being a developed country and the success in OECD's Programme for International Student Assessment (PISA) are found.

Technologies are widespread in Finland and a survey in 2020 showed that 97% of children studying at the basic education level have used smartphones mainly for after-school and leisure situations (Kaarakainen & Saikkonen, 2021). Concerning this inclined use of mobile devices and technologies among children, the digitalisation of education (ICT skills and the use of digital devices among learners and teachers) has been immersed in the national basic education curriculum since 2016 (ibid.), specifically engaging the digital competence (Finnish National Agency for Education, 2022). The aim is to encourage learning with the use of technologies and also prepare learners to be responsible

'Netizens' (the people using the internet). Being citizens in the virtual world, learners need to manage the ICT skills for practical and creative use, to be responsible and safe in both physical and virtual environments, and to practice making enquiries and interaction with others via the internet and technologies.

On the other hand, according to Kaarakainen and Saikkonen (2021), teachers have the key power in the decision of using digital devices in learning, rather than the school-level policies in the Finnish context. Although the curriculum of education promotes the digitalisation of education, the Finnish education system also encourages teacher autonomy that teachers are free to make their own decision on the teaching method and materials (Ministry of Education and Culture & Finnish National Agency for Education, 2022). Therefore, the use of mobile learning highly relies on teachers' decision making and thinking and this resonates with the research interest (in Section 5).

3 SOCIOCULTURAL THEORY AND SECOND LANGUAGE ACQUISITION

The expanding significance and development of mobile technologies in education have given an impetus to conduct a qualitative research study on mobile learning with the Vygotskian thinking - Sociocultural Theory (SCT) - to second language acquisition (SLA). However, there is no explicit theoretical framework supporting the relationship between SCT, SLA and mobile learning and hence, the following sections focus on the connection between these three aspects.

3.1 Sociocultural theory

Mitchell, Myles and Marsden (2013) commented that SCT is a broad conceptual framework used for exploring human learning. According to the Vygotskian sociocultural theory, mediating exists in every mental activity,

including those in language learning (Lantolf & Thorne, 2006). SCT emphasises the use of physical materials and symbolic tools which assist individuals to mentally appropriate and possess knowledge and skills (internalisation) during interactive, collective behaviour (Lantolf & Thorne, 2006; Wells & Claxton, 2002; Swain, 2000). For example, language itself is one of the mediation tools for the second language (L2) learners to utilise their first language (L1) as a cognitive tool to conduct private speech (or namely self-talk or inner speech) to direct their behaviour in a collaborative activity (Mitchell et al., 2013; Lantolf & Thorne, 2006). This kind of artefact-mediated activity for cognition development is not individually constructed but culturally. Ben Said and Zhang (2015) and Well and Claxton (2002) noted learners as active agents willingly participate and mediate their actions through interacting with others, who are more capable in the target language, and so as to support them in making sense of the historical, social and cultural contexts. In this study, the well-explored symbolic tool – language, is not the main focus, but the local needs and concerns in the community of the material tool – mobile devices and its affordances for pedagogical mediation in the Finnish context.

3.1.1 Second language acquisition and second language learning

The existing research on language learning generally covers L1, L2 and foreign language learning respectively. Anomalously, this study follows Mitchell et al. (2013)'s approach that second language acquisition (SLA) and second language acquisition (SLL) are defined as the language(s) acquired after the L1. In other words, regardless of the learning purpose and circumstances, the learning processes of language(s) are learnt after the mother tongue are related to this research topic.

To focus on the research interest, English, as a lingua franca, is the targeted L2 throughout the research study. The research established in the educational field commonly shared the point of view that the terms SLL and SLA are interchangeable since acquiring both meaning-making and linguistic ability is required for language learning (Van Lier, 2004). However, a different point of

view from Krashen's 'acquisition-learning hypothesis', SLA refers to the learning process of a second language subconsciously and learners are able to apply what has been learnt with the sense of meaning-making while SLL suggests learners, on the contrary, learn consciously and explicitly with the forms and linguistic rules (Mitchell et al. 2013, pp.41-42). Van Lier (2004) objected to the distinction coined by Krashen that repeatedly drilling without immersing meaningful aspects, the drill-and-kill method, is useless; on the contrary, the acquisition-learning distinction is not visible as both ways are crucial for language development. Therefore, SLA is mainly used and represents both L2 and foreign languages in this study.

3.1.2 Interaction and opportunities in SLA

The significance of both linguistic form and meaning-making construction in SLA links to SCT which emphasises the social relationship. Social interaction can successfully or unsuccessfully lead to meaningful production of language in SLA depending on how mediational tools or means are engaged in the learning process, i.e. the negotiation of meaning and the modification of output. Taking communication as an interactional example of SCT, learning and development are barely found in individual interaction but social interaction as noted by Vygotsky (1978, as cited in Swain et al., 2015). Followed by Johnson (1995)'s belief in social interaction in SLA and classroom learning, language production, as a part of the learning process, exists in the context of social interaction, such as authentic contexts, rather than isolation, which means particularly interaction.

Learning through the social interaction between learners and interlocutors or high-ability peers is more likely to push learners to raise awareness of what is confusing and unclear in the target language, to reflect on what they have in their mind, and to ask for clarification and to check their use of language with the feedback from the interlocutors (Swain, 2005). Unlike the "insert" system of knowledge transmitting in schools, from the SCT perspective, it is not sufficient enough for language learning and learners have to be pushed to build up their L2 linguistic ability and meaning-making by participating and trying out what

they have learnt during interaction, instead of information processing or language production in isolation (Thorne, 2005; Van Lier 2000, p.138). In other words, social interaction gives L2 learners opportunities to think and reflect on both syntactic and semantic language learning in order to make meaningful interactions and which encourages them to produce meaningful interactional modification and negotiation in the target language. Not only does social interaction offer opportunities for language learning, but the artefacts for mediating also provide opportunities. The use of mediational tools regarding its affordances and constraints sheds light on the SLA from the learner's and teacher's perspectives.

3.2 Affordance and constraints of mediational tools

Starting with clarifying the term affordance, Gibson defined it as the environment provides or furnishes opportunities (cited in Greeno, 1994). Van Lier (2000, p.253) stated affordance, in language learning, refers to 'an environment for active, participating language learner'. On the contrary, constraints are an environment diminishing opportunities (Eriksson-Bergström, 2008). In the digital learning, affordances refers to the opportunities provided and the environment created by technology and what digital tools affect learners to act (Carrier, 2017; Eriksson-Bergström, 2008; Wertsch, 2007).

To understand mediational tools and their affordances and constraints, the orders of mediation coined by Lantolf and Poehner (2014) are adopted and elaborated. In the first-order of mediation, L2 development is based on interpersonal interaction and the mediating to construct learners' self-regulation. The second-order of mediation refers to the thinking process being affected by the culturally constructed artefacts which demonstrate learning rather than being the thinking process. In both types of mediation, interlocutors have a significant role.

In the first-order, interlocutors (i.e. teachers) using culturally mediating artefacts aim to lead learners to move from their Zone of Achieved Development

to their Zone of Proximal Development (ZPD) to guide learners to internalise new knowledge and construct meaning (Ben Said & Zhang, 2013; Huong, 2003; Well & Claxton, 2002). For example, a teacher uses L1 as a symbolic artefact in scaffolding to guide the learners to try to finish a task in L2 when the learners cannot accomplish the task alone. The learners are able to use the L2 with the support provided by the artefact and the social interaction with the teacher.

Day and Lloyd (2007) stated engaging digital devices in SLA is fruitful in the sense of providing opportunities by utilising the communication and entertainment affordances. She, nonetheless, raised questions about these affordances for learning that they might not be able to support learning because the communication and entertainment affordances do not overlap with the learning affordances. Booton et al. (2021) also gave an example of this argument that the mobile application for alleviating children's story reading comprehension might reduce their attention on texts, in contrast, luring children to 'read' the story via pictures and animation. These lead to the second-order of mediation. The affordances and constraints of mobile learning succeed or fail to support learners in language learning depending on whether learners have noticed and used the affordances for pedagogical purposes. However, learners can notice the affordances with the help of teachers or more capable peers, which relates to ZPD. For instance, the design of mobile learning made by teachers, who are the interlocutors, encourages and pushes the learners to go beyond their current level by using the communicative environment provided by the digital technology. In other words, the affordances are taken up by learners, and teachers cannot create the affordance but guide and assist learners to make use of the artefacts to achieve the goal (Huong, 2003).

