Personal English Learning Ecologies

English as a Foreign Language and Technological Artefacts in School and out of School

Michel Cabot

A Thesis in the Master's Program in

"ICT in Learning"

University College Stord/Haugesund

November 2014

2014

Personal English Learning Ecologies

English as a Foreign Language and Technological Artefacts in School and out of School

Abstract

Purpose and Research Question

The main purpose of this Master's thesis was to map and analyse important learning ecologies of English learners at school and out of school. The main research question was: What role do digital and non-digital artefacts and 'agency' play in upper secondary students' self-perceived trajectories of English learning ecologies in the past, present and future? Questions on artefactual (technology), interpersonal (pedagogy) and language learning (content) oriented ecologies provided essential information on the students' personal English learning ecologies (PELE).

Method

This paper is based on a descriptive qualitative study. Focus interviews, in-depth interviews and member checking with three female and three male students of an upper secondary school in Western Norway were carried out. The first phase was explorative. The second phase consisted of constructed and analytical in-depth interviews with each student. In the third and last phase member checking was carried out six months later. Different coding methods were used to analyse the transcriptions.

Theoretical Framework

The current study was placed within a socio-cultural and ecological framework. The main emphasis was put on theories of a*gency* (Emirbayer and Mische 1998, Biesta and Tedder 2006) and the distinction between temporal (the past, present, future) and relational (iterative, practical-evaluative, projective) dimensions. Another approach was Mishra and Koehler's framework which was only used as an analytical tool to focus on the following three areas: 1. technology (types of artefacts and affordances: Gibson 1979, Salomon and Perkins 2005, Selwyn 2008); 2. pedagogy (the zone of proximal development and deliberate learning: Vygotsky 1978, 1986, Elgort 2011, Nation 2001, 2007); 3. content (productive versus receptive skills, input, interactionally modified input and output hypothesis: Krashen 1985, García Mayo and Alcón Soler, Swain 1985, 1995). Notions such as personal English learning ecology (PELE) regrouping artefactual, interpersonal and language oriented learning ecologies were introduced.

Conclusions

The findings of my study indicated that agency was created in the past with digital (e.g. *Facebook*, *Instagram*, *Twitter*, *Snapshot*, *Minecraft*, *Call of Duty, League of Legends*)

and non-digital artefacts (e.g. vocabulary tests, the blackboard, homework), whilst the present and the future seemed to be mostly influenced by digital artefacts (e.g. *League of legends, Minecraft, Kahoot* quizzes, *www.ordnet.no*) (cf. appendix B). My enquiry revealed that playful artefacts were more predominant for male students than female students in the present. The expressive artefacts were more used by girls than boys. It is possible to assert that there was an evolution from a playful past to an expressive present in the case of the girls, and from an expressive past to a playful present in the case of the boys.

Deliberate learning in out-of-school contexts was infrequent in this study. It was only present at school and in semiformal contexts. Notwithstanding the fact that many informants declared not being interested in deliberate learning outside school, they did not comment negatively on deliberate learning at school and in semiformal contexts. The dichotomy "out-of-school learning" versus "in-school learning" did not seem to be always convincing when talking about learning ecologies. In many situations we had in-school learning out of school and out-of-school learning at school.

The informants' English teacher played an important role within their learning ecology and the informants even enjoyed formal grammar teaching at the black board. All female students commented positively on vocabulary tests. Only the male students said that they developed more productive skills out of school. The English input was generally greater in out of-school learning. School was generally more important for the speaking skills of the female students. Writing skills were a challenge for all informants and were mostly initiated by the school teacher. It seemed that school was particularly important for the metalinguistic function of output. The hypothesis formulation and testing was of greater importance at home than at school only in the case of those students who either had English speaking parents or relatives or were used to gaming. Most ecological transitions or agentic moments in the informants' self-perceived learning trajectories could be qualified as asymmetric interactions within their zones of proximal development. An important implication of my study is that school has a beneficial and complementary function related to out-of-school learning and that the capitalization of out-of-school learning is not necessarily a panacea for in-school problems. In the cases of writing skills, metalinguistic function of output and deliberate learning school has apparently even a compensatory function.

Preface

This report is my master thesis for the conclusion of the Master program 'ICT in Learning' at University College Stord/Haugesund.

The initial motivation for the study stemmed from a cooperation with my colleagues Ph.D. Thomas Arnesen and Professor Lars Vavik. It is a modest contribution to phase two of the research project "Learning in the 21st century" at University College Stord/Haugesund.

I would firstly thank my supervisor Professor Lars Vavik. We had many spontaneous and really useful discussions.

I also want to express a special gratitude to Ph.D. Thomas Arnesen for lots of great inspiration, ideas and comments. He gave me a lot of detailed instructions on my project. All our meetings were incredibly fruitful because he is a good discussion partner.

Last but not least, I would like to thank my wife and three children who stood by me during the last two difficult years. It has been a great adventure and experience. It would not have been possible without your personal sacrifice.

Contents

List of Figures

List of Tables

1 Introduction

1.1 Rationale and Existing Research

An increasing number of Norwegian children and adolescents spend several hours a day in front of a computer. Students learn English at school and during their spare time outside school. Sundquist (2009, p. 25-26)) uses the term extramural English (EE) as an all-compassing umbrella term for notions used by other research fellows such as out-of-class learning, out-of-school learning or spare time English. Eshach (2007) emphasises that children attending Kindergarten and primary school spend 85% of their learning time outside school. "To understand fully children's (…) learning, one should look not only at learning that takes place in the kindergarten and primary school but also at learning that takes place out of school" (Eshach 2007, p. 171). Information and Communication Technology (ICT) is increasingly used by students, but influences teaching at school only to a certain degree (cf. for example Blikstad-Balas 2012 and Dabbagh 2012). According to a recent[1] European survey (cf. European Commission 2013) it is not the access to ICT, but the use of ICT in the classroom which could be a problem in Norway. Norway ranks at a good place, namely place 19, when it comes to using ICT in more than 25% of the teaching at grade eight. To improve the use of ICT and English at school it could be interesting to find out how ICT and English are used by the students themselves at school and out of school.

Quite surprisingly, it is difficult to find studies concerning EE (extramural English) or English out-of-school learning which are linked to the use of ICT. Very few studies specifically explored English out-of-school learning. Pickard (1996) studied EE (extramural English) of twenty proficient German students of English. The most popular EE activities were listening to the radio and reading newspapers, novels and magazines. However Pickard's study is unfortunately quite out of date as ICT did not have the same importance in the mid-1990s as today.

Pearson (2004) investigated in his study the effect of language proficiency on out-of-class learning strategies. Some of his informants reported that EE activities were more

---

[1] The *Survey of Schools: ICT in Education* commissioned in 2011 by the European Commission took place between January 2011 and November 2012. This report was published in February 2013 (cf. European Commission 2013).

efficient than formal teaching (Pearson 2004, p. 4). Some essential aspects of EE are according to Pearson (2004, p. 7) "learner motivation, learner awareness, learner training and learner monitoring or self-evaluation". Sylvén (2004, p. 220) advocates that male students are more active in EE activities than female students. But his study investigated only vocabulary development and not specifically the use of digital artefacts within English learning ecologies.

My thesis will focus on the use of ICT and English as a foreign language. The students sometimes come with their knowledge to school and feel that their knowledge is irrelevant to current in-school learning. Compared to other countries where students are less exposed to the English language, such as in countries where most foreign films and TV-productions are dubbed, Norway is in a unique position to profit from the students' out-of-school English learning. This is particularly relevant in the case of upper secondary school where there is extensive computer and Internet use. Every student has his or her own English learning history where he or she has encountered the English language using different digital or non-digital contexts outside or inside school. The main concern of this thesis is to find out where, when and how students learn English. This study does not answer the question of whether using learning ecologies linked to more digital or non-digital artefacts is beneficial to language learning.

This thesis is a contribution to phase two of the research project "Learning in the 21st century" at University College Stord/Haugesund.

1.2 Problem Definition and Research Questions

The main purpose of this thesis is to map and analyse important learning ecologies of English learners. When a student learns English, he creates his own learning ecology which can include digital and non-digital artefacts. The main research question of my thesis is: What role do digital and non-digital artefacts and 'agency' play in upper secondary students' self-perceived trajectories of English learning ecologies in the past, present and future?

The following three research areas are derived from Mishra and Koehler's (2008) TPACK (technological, pedagogical and content knowledge) framework which will be

used as an analytical tool. The three research areas will be analysed separately without any specific focus on possible intersections between content, pedagogy and technology knowledge. Related more specifically to the theories used in this thesis, the following sub-questions are asked:

Technology framework (types of artefacts and agentic triggers (Gibson 1979, Salomon & Perkins 2005, p. 84), "the playful, the expressive, the reflective and the exploratory" (Selwyn 2008, p. 9)): Where are upper secondary students when they learn English? What is the reason for using certain digital or non-digital artefacts? What characterises these artefacts? Background: artefactual English learning ecologies. **Where, why and which digital or non-digital artefacts?**

Pedagogical framework (the zone of proximal development (Vygotsky 1978, 1986), deliberate learning (Elgort 2011, Nation 2007): Who is involved in the learning situation? Is there any deliberate learning? Background: interpersonal English learning ecologies, interpersonal relationship between the English learner and other English learners or more knowing environments. **With whom and what kind of deliberate learning?**

Content framework (productive versus receptive skills, the input hypothesis (Krashen 1982), interactionally modified input (García Mayo & Alcón Soler 2013), the output hypothesis (Swain 1993)): Which of the four skills are developed? Is there a main focus on input (receptive skills) or output (productive skills)? How do the learners develop their input or output? Background: language oriented English learning ecology, relationship between the learner and the English language. **Which language skills?**

All the above mentioned concepts and theories will be explained in the following chapters. Artefactual, interpersonal and language learning oriented ecologies will give us some essential information on the students' Personal English Learning Ecologies (PELE). An important distinction will be in-school learning on the one hand and out-of-school learning on the other hand. This thesis has a holistic approach. It is supposed that questions like why and how are often more interesting than what.

2 Theoretical Background

The theoretical part of this thesis consists of a macrostructure and three microstructures. In the first section I will outline - as illustrated below in figure 1 - the macrostructure and the main theories on agency and learning ecology.
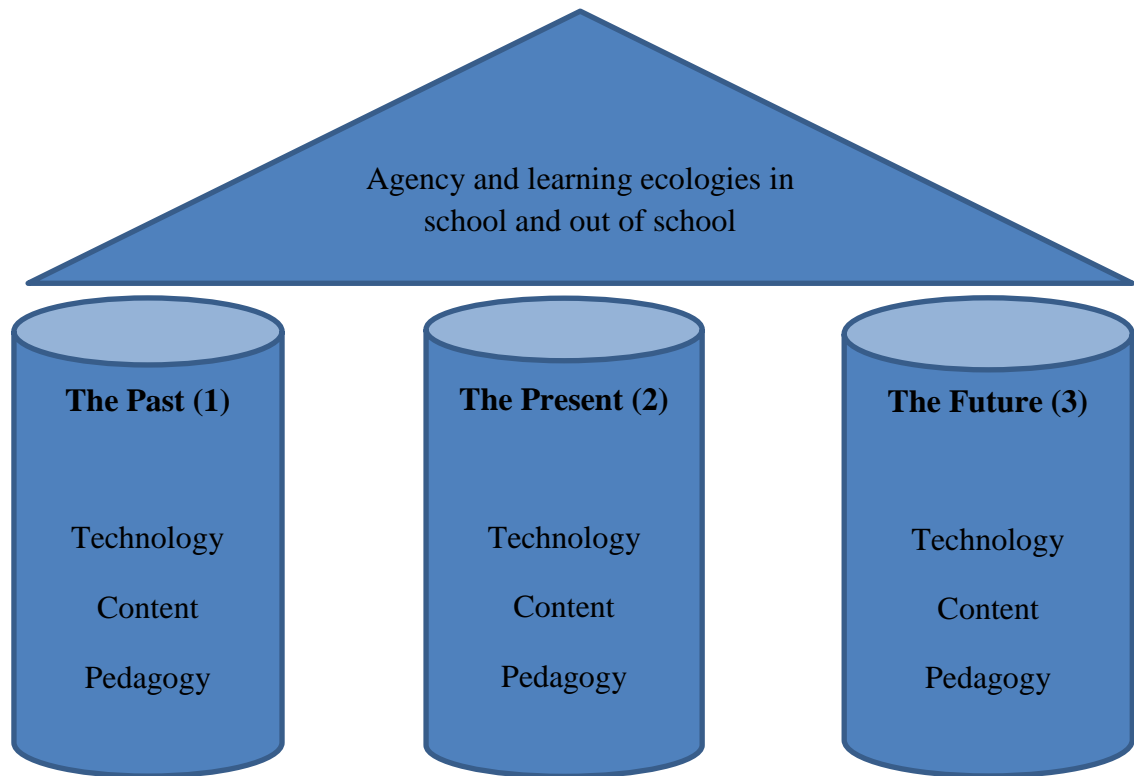
Figure 1 Agency (Biesta & Tedder 2006, Emirbayer & Mische 1998), learning ecologies (Barron 2006) and the TPAC framework (Mishra & Koehler 2008)

In the second section I will introduce the three microstructures derived from Mishra and Koehler (2008) and the theories and analytic tools for each microstructure's section on technology, content and pedagogy. The three microstructures are all part and parcel of the macrostructure which tries to understand to what extent students create agency and what kind of learning ecologies are formed by upper secondary students in English.

A theoretically broad approach to the problem area under scrutiny can be justified by the ecological perspective of this study.

2. 1 The Thesis and its Macrostructure

2.1.1 Agency, Purpose and Ecological Transitions

This thesis will use theories on 'agency' as a main theory. The level of agency seems in my opinion to play a major role in learning contexts. Greeno (2006, p. 538) defines agency as "learning to act authoritatively and accountably", as "an action that has consequences that depend on choices made by the agent in which material or conceptual resources are appropriated, adapted, or modified for a purpose in the agent's activity". According to Kumpulainen (2010, p. 23) "the will to act, to experience and to exist" or "an identity that has been formed through participation" is called agency, too.

Biesta and Tedder (2006) suggest two different definitions of agency: 'agency as phenomenon' (explanans) and 'agency as theory' (explanandum). Agency is in their first definition "the situation where individuals are able to exert control over and give direction to the course of their lives" (Biesta & Tedder 2006, p. 9). The second definition is an attempt to theorise agency as an analytical category in its own right. On the one hand agency is "a construct, a phenomenon to be described, understood and explained" and on the other hand "agency refers itself to an explanatory theory which proposes to understand and explain human action in terms of its 'agentic causes'" (Biesta & Tedder 2006, p. 9). In this context it is quite interesting to find out which causes changed a learner's individual learning ecology. Such knowledge could be useful for teachers who can influence pupil's learning.

My thesis will take both definitions into consideration. The main purpose in this study is to know where, why and when the students learn English in their learning ecologies. It is argued that agency is not achieved by the individual, but always by the individual-in-transaction. Agency could be visualised in the following way:

```
Agent  ➡  AGENCY     ⬅  Structure
           Transaction
```

Figure 2: Simple representation of agency

An agent can opt for another structure. However, a structure can also change an agent. It could be of interest to know what an environment does with an agent. Are there people who are more agentic than other people because of certain situations?

Agency is the transaction between an actor and a structure and this transaction is characterized by the dynamic interplay between relational and temporal dimensions. Emirbayer and Mische (1998, p. 963) define agency

> *as a temporally embedded process of social engagement, informed by the past, (in its habitual aspect), but also oriented toward the future (as a capacity to imagine alternative possibilities) and toward the present (as a capacity to contextualize past habits and future projects with contingencies of the moment.*

The polarization between structure and agent and the overfocus on agency as only either routine, purpose or judgment seem to be too simple. There is always a risk to focus too much on either agent or structure. Biesta and Tedder (2006, p. 19) call for a more ecological understanding of agency in which "agency is not something people can have. It is (…) something that people can achieve, and they can only achieve it in transaction with a particular situation". One shortcoming of Emirbayer and Mische's analysis is that "they pay far more attention to the different ways in which individual actors can engage with 'temporal-relational context' than with understanding how such contexts 'engage' with actors" (Biesta, Tedder 2006, p. 19).

The notion of 'particular situations' mentioned above in Biesta and Tedder's definition can be linked to what Bronfenbrenner (1979) calls "ecological transitions". He uses this term for some crucial moments of a learner's trajectory where he changes his attention from one environment to another to concentrate on what to attend to, where to interact, whom to spend time with and what objective to pursue. It looks like research has given little attention to the questions why, how, when and where adolescents create learning opportunities or ecologies for themselves (cf. Barron 2006, p. 197).