In the next section, a further explanation of the mediational tool and its potential affordances put forward by teachers is presented.

3.2.1 The mediating roles of teachers and artefacts in SLA

SCT is interpreted with diverse disciplined lenses in the field of social sciences. However, this section attempts to articulate how SCT influences

language pedagogy, especially learning English as an L2, from a teacher's perspective indicating the relationship between interlocutors, referring to teachers, and mediational tools.

As mentioned previously, SCT emphasises the mental activity and human thinking through the mediation of culturally constructed artefacts and social formation (Swain et al., 2015; Mitchell et al., 2013). This psychological activity suggests that the acquisition relies on the transformation from interpersonal interaction to intrapersonal understanding that the individuals firstly are involved and participate in the social interaction; then, they negotiate the meaning and make interpretations with the cultural and historical viewpoints from the others; thirdly, the interaction leads to appropriation and internalisation and so as to form self-regulation that the thinking process regulates one's behaviour (Wertsch, 2007).

Thorne (2005) clarified SCT with the framework of activity theory that mental functioning in development does not depend on socialisation but "the conversion of social relations" (p.395). That is to say, the mediating roles of both social interaction and artefacts support the process of the theory of mind that learners understand and relate to whom they are interacting with (Bland, 2018; Hunte & Golembiewski, 2014) and so to form and possess the learner's own understanding to regulate and appropriate their mind through collective, cognitive activity. For example, the symbolic artefact, language, is used for making interaction. During the interaction, teachers can provide scaffolding with the use of the artefact for learners to process new knowledge and appropriate meaning. The social interaction and the use of artefacts are controlled by both learners and teachers. Teachers as interlocutors use social interaction and artefacts to maximise the learning opportunities for learners while learners as active participants in learning take responsibility to construct meaning and linguistic forms through mediating. The ways that the teachers use the symbolic artefacts influence how the learners make use of the artefacts to construct meaning socioculturally (Lantolf and Poehner, 2014; Mitchell et al., 2013; Lantolf & Thorne, 2006). That means how learners internalise, negotiate and appropriate

the use of the artefacts to achieve the goal is affected by how the teachers demonstrate learning and bring up what the tools afford.

In short, mediational tools provide various affordances by themselves but to determine if it is a powerful or powerless artefacts for achieving the goals depends on how learners and interlocutors integrate the artefacts into human activities (Lantolf and Poehner, 2014). Teachers have their own interpretation of the affordances and constraints of the tools and this leads to the diverse use of artefacts due to the social, cultural and historical factors.

4 MOBILE LEARNING IN SOCIOCULTURAL THEORY

By defining and clarifying mobile learning, SCT and SLA, cognition and language learning are mainly regarded as the social interaction engaging artefacts among learners and their teachers or those who are more capable. The immediate social formations are recognised as a learning environment where the mediation is involved in the interaction to achieve the goal – being able to create linguistic form and make meaningful interaction, including negotiating the meaning, noticing and hypothesis testing (Swain, 2005). Yet, the relationship between SCT and mobile learning is abstract and novel, and hence, this part attempts to illustrate the relationship between these two concepts by focusing on mediational tools – the artefacts that extend and mediate learners' actions (Well & Claxton, 2002).

Mobile learning serves not only as a pedagogical tool but also as a mediational tool affording and constraining the development of SLA of the target L2. Following Wertsch (2007)'s definition of mediational means, this requires the awareness of using mobile learning didactically not gratuitously to elaborate on what mobile learning affords and limits in language pedagogy. The current criticism of the use of technology in education, the drill and practice exercise and gamification in mobile learning deprive learners of constructing their own understanding with a presumed learning outcome (Dashtestani, 2016; Kegenhof, 2014). The effectiveness of mobile learning might vary regarding the design of the tasks (Rikala and Kankaanranta 2014). The tasks with the use of technologies should have a clear didactic objective that induces learners to produce language use and understanding (Cutrim Schmid & Whyte, 2018). Hence, it is crucial to explore its affordances and constraints conceived by teachers which influence language teaching and learning and so as to investigate the teachers' conceptions and practice of using mobile learning.

5 RESEARCH AIM AND QUESTIONS

Although there is no explicit connection between SCT and mobile learning, the common ground of SCT and SLA affects the use of mobile learning as technology is raising in the educational field. The aim of this research study is heavily affected by Stephen Kemmis (2014)'s belief in educational research pointing to the need to recognise that so-called education can be educational, but also non-educational, or anti-educational if the use of mobile learning in SLA is only an obligation without pedagogical purposes. The educational use of technology has been one of the controversial topics for decades while mobile devices are widely used among children and teenagers, as digital natives, in the digital age. The urge of using mobile devices in schools is obvious and crucial to learners' development and future paths shown in the education curriculum and research. However, with respect to the Cartesian Doubt, this study sheds light on the doubt of whether the current implementation of mobile learning is educational, non-educational, or anti-educational to understand the research topic thoroughly, rather than following the flow engaging mobile technology obligatorily or being hostile to the technology in the educational field. In this study, the investigation allows opening the door to see the pedagogical thinking of the Finnish experienced language teachers. The role of mobile learning is recognised as a pedagogical tool for enhancing teaching and learning and also a tool for understanding the Finnish context.

To generate an in-depth understanding of mobile learning, the foci are on the teachers' conception of mobile learning and the influence of teachers' conception on the role of mobile devices in practice. Although mobile learning and its development are varying and which affects the opportunities for L2 learners, its usability is determined by learners how they use and perceive the affordances (Day & Lloyd, 2007). In the classrooms mobile learning highly depends on teachers' decision making and hence the usability is determined by both learners and teachers. Cutrim Schmid and Whyte, (2018, p.240) stated that some technology integrated learning activities are 'gratuitous activity' which

means the failure of providing a clear pedagogical purpose of using it, for example, the drill-and-practice tasks without syntactic or semantic language use. The teacher's perspective, such as their purposes in using mobile learning, is crucial to unfold the enquiry about the 'effective' teaching methods for second language learners. The meaning of 'effective' also varies from teacher to teacher and which is interesting as each experienced teacher in this study is from a distinct teaching background influencing how they define the 'best' way(s) of using mobile learning for their students (Ben Said & Zhang, 2013), especially scrutinising the Finnish context where teacher autonomy and freedom is highly appreciated. That is to say, Finnish teachers are able to decide what materials and tools are used for learning and teaching and this elaborates the pedagogical thinking behind the implementation of mobile learning.

The main method to disclose the research interest is to interview the experienced language teachers in Finland. Since the researcher is a language teacher and also an outsider to the Finnish society, this method gives an opportunity to take a close look at the research topic with the description of how the Finnish teachers implement mobile learning and their insight. Reflecting on and generating an understanding of how the teachers' conception affects their implementation of mobile learning in language learning by interacting with experienced teachers benefits the development personally and generally. At a general level, this investigation contributes to building a bridge between the theories of language learning and methodological implementation by focusing on how to blend technologies meaningfully into classrooms. Moreover, at a personal level, it helps the researcher to build up and reflect on her teacher identity. To answer the primary foci of and navigate the study, two research questions are created.

1. How do the teachers in the Finnish society position the role of mobile device in SLA education?
2. How does the teachers' conceptions of mobile learning influence teaching and learning for SLA in practice?

6 THE CASE STUDY

In order to understand the use of mobile learning in SLA, a case study is carried out to explore the research topic from teachers' perspectives. This study investigates the teachers' conception and its impact on what they actually do in their teaching in the Finnish context. By examining the particular cases, it is not only to learn about mobile learning in-depth but also to draw a conclusion on how experienced Finnish teachers use mobile learning as a tool that could be applied to other contexts (Fraenkel, Wallen, & Hyun, 2015). Before moving forwards to the findings of this study, this part is to explain what strategy is used for the investigation.