In order to better understand the notion of agency, it could be advisable to compare it to other terms, as for example learner autonomy. In this context we could mention Holec's (1981) research and theories. Holec defines learner autonomy as the "ability to take charge of one's own learning", noting that it is "to have (…) the responsibility for all the decisions concerning all aspects of this learning" (Holec 1981, p.3). If we take this definition of learner autonomy, we can rediscover the etymological meaning of the

word agency. Agency reminds us of the latin word *agens* which can be opposed to *patiens*. The role of the pupil who develops agency is active and not passive. Agency has to do with the ability to shape one's responsiveness to problematic situations.

The term learner autonomy seems to focus on the learner and not on the pupil as a whole human being. Agency is broader and perhaps more related to what Biesta (2012, p. 14) calls subjectification. He advocates that educational cultures are learning cultures framed by purposes. There are three domains of educational purpose which have to be equally covered: qualification, socialisation and subjectification. The purposes of a school system or a teacher can impact on a student's agentic moments where he for example suddenly decides to use more digital than non-digital artefacts. The English teacher plays an important role because he can influence a student's agency by his focus on subjectification, that means on "subjectivity ('Subjektivität')", becoming a citizen "(Subjekt werden)" or "human freedom" (Biesta 2012, p. 13). Biesta's notion of purpose is based on a school perspective which takes into consideration questions on societal usefulness, but his theories could be applied on students, too. Biesta (2013, p. 6) considers that the language of learning "is a very unhelpful language in the field of education". Terms such as agency and purpose seem to be more useful than learning.

The following definition given by Emirbayer and Mische's (1998, p. 970) could improve our understanding of agency:

> *What, then, is human agency? We define it as the temporally constructed engagement by actors of different structural environments – the temporal-relational contexts of action – which through the interplay of **habit, imagination and judgment**, both reproduces and transforms those structures in interactive response to the problems posed by changing historical situations.*

Like Emirbayer and Mische (1998, p. 962-963) I understand agency as the ability of students to use past experiences in actual situations where a problem has to be solved. At the same time students manage to influence their future by decision making in the present. On the one hand, there is a temporal perspective where a student has to relate himself to the past, the present and the future and on the other hand, there is a relational perspective where the student uses the past for developing some habits, the present for evaluation and assessment and the future for purposes. Habit, imagination and judgment on the one hand and the temporal contexts on the other hand seem to be important in this definition. This conceptualisation is also called the 'chordal triad' which includes:

1. the iterational element (past habits), 2. the practical-evaluative element (present judgment) and 3. the projective element (future imagination). Biesta and Tedder (2006, p. 15) visualise the chordal triad of agency in the following way:

Table 1: The chordal triad of agency (adapted from Biesta & Tedder 2006, p. 15)

	THE CHORDAL TRIAD OF AGENCY (Emirbayer and Mische 1998)								
	past			present			future		
iterative	selective attention	recognition of type	cate-gorical location	manoeuver (present)			expectation (future)		
practical-evaluative	characterization (past)			proble-matization	decision	execution	deliberation (future)		
projective	anticipatory identification (past)			experimental enactment (present)			narrative con-struction	symbolic recom-position	hypo-thetical reso-lution

The dominant elements in each dimension which are highlighted in blue in the table above were used as a reference point for my in-depth interviews (cf. appendix A) and will be explained more explicitly in chapter 2.2.4.

According to Emirbayer and Mische (1998) agency is only achieved when the three above mentioned dimensions "enter into different and changing relationships with the temporal-relational contexts of action" (1998, p. 1002). The interaction between them can be called agency. Biesta and Tedder's (2006, p. 18) more ecological focus on "particular situations" and "actors by-means-of-an-environment rather than simply *in* an environment" is deemed complementary in this thesis. This holistic approach is of particular importance because it is part and parcel of the ecological framework of my research. Emirbayer and Mische's (1998) and Biesta and Tedder's (2006) analysis of agency can be mapped in the following way:
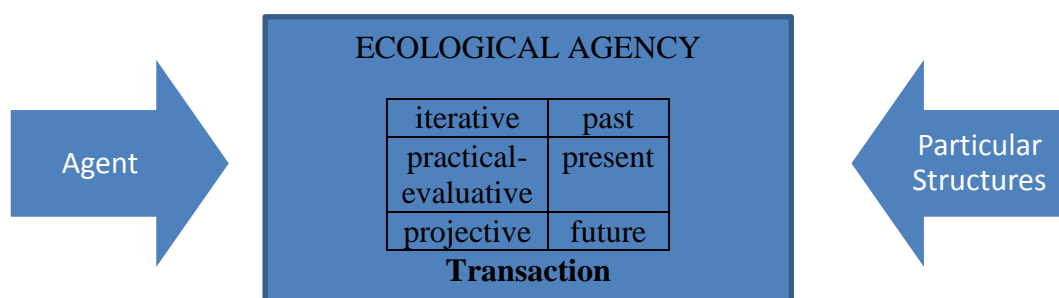
Figure 3: Complex representation of agency

The main focus of this thesis will be on Emirbayer and Mische's (1998) and Biesta and Tedder's (2006) theories on agency. Other definitions given for example by Greeno (2006) and Kumpulainen (2010) will be mentioned, but not used as a main theory.

2.1.2 Socio-cultural Perspective and Learning Ecologies

The current study is placed within a socio-cultural theoretical framework. Learning in a socio-cultural perspective is according to Dysthe (2008, s. 43) essentially characterized by the following six aspects: 1. It is situated, 2. it is basically social, 3. it is distributed, 4. it is mediated, 5. language is part and parcel of learning situations and 6. learning is participation in a 'Practice Community' (cf. Wenger 2004). Especially point five may be of particular interest since the English language increasingly infuses many learning situations in which students use digital and non-digital artefacts which may create and satisfy some communicative needs. The above mentioned six aspects are in my opinion essential for further learning and summarise to a certain degree the conceptual framework of this thesis sensu lato.

The theoretical underpinnings of the current study will also be derived from Barron's (2006) theory on learning ecologies. She uses the following definition of a learning ecology: "A learning ecology is defined as the set of contexts found in physical or virtual spaces that provide opportunities for learning" (Barron 2006, p. 195). Barron's framework made it easier to find good interview questions which could give us some insight into the world of an English learner. It was of particular interest for this study.

2.1.3 Personal English Learning Ecologies and Artefacts

The research area under scrutiny is the use of digital and non-digital artefacts within learning ecologies. The notion of learning ecology has been explained in the previous chapter.

In regard to learning ecologies, it goes without saying that the students' learning process outside school and increasingly at school is often affected by ICT, e.g. computer games, music, movies or even news reading activities in English. A student of mine whose English could be said to be excellent told me that he had learnt English by playing *World of Warcraft*, especially after having started to use a microphone. Gaming can promote English learning. This is for example confirmed by a study made by Uuskoski (2011) in Finland. The number and the content of tools used by an individual within its own English learning ecology is important for describing the personal English learning ecology (PELE) of a student. These tools can be called digital or non-digital artefacts. By artefact – derived from the Latin phrase *arte factum*, from *ars* 'skill' and *facere* 'to make' - I understand any object or 'concept' created by humans, typically of linguistic or socio-cultural interest. This study considers a classical blackboard as a non-digital artefact while Smart Boards are considered as digital artefacts. Depending on the use of *Word* or paper, homework can be seen as a digital or non-digital didactic artefact.

The overarching research objective of this study is to describe some learners' Personal English Learning Environments (PELE) which - according to Horgen (2012) - consist of people and personal web tools. Certain tools are used more by some people and not at all by other people.

With regard to terminology, different terms such as Personal Learning Environment (PLE) or Personal Learning Network (PLN) can be used to describe some aspects of a same phenomenon. The notion of PLN is linked to PLE (Personal Learning Environment) which according to Dalsgaard (2011, s. 9) has appeared in 2005 as a reaction to integrated e-learning or learning management systems. A PLN is according to Martindale and Dowdy (2010, s.182) part and parcel of a bigger picture at a superior level which could be called PLE (Personal Learning Environment). In my case one might say that my PLE is influenced by conditions where ICT is highly prioritised and *Facebook* well accepted in Norway. The situation would be rather different in my home country France. This can obviously influence my PLN and my use of *Facebook*.