Case study has established itself in educational research, albeit without a clear definition. Hamilton and Corbett-Whittier (2013) argued the role of a case study depends on how the research defines and positions it. To achieve the aim of this exploratory case study, it is described as the guiding principles leading to a close look into mobile learning in the Finnish context and to uncover real-life practices by interacting with the data. The design of this qualitative case study is based on seeing the Finnish context and mobile learning in language education as a single-case context with three units of analysis, a holistic multiple case study to holistically respond to the research interest (Yin, 2009). With an interpretivist's viewpoint, this study is not seeking regularity but analysing three unique cases to understand the cross-sectional phenomena (Moon & Blackman, 2014; Denzin & Lincoln, 2011) regarding SLA and mobile learning. In other words, Hans Eysenck (1976, as cited in Denzin & Lincoln, 2011) affirmed that studying cases did not aim to prove something but to learn something. The uniqueness of the cases opens the gateway for researchers and readers to diversely form their own understanding of their contexts with their interpretation powers (Stake, 1995).

6.1 Research Context

Interpretivism prepares the ground of this study to examine the research topic as the meaning of mobile learning immersed in the data is a cross-sectional kind of data that would change over time. This mono-method qualitative case study helps to understand how and why mobile learning is used in practice in a specific context with an interpretative and exploratory approach (Routio, 2007). The dataset aimed to give a deeper understanding with regard to the influence of teachers' conceptions of mobile learning on SLA in Finland, rather than finding a universal teaching approach as no single approach fits all in the didactic field or judgement. This type of case study aims to go beyond Stake's intrinsic case study in that the case chosen shows the entirety of the subject matter (as cited in Hamilton & Corbett-Whittier, 2013), rather than interpreting the data provided by three unique cases of three experienced language teachers, who have taught in the training schools and comprehensive schools in Finland, in-depth to apply what is discovered in this study to another context (Fraenkel et al., 2015). It enables the researcher of this study and readers to contemplate the role of mobile technologies and the implementation in education by gaining valuable insights through the study of three cases. The details of the cases chosen will be elaborated in the following section.

6.2 Research Participants

The dataset includes three cases – three experienced language teachers who have taught in the basic education in Finland. The potential participants were invited with two typical categories – (1) the teachers engage in basic education in Finland and (2) use or used mobile devices in their teaching. This interview sampling ensured not only to articulate the motivation and experience from the participant's perspective but also to share their expertise that creates meaning within the data (Tracy, 2013). Under the interpretive paradigm, people believe in some parts of reality and no one could know the whole and all (ibid.) and a diversity of conclusions can be drawn from the variety of interpretations (Moon

& Blackman, 2014; Denzin & Lincoln, 2011), researchers construct the reality with the participants and between the participants. In other words, they collaborate with one another in order to make use of the data provided and actions taken by the participants to understand reality from a first-person viewpoints (Baxter & Jack, 2008). The dataset relies on the participants to share their insider experience and their expertise in the form of knowledge.

For seeing reality more holistically from a diverse angle, the design of the study was planned to investigate the real-life practice with three various methods - observation, interview, and document and material analysis so as to see the relationship between what the teachers think and say and what they actually do. Three participants with rich and experienced teaching backgrounds were recruited for taking part in this study. They were open to providing expertise and articulate stories. However, due to the limitation of time and resources in this research project, the interviews have changed to be the main dataset providing insight into the teachers' conception and the example practices regarding their implementation of mobile learning in SLA while the observation and the documents recorded inspired the researcher, as an outsider, to deepen the understanding of the Finnish educational landscape (Pole & Morrison, 2003). The observations and materials used (e.g. the QR codes used in the lesson) helped as supplementary information relating to and resonating with what has been discussed and brought up by the teachers in the interviews.

In this study, three participants are referred to as Aino, Viivi and Lilja pseudonymously for protecting participants anonymity. All of them have over 10-year teaching experience and have been using mobile learning in their teaching, however, all of them have different backgrounds and worked in different institutes and which enriches the dataset although a small-scale qualitative case study is carried out for investigating this research topic.

6.3 Research Data

After recruiting participants, the focus shifted to how to acquire valid information by conducting interviews, two face-to-face and one online interviews due to the limited time and resources. Although two formats of interviews were conducted, the data gathered were based on the semi-structured interview which ensures the validity of what is obtained and interpreted from the interviews. To ensure the data is relevant to the real-life practice from the participant's experience and enables interpretation of the implicit meaning behind the description (Attride-Stirling, 2001; Kvale, 1996), the interview questions adequately cover what the study is intended to find. To obtain the lived meaning from the participants and unfolding their narratives, the interviewer needs to prepare for conducting interviews, including setting up the semi-structured interview (Kvale, 1996), identifying the role of an interviewer (Tracy, 2013), and preparing for being an instrument in the study that researcher as a part of the strategy to help interpret the data (Fraenkel et al., 2013).

The interview was designed in a semi-structured format to prepare the ground for a narrative of the respondents. The questions were divided into five categories, including the background of the participant, their views on language learning, their experience in mobile learning, their training background related to mobile learning, and the design of mobile learning activities. The flexibility of this interview type encourages the respondents to express themselves and share their ideas spontaneously and freely (Horton, Macve & Struyven, 2004; Drever, 1995). The interview questions were set up in an open-ended way so as to elicit information and expertise from the respondents (Kvale, 1996). The interviews were constructed to involve specific, direct and indirect questions and also some following up questions and interpreting questions were spontaneously asked to assist the participants to complete their narratives. The way to elicit responses is as crucial as creating the questions and both are the techniques that an interviewer needs to acquire (ibid.).

The role of the interviewer is worth considering before having the conversation with the participants which determines what techniques needed to

be used during the interviews. Assuming the participants as experts who are able to construct meaningful narratives of description, the interviewer took the stance to be an active listener, as well as, to be friendly and open to maintain the flow of conversation (Tracy, 2013; Kvale, 1996). The more attentive the interviewer is, the more information emerges from the data, such as using active listening to raise following up questions and encourage the clarification of the Finnish learning environment. During the conversation, the interviewer did not give any evaluation but showed a sense of curiosity and being open to new aspects of the research topic raised by the participants. For instance, as Aino offered the opportunity for the researcher, as an outsider, to step into the classroom and observe a lesson, engaging the use of mobile devices, the interview was occupied with spontaneous follow-up questions regarding the lesson which aimed to find out the relationship between the teachers' conception and her action. Although the field note and the observation were not included in the dataset, as mentioned previously, the interview covered the practice and examples given by Aino which are equivalently useful for analysing. In the following part, a detail explanation on the data analysis is presented with the use of transcript formed from the interview recording.

6.4 Data Analysis

Implementing a case study allows the researcher to comprehend and interpret the data with in-depth description inductively (Becker, Dawson, Devine, Hannum, Hill, Leydens, Matuskevich, Traver, & Palmquist, 2005). Thematic analysis is used to identify the themes from the data (Braun & Clarke, 2006) in an inductive way which sheds light on the embedded meanings and the codes and themes derived from the data (Patton, 2015). To proceed to the analysis, the interviews were recorded and transcribed in the first place. The coding process was initially accompanied by the conceptual frame of the research questions (Hamilton & Corbett-Whittier, 2013) with a sociocultural lens, albeit with no direct connection between sociocultural theory and mobile learning. The

data gave the ground to examine the relationship between teachers' pedagogical thinking and the use of mobile learning as a tool.