Notwithstanding, the term 'environment' in PLE seems more adequate to my research than 'network' in PLN. The question is in my opinion not whether we are able to build up a network consisting of web tools and people, but how we experience, relate to and are influenced by the environment or personal world in which we live. A different perspective underlies the term of PLN. When we use the term network, we get the idea of building up contacts and web-tools in order to learn English and that all this can be done consciously, exclusively on purpose. Digital contexts make the students learn English both consciously and unconsciously.

Learning 'grows' everywhere like in an ecology which describes the relation of plants and living creatures to each other and to their environment. It can't always be controlled. If we compare the terms environment and ecology, the latter presupposes more an active interplay between an individual and a given context. Thus, the term Personal Learning Ecology will be preferred. Related to second language acquisition, I will use the term Personal English Learning Ecology (PELE) in this thesis.

2.1.4 The TPACK-framework as Analytical Tool

Another important approach will be found in Mishra and Koehler's (2008) framework on technological pedagogical content knowledge. The questions in my enquiry will focus on three following domains: 1. technology (agentic triggers (Gibson 1979, Salomon & Perkins 2005, p. 84), "the playful, the expressive, the reflective and the exploratory" (Selwyn 2008, p. 9)), 2. pedagogy (the zone of proximal development (Vygotsky 1978, 1986)), deliberate learning (Elgort 2011, Nation 2007)), 3. content (receptive versus productive skills, the input hypothesis (Krashen 1982), the output hypothesis (Swain 1993)). In opposition to Mishra and Koehler, these three research areas will be analysed separately. There won't be any particular focus on possible intersections between content, pedagogy and technology knowledge.

Mishra and Koehler's notion of pedagogical knowledge reminds us of a teacher-student relation. However, the research area under scrutiny in this study is the student's self-perceived learning situation. From a teacher's point of view it is important to maintain the notion of pedagogy because it forces us to analyse the students' learning ecologies pedagogically when they actually act as their own teachers. The possible views of a teacher can be integrated in a discussion about self-perceived learning ecologies where

the teacher often is not present. Thus, a good balance between the students' views and the teachers' views based on research about good learning could be guaranteed.

The notion of technology is to be understood sensu lato. This study will focus on digital artefacts, but other artefacts will also be mentioned. Even the English language, vocabulary tests or artefacts such as the blackboard in grammar teaching will be included. By technology I understand everything that seems to be handy to use for teachers and students. Even Mishra and Koehler (2008, p. 3-4) define technology in their definition of technology knowledge broadly:

> *Technology knowledge is knowledge about standard technologies such as books and chalk and blackboard, as well as more advanced technologies such as the Internet and digital video.*

This study uses Mishra and Koehler's TPACK framework as a lens or analytical tool. In contrast to their theories, there won't be any focus on the skills required to operate particular technologies.

2.2 The Thesis and its Microstructure

2.2.1 Technology Oriented Theories

Theories on affordances (Gibson 1979, Hammond 2010, p. 209) appear interesting because they can be linked to theories on technology or agency (cf. chapter 2.1.1).

Affordance is the quality of an object or an environment which allows an individual to perform an action. A knob affords twisting or pushing, while a cord affords pulling. Gibson (1979, p. 127) defined affordances as *"all action possibilities latent in the environment, objectively measurable and independent of the individual's ability to recognize them, but always in relation to the actor and therefore dependent on their capabilities"*.

In opposition to Gibson, Salomon and Perkins (2005) relate the term much more to cognitivism. They talk about an intellectual amplification *with, of* and *through* technology. These three kinds of effects can be defined as

(…) effects with technology, amplifications of cognitive capability as the technology is used; effects of, residual effects without the technology that is due to substantial experience with it; and effects through, effects largely with the technology that go beyond simply enhancement to a fundamental reorganization of the cognitive activity in question. (Salomon and Perkins 2005, p. 84)

It is important to understand Salomon's term of amplification of cognitive capability and "person plus" (Salomon &Perkins 2005, p. 84). In the case of "effect with", there is an intellectual partnership between the tool and the individual using it. The technology has to do things actively which increase the cognitive capability of the user. One example given by Salomon is the spell check on computers. In this case we can talk of a real added value of technology because "the partnership frees the user from the distractions of lower level cognitive functions" (Salomon & Perkins 2005, p. 74).

The notions of *agency* and *affordance* seem to be of particular interest for this study. The individuals can develop agency in a good learning ecology when there has been a transformation between a structure - including for example the use of ICT - and an actor (Biesta 2006), whilst affordances exist independently of the individual's ability to recognise these structures. Affordances can - according to Hammond (2010, p. 209) - easily be linked to ICT and its possibilities to appeal to people:

> *The focus is on how should we perceive or design a tool so that it supports activities which are seen as desirable or necessary for learning. This implies a top down interest in affordance in that the focus is on what is there in the technology to support a previously articulated pedagogy (Hammond 2010, p. 209).*

The difference can be seen in the transformational character of agency, namely the possible use of a structure by an individual actor. Agency could imply the action itself. That would be a step further than just the phenomenon or existence of affordances. In addition to that, it is possible to associate agency with the idea of autonomy or somebody being his or her own actor for change. A main difference between affordance and agency seems to be the aspect of control which makes sense in a conceptualisation of agency only to a certain extent:

> *Many discussions about agency assume a link between agency and control. In some cases there is a very strong link – e.g. agency as that part of the self which controls the 'identity-work' of the self – while on other cases the link is weaker – e.g., Arendt's idea of agency as being dependent upon re-actions of others. Although it makes sense to include*

the idea of control in a conceptualisation of agency, it is also important to acknowledge that control is not an all-or-nothing concept (Biesta & Tedder 2006, p. 27).

In this thesis we want to use the term affordance sensu lato. We want to define this term as the trigger for future actions resulting from an interaction between a user and a technology which can influence an English student's learning ecology.

Selwyn's (2008) criteria for web 2.0 learning also provide good notions for reflections on a personal English learning ecology (PELE). According to Selwyn (2008, p. 9) "the activities most often associated with web 2.0 realise four typically human dispositions: the playful, the expressive, the reflective and the exploratory". Some students are interested in playing games while some other students want to express feelings and opinions. Another group of students wants to reflect and find a deeper meaning or the real importance of a feeling or experience. The last group behaves like explorers on the net. It goes without saying that all four groups can intertwine.

2.2.2 Pedagogy Oriented Theories

Pedagogy is another important field which can describe some upper secondary students' learning ecologies. In this context especially Vygotsky's (1978, 1986) zone of proximal development (ZPD) is of particular interest. Although this zone is not always as visible and easy to determine as at school, it exists undoubtedly in out-of-school learning. The difficult question is often to determine what kind of zone and scaffolding is beneficial to an improvement of the student's language.

The competence aims in the English subject curriculums for upper secondary schools in Norway (Utdanningsdirektoratet 2013) mention explicitly communication as an important aim. Communicative learning situations can be considered as zones of proximal development which can be described in Vygotsky's (1978, p. 86) own words as

The distance between the actual developmental level as determined by independent problem solving and the level of potential problem solving as determined through problem solving under adult guidance or in collaboration with more able peers.

Especially with regard to communication, questions on who is involved in communicative learning situations are important because these individuals provide scaffolding.

Vygotsky emphasises 'scaffolding' by "more able peers" which implies that an intellectual asymmetry must exist between the learners. As many researchers have noted (Fernández, Wegerif, Mercer & Drummond 2001; Littleton & Light 1999; Cowie & van der Aalsvort 2000), learning can also result from 'symmetrical' interactions where the students have similar levels. An interesting question of this study could be whether interactions which are beneficial for the language development of some upper secondary student are mostly symmetrical or asymmetrical.

According to Luckin (2008) the emphasis that Vygotsky places upon interaction between a learner and his environment is important. The development of the individual learner is the result of his internalisation of these interactions with his environment. Wertsch (1985) calls this internalisation "decontextualization of mediational means".

He defined this principle as "the process whereby the meaning of signs becomes less and less dependent on the unique spatiotemporal context in which they are used" (Wertsch 1985, p. 33). This definition of decontextualisation fits in the ecological perspective of our study and the dynamic interplay between relational and temporal dimensions in our approach to agency.

Another important issue in terms of pedagogy is the question how upper secondary students learn English within their English learning ecology. Research (Krashen 1982, DeKeyser 1998, Ellis 2008, p. 2) makes a distinction between implicit and explicit learning and it has been hotly debated whether there is a transfer from explicit to implicit knowledge. 'Implicit' learning is often used as a synonym to 'Incidental' or 'unintended' learning. The dichotomy 'incidental' or 'unintended' versus 'deliberate' or 'intentional' learning (Schmidt 1995, p. 7) can also be of particular interest in this study. However, the problem is that implicit or incidental learning can occur at any time and everywhere, both at school and out of school. It is per se difficult to know when and where this form of learning occurs in upper secondary students' English learning ecologies. Thus, our study will only take into consideration 'deliberate' or 'intentional' learning.

'Deliberate learning' in my definition includes specific actions carried out by students who want to learn actively and use digital or non-digital artefacts for getting specific answers and improving their level of knowledge. Learning in this case is considered as learning with a conscious intention of improving his knowledge for example in English vocabulary, culture or civilisation. Hatano and Oura (2003, p. 26) say that "students also are expected to develop interest in and acquire rich and well-structured knowledge of academic domains through deliberate practice". According to Schmidt (1995) attention is required for all learning. In opposition to Krashen (1982, 1993) who supported a non-interface position between explicit and implicit knowledge and made a distinction between learning and acquisition, an intermediate view is clearly emerging in research. Not all language features can be acquired when a learner's attention is focused exclusively on meaning. Ellis (2008) advocates a weak interface position. Elgort (2011) claims that Krashen goes too far when he claims that deliberate learning is not useful because it does not affect acquisition. Elgort's research on vocabulary acquisition shows that deliberate learning is not only an efficient and convenient, but also a very effective method of L2 vocabulary acquisition. But deliberate form-focused learning needs to be a part of a balanced learning approach in language courses. Nation (2007) recommends equal amounts of time within four strands: meaning-focused input, meaning-focused output, language focused learning and fluency development, where language-focused learning includes deliberate learning and form-focused instruction. Nation emphasises that the strand language-focused learning should only be a small part of the course and not make up more than one-quarter of the time spent on a whole language course. According to Nation (2001, 296-316) there has been substantial evidence that deliberate learning vocabulary can result in large amounts of well retained usable knowledge.

In the case of deliberate learning, the purpose of the student's learning is to intentionally improve his level of English in e.g. vocabulary, civilisation and literature.

2.2.3 Content Oriented Theories

In Selinker's (1972) and Corder's (1982) interlanguage theory the learner's language is considered as an idiosyncratic dialect. The language learner develops at all points of his learning career a "language" with "latent structures" which is between his mother tongue and the target language. His interlanguage is "regular, systematic, meaningful, that means it has a grammar and is, in principle, describable in terms of a set of rules"

(Corder 1982, p. 17). This theory can be of particular interest in the description of English learning trajectories because the development of interlanguage presupposes communicative needs. Corder asserts that

> *he (sic: the learner) develops his interlanguage system in response to his experienced communicative needs. The logical implications of this are twofold: if he experiences no needs, he won't learn at all; if he can manage with whatever knowledge he has, he won't go on learning. His interlanguage grammar will fossilize at the point in its development where his needs are satisfied. (Corder 1978, p. 83)*

The aim of this study is neither to analyse the informants' English nor to know whether they have developed an interlanguage or not[2]. It is however of particular interest to find out whether experienced communicative needs can promote a non-fossilisation of mistakes and influence learning.

Communication is also mentioned in the competence aims of the English subject curricula for upper secondary school in Norway (Utdanningsdirektoratet 2013). A distinction is made here between communication, language and culture, society and literature. My enquiry will not focus on the content itself, but on how students acquire new content knowledge, that means by reading, writing, listening or speaking. The term 'content' is to be understood metalinguistically in this study. It will be of particular interest to know to what extent the chosen learning ecologies made the students come one step forward in their interlanguage or learning language and which of the two skills, receptive or productive skills, has been developed.

Other pertinent theories are Krashen's (1982, 1985) comprehensible input hypothesis, García Mayo and Alcón Soler's (2013) interactionally modified input, Swain's (1985) "pushed output" hypothesis and Long's (1996) interaction hypothesis.

According to Long (1996) interaction presupposes comprehensible input and output and fosters acquisition when a communication problem arises and learners are engaged in negotiating for meaning. The modifications that arise help to make input more comprehensible, provide corrective feedback, and push learners to modify their own

---

[2] It is difficult to operationalise the interlanguage theory. Selinker (1972, p. 212) makes the assumption that a mere 5% of learners "'succeed' in learning a second language so that they achieve native-speaker 'competence'". Thus, it can be asserted that 95% develop an interlanguage when they are in the process of learning. The term "interlanguage" is according to Selinker not to be understood negatively.

output by reparing their own errors. This is illustrated by the well-known example from Pica (1994, p. 514):

> *Learner: The windows are crozed.*
>
> *NS: The windows have what?*
>
> *Learner: Closed.*
>
> *NS: Crossed? I'm not sure what you are saying there.*
>
> *Learner: Windows are closed.*
>
> *NS: Oh. The windows are closed. Oh. Ok, sorry.*

By making mistakes and being exposed to communication problems many learners will learn the English language more easily. Long's interaction hypothesis presupposes in a way Krashen's input and Swain's output hypothesis.

According to Swain (1985) good opportunities for output are when the learner is stretched to express messages clearly and explicitly. This "pushed output" is beneficial for language acquisition. Swain (1995, p. 128) proposed three functions of output in the second language learning process: 1. the noticing function, 2. the hypothesis formulation and testing and 3. the metalinguistic function. The results of Swain's study in which think-aloud procedures were used demonstrated quite clearly that second language learners notice problems and gaps in their linguistic knowledge and solve them either correctly or incorrectly. In addition to that, to test a hypothesis learners need to do something, either by writing or speaking. The learner's output itself becomes a hypothesis. This is of particular interest for the development of a learner's interlanguage. The third function is also important because the learner has to reflect on the language form. This often occurs in a dialogic interaction and metalanguage can be used or not for describing for example grammar rules.

However, Krashen's (1982, 1985) input hypothesis is difficult to operationalise, especially by using in-depth interviews. The English input of upper secondary students seems to be increasingly high. It is unusual to dub films or serials on Norwegian television. Krashen talks about comprehensible input which can be challenging to a certain degree (i+1) and is decisive for a learner's development. When the input becomes too difficult, it is not beneficial for the learner.

García Mayo and Alcón Soler (2013) mention that a so called interactionally modified input has been claimed to facilitate the learning process of foreign languages. It seems to be more effective than premodified input where input is modified in terms of decreased complexity and increased quantity and redundancy. In the following example negotiation in an exchange between two learners leads to input that explains the lexical meaning and use of an item to another learner:

S1: And they have the spaceship

S2: The what?

S1: The spaceship

S2: What does it mean?

S1: Like a car to travel to the space

S2: Ah.

S1: The astronauts use it to go to the moon

S2: Oh nave especial

(García Mayo & Alcón Soler 2013, p. 215)

It could be quite interesting to analyse and describe where and how interactionally modified input occurs in students' English Learning Ecologies.

2.2.4 Agentic Dimensions in the Past, Present and Future

It is worth mentioning that the following elements and dimensions can intertwine and feed into one another.

The Past and the iterative element

According to the chordal triad of agency (cf. chapter 2.1.1 and Emirbayer and Mische 1998, p. 975) the iterative element is the dominant tone of the past. The term iterative is derived from the latin adverb *iterum* which means *again*. An iterative element of agency means the quality of repeating a process with the aim of approaching a desired goal, target or result. Emirbayer and Mische distinguish three different categories: *selective attention, recognition of type* and *categorical location*. Only two of these dominant tones are operationalised in this study, namely *selective attention* and *recognition of type*.

The first category encompasses the capacity of our mind to only focus attention upon a small area of reality. Our mind is selective. What we consciously or unconsciously remind from the past, will influence our present or future actions.

The second category deals about the actor's ability to recognize the same pattern from the past in the present and the future. Actors recognise "likeness" or "analogy" (Emirbayer and Mische 1998, p. 979) of an emerging experience with those of the past.

The present and the practical-evaluative element

Regarding the present, Emirbayer and Mische (1998) recommend to look at three dominant tones within its internal chordal triad: *problematization*, *decision* and *execution*. Only two of these dominant tones are operationalised in this study, namely *problematization* and *decision*.