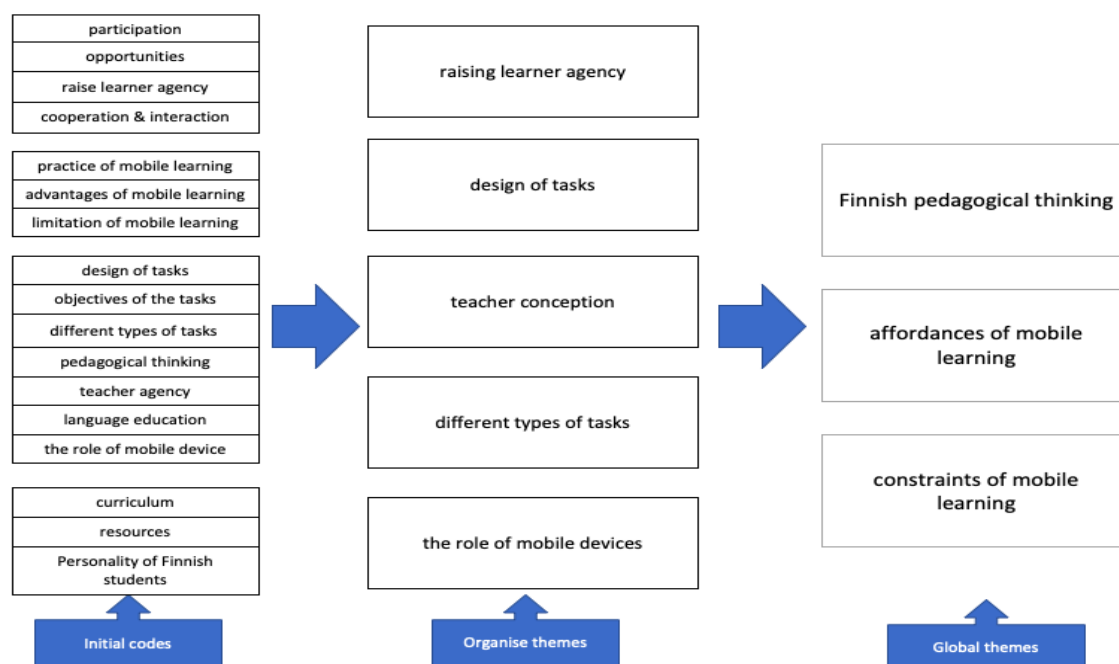


Figure 1 The thematic network of the analysis

In order to interpret the data thoroughly, this study synthesised Braun's and Clarke (2006)'s and Attride-Stirling (2001)'s guidelines for conducting thematic analysis to guide the analysing process. Firstly, the recordings were transcribed and read thoroughly and attentively. Then, the primary coding of three cases was formed separately based on the research questions and the sociocultural theory to interpret and identify the patterns with Tracy (2013)'s use of coding visual display. A mind-map (see Figure 1) indicating the initial codes was established to explore the thematic network and the pattern followed by putting all the codes from three cases. Some initial codes in the transcripts were not put in the mind-map because the data were not enough to transform the codes into organise themes during the process of discarding data, for instance, the code 'own learning pace'. Some of the initial codes combined in the recoding process, such as the goal-directed tasks and the design of tasks combined into one. Then, the emerging patterns appeared to further define and refine the global themes, which refers to the salient themes carrying implicit signification throughout the data (Attride-Stirling, 2001), including the different types of

tasks, the pedagogical thinking, the affordances and constraints, and the advantage of mobile learning. Next, refinement was needed to remove the organise theme 'advantage of mobile learning' as this theme did not connect with the research interest and overlapped with the other themes, like teacher conception and the role of mobile devices. This defining and refining process was conducted constantly to generate the thematic network. These then lead to the key conceptual findings which contribute to telling the story of mobile learning in SLA.

6.5 Ethical Solutions

Ethical concern affects the quality of a qualitative research study (Tracy, 2013). The research ethic of this study consists mainly of the consent process, anonymity and pseudonymity, the relationship between the researcher and participants and the storing and disposal of data.

For data collection, the potential participants were invited to contribute to the research topic by sending a privacy notice about the interest and the aim of the study and a written consent form that ensures the confidentiality, notes free will of participation in this study and asks for permission for using the data in the research with a covering email. The consent letter highlights the participant is respected and they could withdraw from the study as long as they ask to. Moreover, to avoid any embarrassment or harm to the participants, the information would indicate the identity - the name of the participants - are pseudonymously replaced by three common Finnish names (Lilja, Anni and Viivi) in the reporting section. On the other hand, some of the personal information, such as the workplace, name of school, work experience, and teaching experience, are included within the data. The information is transcribed and reported anonymously and pseudonymously. For instance, the year of teaching experience is used to reveal the background of the participants and which is reported as "with over 10 year experience" while the school names

mentioned in the interview are replaced by “XXX school” to protect the participants’ privacy and de-identify from the data.

During the interview, the role of the interviewer is mainly to maintain the flow of the conversation as a natural interaction, as mentioned in Section 5.2. As important as the positioning of the role of the researcher, participants are positioned as experts to contribute to the conversation about the research topic and hence the voice of the participants are respected and encouraged. To ensure appropriateness and respect for the participants, a trial interview was conducted with a colleague in order to practice the interview strategies, time management, and interview flow.

Throughout the data gathering process, the data regarding confidentiality and privacy includes the digital documents of the interview transcripts and interview recordings and the signed written consent forms. During the data analysis, the recordings and transcripts are stored in the secure U-drive provided by the University of Jyväskylä for normal and remote access, rather than commercial cloud services or USB memory sticks. After the study is completed, all the digital files and documents should be overwritten while the non-digital data should be disposed of in the confidential waste paper container located on the university campus.

7 FINDINGS

This section illustrates the findings answering two research questions of this data-driven qualitative case study, (1) how the role of mobile devices is positioned in language learning in the Finnish context and (2) how the teachers' conception influences SLA in practice with three global themes (mentioned in Figure 1). The key conceptual findings identified as **the categories of mobile learning** further elaborating Carrier (2017)'s categories of digital learning, **the affordances and constraints of mobile learning** and **the Finnish pedagogical thinking** together form a thematic network for sociocultural interpretation of the pedagogical technology. The data will be presented in a dialogue-like structure to integrate the different points of view from three cases.

7.1 Categories of mobile learning

This analysis starts with the types of mobile learning activities found in the participants' descriptions of the practices which articulates the possibility of mobile learning being seen as a pedagogical tool in language teaching and learning at the present stage as mobile learning and technology in education are developing and changing constantly and rapidly. In SCT, analysing the activities interprets how human beings learn through thinking and acts with engaging mediated tools (Eriksson-Bergström, 2008) and relies on the belief that how L2 learners adopt and use a language is mediated by the symbolic means and materials which are constructed culturally (Lantolf & Poehner, 2014; Day & Lloyd, 2007; Lantolf & Thorne, 2006; Thorne, 2005). The practices below relate to contexts where mobile learning served as a pedagogical and mediational tool affecting learning and development.

Table 1 below outlines the features of mobile learning in detail which are synthesised from the descriptions of practices in the data that further explore the use of mobile learning from a pedagogical perspective. The categories thoroughly explain the technologies and the use of mobile learning for

pedagogical purposes by collating the features with the aims and examples given by the participants.

Categories	Aim	The example practices
Synchronous communicative technologies	to maximise spoken and written language use and participation	Learners use video-conferencing (e.g. Google Teams) to make conversation with other learners overseas with the use of the target L2.
Asynchronous communicative technologies	to ask and share information and give comments	Learners ask and answer questions, share their works and comment on their peers' works on the stream (e.g. Google Education).
Mobile learning games	to get learner's motivation and arouse interest	Learners individually participate in a game and compete to win the game by answering the questions correctly in the shortest time (e.g. Quizizz, Wordwall).
Interactive mobile learning games	To enlarge learner's motivation, cooperation and interaction	Learners form groups to play a game and win the game together (e.g. Quizlet, Baamboozle).
Assessment use	to assess learners' language proficiency efficiently without affecting their confidence in learning	Learners are asked to record their presentations with the use of mobile devices. The teacher watches the recording to grade the performance.
Evaluation use	to check learners' understanding of the topic and participation	Learners answer the questions in an app (e.g. Quizizz) and the teacher can see if they answered it correctly or not and take a look at what mistakes they made and raise awareness of those mistakes.
Blended learning use	to afford the interaction in both physical and virtual world	Learners use a map on the mobile device to locate themselves in the 'real' world (e.g. a park) and find the

		tasks and then complete tasks shown on the device.
Creativity stimulation use	to provoke learner's creativity	Learners are asked to produce a mobile game quiz (e.g. Kahoot!) about the vocabulary they learnt in a unit and play the game in the class together.
Group creativity stimulation use	to boost learner's creativity as well as promote cooperation and communication	Learners work in groups to make up stories by recording audios, and selecting pictures in the app (e.g. Adobe Spark).
Listening use	to practice listening skills at learners' own pace	Learners listen to the listening material individually with the use of mobile devices. They can pause whenever they want to.
Presentation technologies	to offer a space for sharing among learners	Learners as a group can create a presentation (e.g. Google Slides) together with access to the internet and share and show their work to others.