In the first case of problematization, our ability to recognise "ambiguous, unsettled or unresolved situations" (Emirbayer and Mische 1998, p. 998) can be a challenge for language learners. A problem or misunderstanding can be created by using for example a wrong word in a discussion and the student would want to correct the mistake as quickly as possible. The first step of avoiding future mistakes is to realise that there is a problem which is unresolved at the very present moment.

In the second case, our decisionmaking or our resolution to act here and now is important for describing an important aspect of agency. This element is closest to the general definition of agency which defines agency as the ability "to exert control over and give direction to the course of somebody's life" or "the capacity of actors to critically shape their own responsiveness to problematic situations" (Biesta & Tedder 2006, p. 9). It is worth mentioning that agency always has to do with overcoming and not insoluble problems. Learning a foreign language such as English in our case, can be described as an overcoming problem although it is not always perceived as so.

The future and the projective element

There are three dominant tones within the internal chordal structure of projectivity: *narrative construction, symbolic recomposition and hypothetical resolution.* Only two of these dominant tones are operationalised in this study, namely *narrative construction* and *hypothetical resolution*.

The first one describes our ability to talk about and think of future possibilities "in relation to more or less coherent causal and temporal sequences" (Emirbayer & Mische 1998, p. 989). We could imagine a student talking about his future use of ICT-tools and explaining when and in which situations he will use this new ICT-tool and why he won't use the other one. The term narrative is chosen because it encompasses both intended and unintended future possibilities. The word construction is according to Emirbayer and Mische linked to intentionality.

The second category is called hypothetical resolution. This element of agency is compounded from our ability to make thought solutions of future problems. We try to think of resolving several conflicts simultaneously and "to incorporate different fields of intended action" (Emirbayer and Mische 1998, p. 990). We could try to imagine some students who think of future strategies for improving their English or avoiding communication problems they had in the present.

2.2.5 Out-of-school Learning versus In-school Learning

The terms out-of-school learning and in-school learning remind us of the physical setting in which learning occurs. The reality is often more complicated. School related activities can be done at home. The distinction made between in-school and out-of-school learning appears to be sometimes rather inappropriate.

Eshach's (2007, p. 174) distinction between formal, non-formal and informal learning is useful for analysing learning ecologies. The artefact homework, however, would be difficult to categorise within his framework. According to Eshach out-of-school learning can be divided into informal and non-formal categories, non-formal learning contexts being places we visit occasionally (e.g. museums, zoos) and informal learning contexts places within our day-to-day routine (e.g. home, playground, free activities at school). Informal learning is everywhere, unstructured, spontaneous while non-formal learning is at institution out of school, structured and usually not evaluated. Eshach's definition of informal learning seems to cover most characteristics of homework, but homework is not necessarily unstructured, voluntary and spontaneous.

Bernstein (1999, p. 159) distinguishes between vertical and horizontal knowledge. Horizontal knowledge is typified as "everyday or 'common-sense' knowledge". It is

likely to be oral, local, context dependent and specific, tacit, multi-layered, and contradictory across but not within contexts". On the other hand, vertical knowledge plays an important role, too. Bernstein gives us the following definition:

> *A vertical discourse takes the form of a coherent, explicit, and systematically principled structure, hierarchically organised, as in the sciences, or it takes the form of specialised languages with specials modes of interrogation and specialised criteria for the production and circulation of texts, as in the social sciences and humanities (Bernstein 1999, p. 159).*

The distinction between vertical and horizontal knowledge will be used in this study to describe the learning discourse within learning ecologies. My research will also use the terms out-of-school learning and in-school learning. Terms such as "informal, non-formal and formal learning" won't be utilised. Only the term semiformal will be used to cover artefacts such as homework which is neither informal nor non-formal.

With regard to the relationship between out-of-school and in-school learning, notions such as the complementary and/or compensatory role of school will be introduced. In the case of a complementary function, out-of-school and in-school learning are both important and complete each other while the compensatory function points out a possible dearth of skills or other shortcomings which have to be compensated.

2.2.6 Possible Results

One of the results of my investigation could be that learning English mostly takes place out of school. It could reveal different learning ecologies and contribute to research analysing out of school and in-school learning.

By illustrating learning trajectories, we will probably encounter both, in-school and out-of-school learning. Students are more or less exposed to the English language when they for example listen to music, watch television or play videogames. A possible result could be that agency is mostly created with digital artefacts. It could be that students refer to learning situations where technology plays an important role and that they want out-of-school learning to be integrated more into in-school learning. Another result could be that school has a useful and beneficial complementary function and in some cases even a compensatory function.

3 Research Design and Methods

3.1 Qualitative Method and In-depth Interviews

The design of my enquiry is qualitative. Focus interviews and in-depth interviews were used as a research method to perceive the personal language development of the students. Neither informal, structured nor projective psychometric interviews, but semi-structured interviews were used (Befring 2010, p. 128). These interviews were tape-recorded. The interview guide (cf. appendix A) helped me to focus the interviews on the topics at hand without constraining them to a particular format. This freedom helped me to tailor the questions to the people I was interviewing.

Three girls and three boys of an upper secondary school in Western Norway were interviewed. They were from the same age group and the same grade, namely the first grade at upper secondary school. According to Thomas Arnesen and Lars Vavik's forthcoming survey about "Learning in the 21. Century", an interesting approach was to make a strategic choice of informants who are frequent and high users of ICT. There were apparently some interesting gender issues.

All interviews were carried out in Norwegian at school. It was important that the students who were interviewed were comfortable with the language and the environment. All questions were whenever possible related to ICT and English learning.

The basis of my research was the informants' reminiscences of good digital or non-digital English learning situations. The study does not give any insight into recent English lessons at the informants' school as no classroom observations were carried out.

Since I wanted to have some insight into my informants' interlanguages or 'learning ecologies', so called in-depth or "face-to-face (FtF) interviews" were advisable. In depth interviews are issue-oriented. This method is according to Nagy Hesse-Biber and Leavy (2011, p. 95) useful when the researcher has a particular topic he wants to focus on. The interaction between interviewer and interviewee makes it possible to gain specific information.

Three different phases were distinguished in my interviews: In the first phase I carried out focus-group interviews which were *explorative* (related to the main topic) and where

the informants were able to talk freely. The main focus was where the informants had learnt English.

In the second phase I took some findings of the focus-group interviews and had in-depth ftf-interviews with each single informant where we had the opportunity to talk more specifically about how and why all digital and non-digital contexts had been used to improve the students' English. This second phase was more *constructed and analytical* (related more directly to my codes and theories). It was a challenge to be either directive or non-directive and not engaging in a question-and-answer approach. The main question in the ftf-interviews was why and not only where like in the focus-group interviews. Leading questions were avoided.

However, leading questions are, according to Kvale and Brinkmann (2009, p. 172), well suited to "repeatedly check the reliability of the interviewees' answers, as well as to verify the interviewer's interpretations". Kvale (2007, p. 203) talks about a "manipulative dialogue" where the aim of the enquiry is sometimes to – in Shakespeare's terms – "by indirections find directions out". It was sometimes advisable to use leading questions for getting confirmation or clarification. This was especially the case in the third and last *conclusive* phase of member checking.

The content structure of the interviews was partially derived from Barron's (2006, p. 195) framework who distinguishes between

> *1. home (family hobbies, projects, games), 2. school (computer science classes, discipline-based classes, technology classes, after-school clubs), 3. work (…), 4. distributed resources (books, tutorials, online groups), 5. peers (games, projects, homework collaboration) and 6. communities (libraries, community technology centers).*

To gain some insight into the pupils' learning ecologies, I used respectively three different set of questions about learning ecologies. One set was related to questions on the students' prehistory, i.e. English learning contexts in the past. Another set tried to find an answer to where the students were learning English today. A last set of questions was related to the future. This structure conforms to the above mentioned conceptualisation of agency (cf. chapter 2.1.1 and 2.2.4) in the 'chordal triad' by Emirbayer and Mische (1998).

3.2 Procedure and Coding

All interviews were transcribed, namely one group interview, six in-depth interviews with a duration of more or less 30 minutes and six short interviews with a duration of more or less ten minutes. *HyperTRANSCRIBE* was used for the transcription and *HyperRESEARCH* for the analysis of the data material. A code system (cf. appendix D) was developed.