Table 1 The categories of mobile learning

Three participants have different approaches to SLA but they share the same goal that is to enhance learning and teaching. Based on their multifaceted approaches and various experiences on the use of mobile learning, this qualitative case study sheds light on the flexibility and possibility of mobile learning. Compared with Carrier (2017)'s three key categories of technologies in language learning, this analysis reaches the pedagogical aspects with the real-life practices from the data. Apparently, the types of tasks listed above are not the only patterns found in mobile learning or digital technologies but emphasised in the cases.

The cases stress the multipurpose use of mobile learning, it offers a presentation of input and interaction as mentioned by Carrier (2007) and also reinforces creativity, participation, evaluation and connection of the physical and

virtual classrooms. These are seen as affordances that mobile learning is an artefact shaping the learner's and teacher's actions (Swain et al., 2015). The use of mobile learning varies among the participants because the objectives of using mobile learning vary. This part leads to an initial understanding of mobile learning in the Finnish context and the next part continues the conversation indicatively in the Finnish context.

7.2 Finnish pedagogical thinking

All three teachers strive for meaningful learning to assist language learning. They emphasised the meaning of using mobile learning in learning and teaching and also questioned if mobile learning should be adopted or not as it is one of the tools instead of a necessity.

Lilja: I think you have to ask yourself, "What advantage does it bring for taking the mobile device?" Does it add anything that we're going to do it on Padlet? Or is it more useful in that situation [to] forget the devices and actually brainstorm face-to-face? If we're writing a story, if we're just writing a regular story, is it more useful to write the story by paper and pen? Or are there any reasons why introducing the device into the task would then give it some advantages over paper and pen?

Anni: If you're just using the devices to use the devices. Then I don't think it's very successful. They need to understand, like, why are we using this device and what is it? Is it giving something more into the learning?

Viivi: It's not about using the latest apps or the latest software, having the latest device. It's more about what or how we relate to the students and what it gives to them...

Anni: So they (students) understand the meaning why we use [the devices] and that's why I think it's also important to have the pedagogical aspects into why we're using mobile. So it needs to have a meaning why, if you don't have a meaning, then they start questioning it.

According to the extracts, it is crucial for teachers to be aware of why a tool is used in and brought into classrooms and which affects the act of their learners. The data echoes with the theory created by Eriksson-Bergström (2008) who noted that the mediational tools do not regulate behaviours or actions but the use of tools does. The mediational tool does not carry meaning itself but its meaning is given by human beings. Three teachers considered what mobile learning brings to language learning. In other words, they have to think about what it affords could help to achieve the goal (i.e. acquisition of L2) in order to adopt the device in their classrooms. The role of mobile learning in SLA is not an unreplaceable pedagogical tool nor a replacement for pen and paper but one of the tools that has specific advantages for language learning and teaching. The implementation depends on the objectives of using it and what mobile learning affords in the situated context. Engaging in mobile learning is under no obligation to learning and teaching. In the next section, it extends the categories of mobile learning (in Section 7.1) to the role of mobile learning going beyond its functions to its affordances that give opportunities and push learners to use L2 meaningfully (Olaf de Groot, 2017).

7.3 Affordances of mobile learning

From the sociocultural perspective, the analysis reveals the pedagogical thinking and the affordances of mobile learning with how the teachers implemented mobile devices in teaching and learning, that is, answering the second research question. The affordances found in this investigation are not only about the opportunities offered by mobile learning but also the contribution of mobile learning and the teachers to support SLA.

7.3.1 Enhancing learner's participation with interactive activities

Kegenhof (2014) specifically explained the Interactive Whiteboard, one of the technologies for learning, affords interaction among learners by offering a space for them to express their own opinions, to think deeply, and to use their reasoning or to make solutions to a problem. The data shows that mobile learning

shares similar affordances as Interactive Whiteboard as three participants likely stressed interaction in their practices for language learning. Interaction is seen as both an approach to language learning and a learning outcome by engaging and pushing their students in the Finnish classrooms.

In the following, the data is presented in a dialogue-like structure to articulate the different viewpoints from three cases. Viivi, one of the participants, prioritises interactive activities to engage her students in language classes where differentiation is a challenge. She shared an interactive activity in an authentic international context enhancing interaction and participation via synchronous and asynchronous mobile learning. However, Lilja has the same intention of using interactive learning in her classes but the need for individual working patterned with adopting mobile devices inside the classroom was embedded in her teaching. Anni addressed the interaction between learners and the devices and between learners and teachers through mobile learning in her lessons.

Lilja: If it's an interactive game, where you actually learn in a group. Then I think those are very motivating for the students. And it's not only learning for myself. It's learning in a group.

Viivi: For example, writing exercise, they could be writing a text together, where they would be editing it together. So that it would increase the cooperation and the interaction in the classroom as well. Co-writing exercise ... helps with the interaction there. They have to cooperate... the mobile activity just helps us to achieve the tasks and the goal ... in an easier or in a better way... to communicate in a more authentic setting. Interactions are more possible to accomplish in that way.

Lilja: We recently did news reports, where one of them had to be the person reading the news. One of them had to be the reporter [who says,] "Now, here I am in Paris," and we had the green screen... then some of the students had to come in and act whatever was happening there. In that sense, sometimes also need the group. While they're doing that they divide the roles, and who's gonna write what and who's gonna say what.

Anni: I give them tasks where they need to interact, so that they need to solve problems together. They need to do this together... When I'm using the mobile learning, the instruction comes through the mobile device. So I don't

need to instruct them, like in a traditional way. Then it's always built in. ... I also kinda give them more agency because they are not relying to me to give them the instructions and the information, but they find the information and instructions [by] themselves. And it's also easier in a way, because when you're using mobile learning, it's quite easy to make smaller segments and make it more easy to understand ... they can all go over the instructions at their own pace. So it is deeper, I think.

Lilja: But if you want to maximize language use. Then I think the most useful (way) often is to have either small groups of two or three. For the audiobooks, I often ask them to write their own story and do their own recording rather than doing it together with somebody, because I would like them to use the language as much as possible. So I think it depends on the activity, I don't think there's "either or", but you would not want to set up a group where somebody is doing everything and speaking and using the language a lot, and then somebody's not saying anything, that's not really the point of the activity. So trying to set it up so that everybody has a role and everybody has to or can [do]. Some might feel that I have to, but hopefully most of them feel like everybody can use the language and be [take] part [in] and participate.

The dialogue above shows different types of activities the teachers prefer to introduce for language learning, such as communicative video-conferencing, online interactive activity, role play, games and so on, and the activities made use of different types of interaction to enhance participation. Hence, language learning in these cases is mediated by the interactivity of mobile learning. The synchronous interaction, such as the video-conferencing and online communication platform enables learners to write, talk, play, create, complete tasks together, express their opinions and share their thoughts with the others in L2 through the mobile devices as it creates an environment affording interaction for the L2 learners in both physical and virtual world authentically. To push learners forwards, the three teachers talked about the individualisation of mobile learning and also assigning roles during group work which explicitly indicated the relationship between interaction and participation enhanced by mobile learning.

This role-assigning act is arranged by both teachers and learners consciously and subconsciously. In the international activity mentioned by Viivi, students working as a group tended to specialise themselves in different roles, such as the communicators (who ask questions), the information searcher (who search for relevant information according to the responses) and the note taker (who written down the responses). Learners divided themselves into roles to fully engage in the tasks because some of them would rather write than speak; some of them would rather search for information than write.

Viivi: When we start an international project, I like to play this game with the kids... [when] we make video call. Then we try to ask yes-or-no questions to figure out where they're from. And they ask us yes-or-no questions. For example, are you in the northern hemisphere? Are you in Europe? Are you in Northern Europe, etc.? ...And that's a really nice way to start the project that we're working on together and it's really nice because kids have different roles in the classroom. Some of them would be looking at the map trying to figure out where they could be; some of them are trying to think of questions to ask; some of them are writing down the questions and the answers, what they've asked and what the other group has answered. And so you would have different roles for kids so that everyone could participate. But not everyone would have to be there in front of the class speaking to the other people in English, because that can be really nerve racking for some so having them participate and being active and using English, but some of them using it more, and some of them less.

One teacher spoke about assigning roles intentionally to push learners to participate to give meaningful use of language.

Lilja: ...trying to set it up so that everybody has a role and everybody has to or can [use the language]. Some might feel that I have to, but hopefully most of them feel like everybody can use the language and be [take] part [in] and participate.

Another teacher said that the division of roles was student-centred that they had to decide whom they worked with and how they worked together decided by

themselves and this maximised the opportunities of making linguistic forms and meaningful use of language.

Anni: [T]hey navigate towards kids that they know are pretty much on the same level with themselves, or not same level, but having similar working styles and similar or maybe more ambitious than skills... they divide the roles, who's gonna write what and who's gonna say what.

On the other hand, one teacher extends the type of interaction outside classrooms that the asynchronous interaction among students and teachers on the stream, which is an online platform, for information sharing, requesting and answering.

Lilja: But if they write it (the questions) there [in the stream], then everyone can see and I can also see and then react.

Mobile learning as an environment offers opportunities for interaction both virtually and physically inside and outside the classroom which encourages learners to actively participate in using the L2 to think, to find solutions and to express their opinions but also the pedagogical thinking is embedded in the interactive activities and allows mobile learning to fulfil the objectives. Mobile learning reinforcing interaction between learners and teachers is also used by teachers for checking learners' understanding in the cases which is stated in the following section.

7.3.2 Tracking learner's understanding

In the pedagogical aspect, the term tracking is adopted from the tracking assessment that teachers use tracking tools to continuously and longitudinally monitor and assess learners' learning outcomes so as to make adjustments and changes in instruction and teaching methods to achieve the educational goal, which is shown in two teachers' description of their practices of using mobile learning. Both Lilja and Anni talked about mobile learning enabled them to efficiently check the learning progress of and assess their students through the

apps. Viivi also shared using Google Forms and Kahoot! to check the students' learning outcomes.

- Anni: I'll check because I can see on the learning app, I can see who's done the task because I have the data there. I can then easily check so that the system checks their work.
- Lilja: ... seeing if they understand or how to spell the word. If you put it into an anagram or then you can share it into your [online] classroom. Yeah you can say, "You need to do this as homework." And then once you share it into classroom, it requires you to sign in and to put in your name and I can then see who's done their homework.
- Anni: I would never have time to go and check each student and how they're doing. But I can give them homework, "Please do this calculus and record it on your iPad and send me the video and you're explaining what you're doing."
- Viivi: ... gives me an opportunity to notice [the mistakes made by the students], "Oh, see! Somebody sends this. Oh! This is really interesting, because this then this and that."

The analysis of these extracts indicates that mobile learning as a tracking tool is likely used for checking student's homework and takes advantage of the affordance of mobile learning to encourage learners to participate and save time for interactive activities in the class, as well as, gaining time to do tracking outside classroom. Because of the tracking move, teachers can easily check what learners have learnt and know about the learning outcome in order to emphasise. Learner's self-correction in L2 use is not the only focus for employing mediational processes through corrective feedback, rather, understanding learner knowledge and ability is also important for L2 development (Peohner & Leontjev, 2020). The tracking function offered by mobile learning sounds like a pedagogical tool but it, on the other hand, mediates interaction between learners and teachers so as to clarify understanding for L2 development.

7.3.3 Provoking creativity

Mobile learning not only promotes interaction and serves as a tracking tool but also provokes creative thinking. Two teachers shared their preference for conducting tasks for sparking learner's creativity with mobile devices.

Lilja: ... audio books, where they first write a story, create the picture. They put pictures of the story in there (the app). Finally, they read the story, record their own reading. We can read their own stories in the classroom, or use these applications where you can make little movies or little animations. We use them a lot... so they're not just passively using it for a game, they're actually creating something with the application or with the device.

Viivi: we would like creativity. If we think about ... skills, you can have them create a lot of things like videos, as I mentioned, and different kinds of things that are possible again, but less stiff or less difficult to do easier to do with the mobile things.

As creativity is an important part of Finnish education, tasks for provoking learner's creativity are popular. All teachers introduced some applications for increasing creativity in the classrooms, such as Google Slides, Spark Post, Book Creator, iMovie, Sock Puppet and so on. Lilja was keen on provoking learner's thinking and using L2 by conducting creative mobile learning activities in the classrooms. Learners were asked to create some products, for example, games, stories, animation, movies, videos, and so on in the activities. Taking the learning games like Kahoot! and Quizizz as examples, they are used as a tracking tool (mentioned in Section 7.2.2) but also as a pedagogical tool for sparking learner's creativity. Normally, the learners engage to answer the questions or solve the problems in the games designed by teachers or educators. The more and faster the learners answer the questions and problems correctly, the higher score they can get and win the game which achieves motivation and participation.

Conversely, the teacher remarked on the diverse functions of mobile language learning games regarding pedagogical use. Older learners are capable of designing language learning games as well as teachers. The creative act

achieves the goal of consolidation and reinforcement, rather than being a passive user interacting with the device. Learners could participate actively by creating their own products, alongside, trying out language use throughout the creative activity. In this sense, mobile learning encourages internalisation and appropriation of L2 use in order to create a mobile language learning game. The interaction between learners and mobile devices and the learning applications can be visible mediation.

The affordances found through the analysis convey a key objective in language learning in this context, that is, learner agency. In the following section, the investigation extended to the digitally mediated agency.

7.3.4 Promoting learner agency

Throughout these three cases, active participation and not being a passive learner are emphasised. The teachers encourage their students to actively participate in learning as an implicit aim of using mobile learning. To reinforce this act, the teachers do not wait for the learners to be active agents but they prepare learners to learn on their own with one of the tools – mobile learning.

Mobile learning is used as a learning environment for learners to take over the responsibility of learning, such as stimulating creative activities and individualised activities. It mediates the use of L2 through interaction between learners and mobile devices. Learners are able to decide their learning pace and the ways to complete the tasks.

Anni: So you're gonna have to give them space to work in their own. they kind of find out the solutions themselves. Mobile learning would be a space or give them the opportunity to build up their agency. There's more opportunities for them to express themselves and to do learning in their own style.

Viivi: [I]t's really important to have the kids be active and using the language in all my lessons.

Lilja: ...so then they're not just passively using it for a game, where they're just using it, but they're actually then creating something with the application or with the device.

- Anni: So I think there are things that are completely out of my control, but like positive things. I think they go really well. But it also by no means me letting go of that control... In front of classroom, I don't really spend time on instructing them [but] the instructions are built into assignments. And I also kind of give them more agency because they are not relying to me to give them the instructions and the information, but they find the information and instructions themselves.
- Viiivi: [T]hat(mobile learning) helps me to differentiate the education and have them participate more so they're more active. They have to be listening and stopping and doing the things themselves. Instead of me as a teacher, stopping and pausing and telling them to answer this question.

The extracts illustrated the attempt of teachers to pass the responsibilities to the learners by using mobile learning to engage them. Mobile learning affords autonomy for learners as this learning environment loosens the teacher's control and raises the learner's awareness of their actions and encourages them to participate actively and manage their own learning, such as processing information at their own pace instead of being determined by teachers.

The mobile device mediates the interaction between learners and peers, as well as, learners and teachers. The learners act as active agents to digest the instruction of the tasks and make full participation. Moreover, the learners assigned themselves to different roles to work together in one of the tasks which articulate the active agents who have the will to act and take part in the activities assisted by the affordance analysed above.

Greeno (1994) noted when the context has affordances, it is properly followed by constraints. Mobile learning has its constraints which are worth considering when using mobile devices.

7.4 Constraints of mobile learning

The learning affordance regarding SLA in this study is to learn the linguistic form and meaningful use of language, specifically including the meaning negotiation, noticing and hypothesis testing (mentioned in section 3.1). Instead

of questioning the affordances, the constraints described by the participants properly contribute to the conversation of utilising mobile learning in language education to illustrate what opportunities are constrained by mobile learning.