As one can see in table 2, different methodical procedures were used. The coding of the transcriptions was the first phase. Phase two consisted of different attempts to categorise the codes. Tables were made which will be presented in chapter 4.

The categorising of codes led to the development of notions based on the findings. Notions and definitions were developed as e.g. artefactual, interpersonal and language oriented personal English learning ecology, semiformal learning and deliberate learning. Eventually, these notions made it possible to develop some theories, for example on the probable complementary and compensatory function of school in the conclusion (cf. chapter 6).

Table 2: Methodical Procedures

Coding →	Categorising →	Notional Development →	Theoretical Development →
Descriptive **Example**: Main group 2 «technology/artefacts» and subgroup ICT-related versus non-ICT related (cf. appendix D) **Explanatory** **Example**: The subgroup «interactionally modified input» **Interpretative** **Example**: Ecological transitions, agency	**Example:** Tables derived from descriptive, explanatory and interpretative coding (chapter 4)	**Example 1:** Artefactual, interpersonal and language learning oriented personal English Learning Ecology **Example 2:** Semiformal learning **Example 3:** Deliberate learning	**Example:** Complementary and compensatory function of school

Different coding methods were used (cf. Grønmo 2004, p. 250): Open versus systematic coding, selective coding, descriptive coding, explanatory coding and interpretative coding.

On the one hand, the coding was open because my approach was inductive and the data material was decisive for the choice of some codes. The code "deliberate learning" was for example introduced quite late in the process of analysis and it was the data material which led to this new code.

The coding was on the other hand rather deductive and systematic since my interview questions were aimed at theories on agency with a temporal (past, present and future) and relational (iterative, practical-evaluative and projective) dimension. They were also structured within three different domains, namely technology, pedagogy and content.

Some kind of selective coding was used, too. Codes based on the 'chordal triad of agency' (Biesta & Tedder 2006, Emirbayer & Mische 1998) which aimed at categorical location in the past, execution in the present and symbolic recomposition in the future, had to be left out because these categories were not well operationalised.

Three other forms of coding were used: descriptive, explanatory and interpretative codes (Grønmo 2011, p. 247). The descriptive coding reflects the factual content of the transcriptions. Within main group 2 the code "technology/artefacts" was for example used to describe the learners' English learning ecology. Especially the subgroup "ICT-related versus non-ICT related" was descriptive because it objectively summarised the findings without explaining or interpreting the data material (cf. appendix D).

The figures in chapter 4.4 and in appendix B and C are however of more explanatory nature. Explanatory coding is used to explain and not only describe certain findings. The subcategory "interactionally modified input" (cf. appendix D) was for example used to describe and explain more precisely certain input situations.

Interpretative coding shows the interpretation of the researcher on the basis of the transcriptions. The codes "agency" or "ecological transitions" were my interpretation of the data material. This was especially the case in figure 7 in chapter 4.4 where agentic moments were compared to other ecological transitions and highlighted in red.

Two different types of figures were used to describe the informants' learning trajectories: Radiographic illustrations (appendix B) and learning curves (appendix C).

3.3 Reliability and Validity

The aim of my enquiry is not to get any particular external validity. This is obviously not possible as I have only interviewed six informants. Nor is any internal validity claimed. The main challenge was to get varied information. It was interesting to get insight into in-school learning without any classroom observation. But I only had the voices of the students and their reminiscences of where they had learnt English. This enquiry does not give any exhaustive image of in-school and out-of-school learning.

The main focus was on the quality and the depth of the interviews. There were some moments where the interviewees did not know what to say and the interviewer had to relaunch the discussion. This means that a certain number of questions had to be pre-formulated and had to cover a certain number of different approaches. The interview guide had to be really well organised and concise. It had to reflect all the theories mentioned in the Master's thesis. This interview guide was not followed strictly, though. Spontaneity and flexibility was important, too.

The questioning could influence the outcome of the interview. When too many questions were used, that means I was too directive and too much engaged in a question-and-answer approach, the 'true story' did not come through. Getting insight into the learner's learning ecology or learner's interlanguage was rather difficult in such situations.

Self-report studies have validity problems because the evidence is based on self-reporting, that is to say what the informants think and remember. A way of assessing the validity of self-report studies is to compare the results of the self-report with another self-report on the same topic. It is therefore advisable to do the same enquiry at another school and to find other students having more or less the same age. This could have given my study some concurrent validity. Such a study has not been carried out due to time limitations of this Master's thesis.

All in-depth interviews were obviously influenced by bias. There are a number of ways to improve the validity of self-report techniques, such as avoiding leading questions.

Leading questions were for example avoided in the first and second phase of this study. Open questions were added to allow respondents to expand upon their replies and confidentiality was reinforced to allow respondents to give more truthful responses.

My enquiry establishes to a certain degree some concept, construct or theoretical validity (Kleven 2011, p. 86). The questions were related to specific theories (cf. the interview guide). All theories used in this paper have been rather well operationalised. The theories were highly operationalised in many cases. However, the questions or the informants themselves made in some few cases a highly operationalised interview not possible.

In addition to that, a form of member checking has been carried out by organising a shorter and more focused in-depth interview of the same informant six months after the focus interview and the first in-depth interview. These interviews being much shorter, the main purpose was to confirm some findings and to add some missing information. Member checking is according to Carlson (2010, p. 1105)

> *an opportunity for members (participants) to check (approve) particular aspects of the interpretation of the data they provided. (...) Participants are given transcripts or particles from the narratives they contributed during interview sessions and are asked to verify their accuracy.*

The respective figures on issues related to the past, present and future (cf. appendix C) and the radiographic representation of the learners' ecologies (cf. appendix B) were presented to the respective informants. They were asked to confirm or contest my findings.

In terms of reliability, stability and equivalence are important in qualitative research (Grønmo 2004, p. 222). This study does not have any equivalence because another similar study has not been carried out by another research fellow with exactly the same informants at the same time. However, stability has been obtained to a certain degree because in some cases the same informants were asked exactly the same questions six months after. As mentioned above, member checking played a major role in terms of stability and thus reliability.

3.4 Ethical Aspects

Permission to carry out this study was obtained from NSD (Norsk samfunnsvitenskapelig datatjeneste) (cf. appendix E). The students who were interviewed had to be comfortable with the environment and the interview itself. That was one of the reasons for organising the face-to-face interviews at the students' schools. All recordings were destroyed after the transcriptions of the interviews. All information was treated confidentially. The informants' anonymity was guaranteed through fictional names (Tim, Ned, Ken for the male students and Grace, Claire, Faith for the female students). Anonymity was stressed both in writing and orally before the interviews.

The project required limited collaboration with the teacher. It was advisable to prepare the informants as well as possible to the interviews. I chose to make the students write an essay or questions before the interviews. The topic of the essay was: "Where did you encounter English in speaking and writing (productive skills), in listening and reading (receptive skills)? Indicate specific and concrete situations." This was deemed a good starting point for selecting the interviewees and for preparing them to the actual in-depth interviews.

The in depth-interviews were time consuming and tiring for the interviewer and the interviewees. I had to be flexible, to vary my questions and make the interviewees feel comfortable.

4 Results

The main research question of my thesis is: What role do digital and non-digital artefacts and 'agency' play in upper secondary students' self-perceived trajectories of English learning ecologies in the past, present and future? To answer this main research question the following research sub-questions (cf. chapter 1.2) have been chosen:

Technology framework: Where are upper secondary students when they learn English? What is the reason for using certain digital or non-digital artefacts? What characterises these artefacts? Background: artefactual English learning ecologies (PELE). **Where, why and which digital or non-digital artefacts?**

Pedagogical framework: Who is involved in the learning situation? Is there any deliberate learning? Background: interpersonal English learning ecologies, interpersonal relationship between the English learner and other English learners or more knowing environments. **With whom and what kind of deliberate learning?**

Content framework: Which of the four skills are developed? Is there a main focus on input (receptive skills) or output (productive skills)? How do the learners develop their input or output? Background: language oriented English learning ecology, relationship between the learner and the English language. **Which language skills?**