One teacher commented that language learning is restricted by the entertainment affordance due to the distraction created by the mobile technology among learners. One found mobile learning distracting in gamification. Compared to the trend of adopting mobile learning in education, the constraints of it also need to be taken into account.

Lilja: We have children who are so addicted to the dopamine that they get from the devices. I have students that have huge difficulties to just sit still two minutes not doing anything waiting for everybody else to finish and not to take out their mobile devices.

Viivi: It can be a distraction for some people definitely... the kids playing a game when they should be doing something else.

Anni: But if it's just like doing it for the sake of touch. I don't know why it's just getting the kids excited for them. What's the point?

One of the teachers noticed that the learners addicted to technology, have difficulties in concentration and find it hard to build up endurance because of the perpetual stimulation of technology. The other teacher shared a similar opinion that learners are distracted by games easily and this hinders learning and teaching. Furthermore, one opinion says the design of mobile learning linking to the learning objectives is more important than the feature of mobile learning (e.g. touchscreen functions).

Except from distraction, the gamification abets passive learning in that learners are more likely to keep themselves as passive users instead of taking the responsibility to learn and use the language and relying on the teachers to give out the input.

Lilja: But those (games) are easy, in a sense, the person there is passively using it to play. They're very good at using it being passive users...

Anni: But it's generally if there's a task where there's just one correct answer, and it's really regimented.

When the learning games or tasks appear to be with standardisation, such as model answers or solutions, it is easy for learners to finish the tasks but they do not take the initiatives to take action in learning. Learners are highly motivated during mobile learning; in contrast, if motivation is the only reason for using mobile learning without engaging any pedagogical purposes or it only requires passive learning, in other words, the entertainment affordance taking over the learning affordance, it is not a meaningful use in SLA. It is an entertaining tool rather than a mediational or pedagogical tool whereas mobile learning is found to be a tool hindering learning and teaching.

8 DISCUSSION AND CONCLUSION

The aim of this qualitative case study is to investigate how three experienced language teachers in the Finnish society practiced mobile learning. Three teachers have different experiences built in different backgrounds in language education but their approaches to mobile learning are substantially matching with one another. Three cases overlapped with one another and meanwhile filled in the gaps altogether to respond to the research questions of this study through generating three global themes from the analysis, including (1) the categories of mobile learning, (2) the Finnish pedagogical thinking and (3) the affordances and constraints of mobile learning. This section summarises the findings and discusses how these three global themes answer the research questions and contemplate the findings relating to the previous literature, as a result, to understand the implementation of mobile learning and its pedagogical meaning given and strengthened by the teachers.

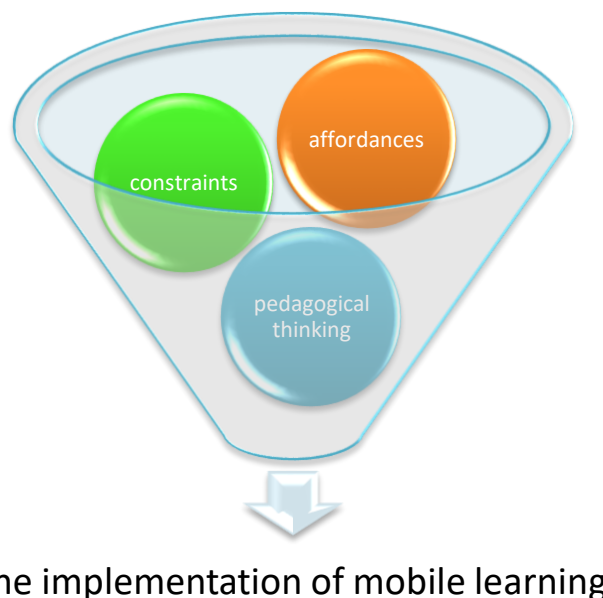


Figure 2 The key factors of mobile learning

Figure 2 illustrates the relationship between three different components of mobile learning and summarises their impacts on the implementation through the sociocultural lens, including the teachers' pedagogical thinking, the

affordances and constraints of mobile learning. The pedagogical thinking of the teacher and the role of mobile learning do not overlap but enrich the pedagogical opportunities for language learning as whether mobile learning is meaningful or not is elaborated by teachers' pedagogical thinking, instead of the meaning given by itself, so that the didactical use of mobile learning is a practical pedagogical choice that carries specific affordances for enhancing learning. This interpretation relies on the data to connect the teachers' perspective, mobile learning and language education. Although digital learning has been a controversy for decades, there is arguably value to use mobile learning in the classrooms (Carrier, 2017; Dashtestani, 2016), as well as, the expanding importance of the teachers' pedagogical thinking which might define mobile learning and affect the effectiveness of mobile learning in teaching and learning as Cutrim Schmid and Whyte (2018) and Lämsä et al. (2018) noted the design highly influences the learning outcome. Hence, to investigate how to fully use mobile technologies for supporting SLA, the study is based on the practices of using mobile learning as a pedagogical tool and a mediational tool and the pedagogical thinking described in the data.

Table 1 shows language learning in practices that were mediated through mobile technologies and teachers' pedagogical thinking. The table illustrates the possibilities of multipurpose mobile learning, as categorised as one of the technologies used in education. Mobile learning has the features of input, interactive and portable technologies but the aims of using it exceed the theory of digital learning technology coined by Carrier (2017). The categories of mobile learning go beyond Carrier's description as input, interactive or portable because the implementation of mobile technology varies according to the need of learning and teaching. For example, the use of mobile learning stimulating creativity aims to reinforce learners to create something, display their thoughts, try to make use of L2 and interact with their peers and teachers while at a group level, it targets more likely interaction among learners. Meanwhile, the evaluation use of mobile learning stressed more on the teachers' points of view that allows them to know what their students are good at or struggling with (Peohner & Leontjev, 2020).

Hence, this first global theme takes an initial step to answer the questions that the implementation of mobile learning varies and can be flexibly adjusted in order to fulfil the objective of language learning which means mobile learning is not only a pedagogical tool but striving to be a mediational tool that shapes and elicits learners' actions and thinking (Swain, 2015; Lantolf & Poehner, 2014; Lantolf & Thorne, 2006).

After explaining how mobile learning is used as a pedagogical tool, the following parts attempt to extend the discussion to mobile learning as a mediational tool. Mediated artefacts emphasise learners' mental activities regarding internalisation, appropriation, and habitus (Lantolf & Thorne, 2006). Instead of a learner's perspective, the teachers' influence takes part in the discussion of mediation through mobile learning. Fullan and Quinn (2015, as cited in Carrier & Nye, 2017, p.209) noted "Pedagogy is the driver, technology is the accelerator." In other words, how teachers use and what they attempt to achieve through using technologies primarily impact on learning outcomes. In terms of language learning, SLA is mediated through both the artefacts and teachers' approaches. Thorne and Poehner (2014) noted how a mediational tool affects language development depends on how a potential artefact is integrated into human activities. It is crucial to see how mobile learning is used pedagogically and, more particularly, mobile learning is arranged and organised based on its affordances to fit into learners' need to encourage internalisation and self-regulation for constructing meaning and linguistic form in SLA.

Three cases in this study brought insights to understand the mediation through mobile learning by analysing how mobile learning in practice offered opportunities for learners to acquire L2 which refers to affordance (Carrier, 2017; Eriksson-Bergström, 2008; Wertsch, 2007). In language learning, it refers to 'an environment for active, participating language learners' (Van Lier, 2000, p.253) which means learners consciously or subconsciously notice the affordances of an artefact in order to use it for learning. This feature of affordance resonates with the understanding of mediational tools that potential artefacts have no power unless they are defined and utilised by human for achieving goals (Thorne and

Poehner, 2014). The learner's perception of mobile learning is highly influenced by teachers, who adhere to the culture mediate thinking in SCT.

The sociocultural theory for SLA applies not only to the production and modification of language use but also to the thinking and learning process as Thorne (2005) stated all actions are socioculturally mediated. The ways learners use an artefact to support learning are adopted from the interlocutors (i.e. teachers and more capable others) socioculturally. For example, the international project introduced by Viivi allowed her students to interact and communicate with the other international students in English. Viivi needed to arrange time and resources to make a smooth and successful conversation between two groups of students. As a result, her students even continued to interact with the other group and practice language use outside the classroom through the use of mobile devices and the internet. Teachers showed the communicative affordance in the activities connecting to the pedagogical purpose and this regulates how learners use and interact with mobile technologies for achieving the learning goal furthermore.

In addition to communicative affordance, mobile learning provides opportunities for learners to participate actively. The tracking use of mobile learning offers opportunities for learners to perform and try to construct linguistic forms and meaning-making; moreover, it offers the opportunities for teachers to check learners' understanding which might result in modification and negotiation of meaning with the scaffolding offered by teachers. More examples of enhancing participation, video-conferencing, answering questions on mobile applications, sharing and commenting on the stream, and so forth, these social activities form the learning environment for language learners (Swain, 2000; Van Lier, 2000). Cutrim Schmid and Whyte (2018) added that the interactive affordance of digital learning is required to provide opportunities for communicating and negotiating meaning, using the L2, reflecting on learners' own learning needs, and connecting L2 use inside and outside the classrooms. With regard to this definition of interactive affordance, mobile learning affords an interactive environment for SLA by maximising the language use and which

leads to achieving an objective but there is no explicit evidence immersed in the data supporting that mobile learning is directing learners to make negotiation or modification since the data collection did not recruit any student's works or performances.

On the other hand, the affordances of mobile learning enlarging learners' participation pinpoints enhancing learner agency. Learner agency is defined as the learner's decision making and action initiated by themselves, rather than teachers or curriculum (Teng, 2017). Kalaja and Ruohotie-Lyhty (2020) addressed the learning process is constructed by active learners themselves rather than by receiving input passively. In other words, learners have to take charge of and take responsibility for their learning within the given autonomy. Teng (2017) noted that, for language learning, agency is the combination of motivation (maximising the learning opportunities for learners themselves) and intelligence (constructing learners' own learning environment with active engagement). He also suggested that the role of teachers is not to motivate them but to help them to motivate themselves and so they are able to take control of their own learning process. Thorne (2005) elaborated on the relationship between learner agency and SCT that agency is not produced individually. It is formed and shaped by social interaction and self-regulation where co-construction and renegotiation between individuals and the society take place. As lifelong learning is highlighted in the Finnish context (Ministry of Education and Culture & Finnish National Agency of Education, 2022), the embedded objective, raising learner agency, can be found in the data in which all experienced teachers tended to shift the responsibilities of L2 learning from them to their students, for example, lowering the extent of teacher-led classroom instruction by using mobile learning leading to enlarging the degree of learner-centred approach, allowing learning at learner's own pace.

Another finding that mobile learning implicitly connects to is digitally mediated creativity. This data is analysed with Swain's Pushed Output Hypothesis (2000) which supplements the SCT in an argumentative way after Krashen's Input Hypothesis. He argued that effective learning is more likely

elicited from the output produced by learners rather than the input given by teachers (Swain et al., 2015; Lantolf & Poehner, 2014; Swain, 2000; Van Lier, 2000). Output is rather understood as a learning action and process than a product as learners need to be pushed to make modified output by, for instance, elicitation and recasts (Swain, 2000). Per the findings, mobile learning did not prepare elicitation or recast feedback but provided an environment for learners to create linguistic form and meaningful interaction, that is to create output, by encouraging learners to think, to internalise, and to regulate their acts in order to achieve the objective in the SLA activities (i.e. creating a vocabulary learning Kahoot!). Another example, the camera on the mobile device is to capture pictures or film videos but when the design of the activities engages with teachers' pedagogical thinking, the camera changes into an environment for learners to practice language use authentically. Learners are more likely to practice and try out language use during the creativity stimulation activities since they are not passively receiving input but producing output for renegotiation of meaning and noticing in the mobile learning environment.

However, an artefact might withhold opportunities and also constrain language development. The constraints of mobile learning relate to the non-pedagogical purpose mediated by the artefact. As Mercer (2002) said teachers as a facilitator, an instructor but also a creator of the learning environment and conditions that encourage learners to be active learners and keep on reflecting on their learning journey, constraints of the artefacts worth considering when it is introduced to the classroom. Except considering if the use of mobile learning fits the pedagogical purpose, teachers as the interlocutors, who affect how learners use the technology socioculturally, need to agonise the possibilities that the technology hinders learning and teaching, that is, the distraction impact and lower learner's attention span. The more the teachers practice using mobile learning in language teaching and learning, the more varied conception of the affordances and constraints of the artefact are shown. Teachers is a crucial role to decide whether a tool or equipment, no matter if it is technological or not, supports to enhance the learning outcome.

The discussion of mobile learning used in language education has well established the connection between three global themes. Studying the digital technologies from the sociocultural perspective was a popular topic in educational sciences (Cutrim Schmid and Whyte, 2018) but this research study which contributes to mobile learning, mediation and the affordances and constraints brings new insights to the field. Nevertheless, two limitations have been identified which would impact the interpretation of the study. Firstly, the data gathering was planned to triangulate the findings by collecting three datasets, including the interviews, the field-notes of lesson observation and the photographs of lesson materials. However, the researcher was too ambitious for collecting the datasets within a short time and with limited resources. Only one lesson observation has been done and it was regarded as an example that helped the researcher to familiarise with language learning in the Finnish context and how mobile learning is perceived in practice, rather than a set of data. For example, smartphones are not recognised as a tool for learning inside the classrooms. Mobile learning is conducted with a device (i.e. tablet or iPad) provided by the government and schools. Hence, mobile learning is not commonly used in language education in Finland, even though the emphasis on ICT skills and digital learning in the Finnish curriculum. This leads to a challenge in recruiting participants. Some potential participants from different backgrounds might have difficulties taking part in the study due to the lack of resources. However, three participants who are expert, experienced teachers interested in mobile learning accepted the invitation to participate in this study. Although they are not from the same background or institute, their expertise and their thoughts based on their practices, that they have been using the mobile technologies in their classrooms constantly, helped to construct meaning on this research topic.

Besides, as mentioned earlier, the interviews were conducted in two ways. Two interviews were in person while one was through video-conferencing. Due to the limited time and resources, one of the interviews needed to be conducted online which might cause the risk of losing connection to the internet and so lose

a part of the data. Moreover, the relationship between the interviewee and interviewer was hardly built up as it was distanced literally and physically. When the participant was using the device for video-conferencing, it discouraged her to show any example visually, instead, she would rather describe the information orally. On the contrary, the other participants were, comparatively, more willing to show what applications and tasks they made previously as a visual aid for the researcher to make sense of what has been discussed.

To contribute to the conversation about digital technology in education, looking at the topic through the sociocultural theory is significant to the development and implementation of mobile learning. Nonetheless, this study needs to be supplemented with a learner's perspective to gather more evidence on the mediating process, for instance, how learners internalise and appropriate the use of the mediational tool. On the other hand, mobile learning as one of the digital learning faces an issue that is still developing and changing constantly. Further investigation on how mobile learning as a mediational tool affects SLA in practice from learners' perspective is constantly needed to bring the topic to another level. Moreover, to specify the mobile learning use in Finland, it arouses interest in investigating the use of mobile learning for nurturing learners as active agents.

This study highlights the significant affordances provided by mobile learning, its constraints noticed by the teachers and the teachers' pedagogical thinking. For the ongoing development of language education, this means to foster language learning, it is necessary for teachers to think about what tool they would prefer and what it affords, benefits and constrains learning and teaching. This is also emphasised by one participant, who said, 'It's not about using the latest apps or the latest software or having the latest device. It's more about what or how we relate to the students and what it gives to them.' This study attempts to deeply understand of the implementation of mobile learning without misconstruing the practices found in the data that are the only approaches in respect of 'effective'. Conversely, the use of mobile learning varies based on the learners and social needs as it is a pedagogical and mediational tool and it could

offer more potential affordances and constraints when the use is socioculturally shaped by learners and teachers.

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