All these three domains were analysed separately in the past, present and future. Notwithstanding, the findings can intertwine. To analyse the learning ecologies of for example Faith the following illustrations were used (cf. appendix C for the figures illustrating the other informants' learning trajectories and their issues related to technology, pedagogy and content):
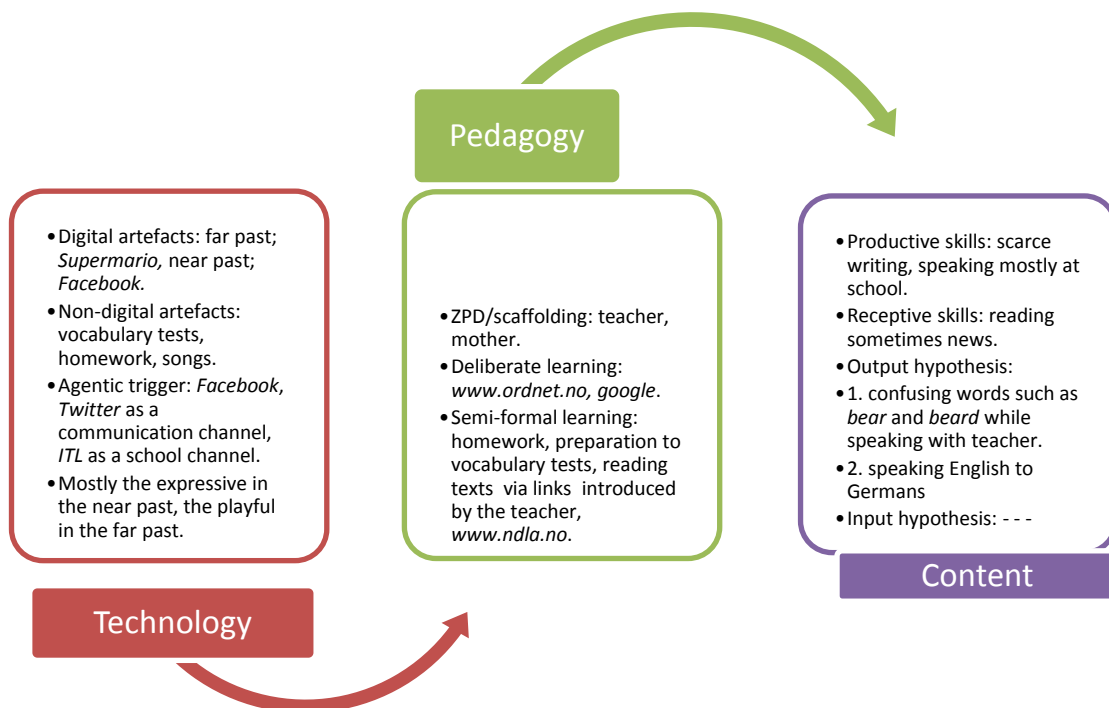
Figure 4: The past, interview 6, Faith (cf. appendix C)
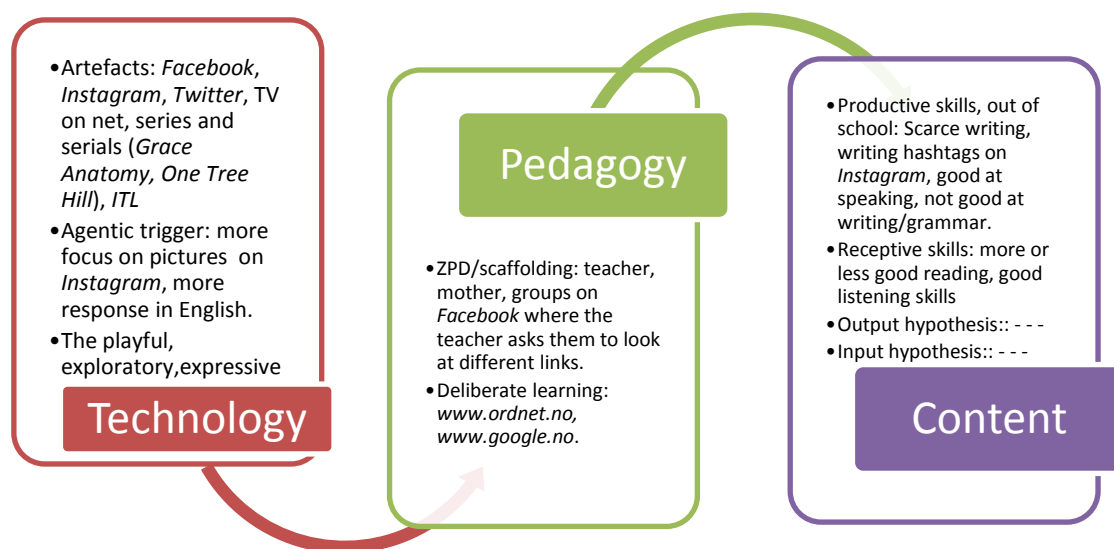
Figure 5: The present, interview 6, Faith (cf. appendix C)
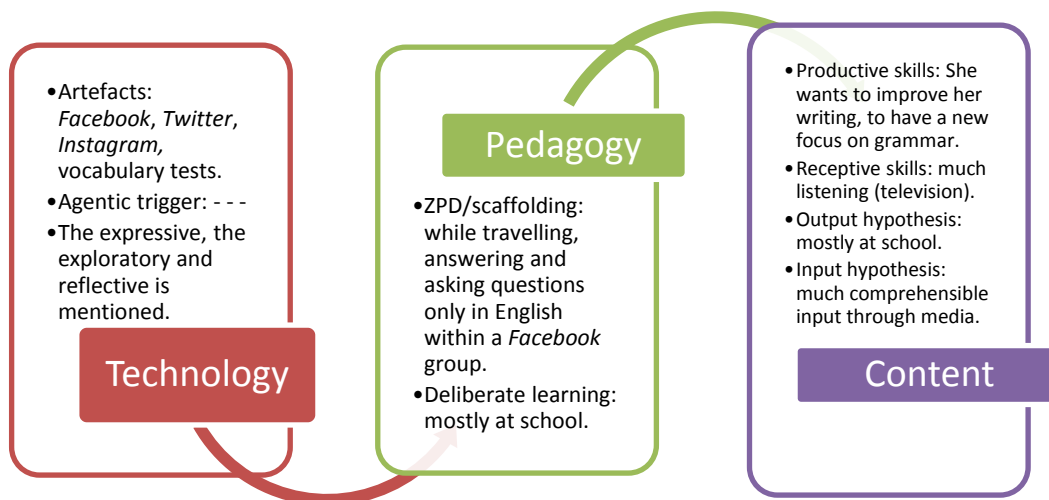
Figure 6: The future, interview 6, Faith (cf. appendix C)

These illustrations give us an idea of the informants' English learning ecologies and evolution of learning trajectories. It was an efficient analytical tool which made it possible to categorise and analyse all data and to get an answer to our following main research question: What role do digital and non-digital artefacts and 'agency' play in upper secondary students' trajectories of English learning ecologies in the present, past and future?

In the following paragraphs I will make an in-depth analysis of the informants' use of technology, pedagogy and content in the past, the present and the future. In the last chapter 4.4 the main research question will come under close scrutiny and an overview over ecological transitions and agentic moments within the informants' trajectories will be given.

4.1 The Past and the Iterational Element

4.1.1 Technology in School and out of School

The following tables summarise the findings related to the first research question.

Table 3: The male students and technology in the past

	Tim	Ned	Ken
Where were you when you learnt English?	*Call of Duty* *Assassin's Creed* *Minecraft* Listening to music on his mp3-player *Grandturismo*	*League of Legends* *Minecraft* *Bob the Builder* Listening to songs, such "Time of your life" Occasionally a *blog* and/or a wiki	*Call of Duty* *League of Legends* *Nintendo DS* *Minecraft* Some social media
What were the reasons for using certain digital or non-digital artefacts?	*Grandturismo*: sense of accomplishement while playing	Blog/wiki: reading useless comments on *YouTube*	*http://major-gaming.com* and sense of accomplishment.
What did characterise these digital or non-digital artefacts?	Far past: the expressive Near past: the playful	The playful, occasionally the reflective	Far past: the expressive Near past: the playful

Table 4: The female students and technology in the past

	Grace	Claire	Faith
Where were you situated when you learnt English?	Seldom social media, but *Facebook* group in English *ITL, Netflix, Minecraft* Vocabulary tests	Seldom social media, but *Facebook* group *ITL, Netflix* *Nintendo DS, Pokemon* Vocabulary tests	Seldom social media, but *Facebook* group in English *ITL, Supermario* Vocabulary tests
What were the reasons for using certain digital or non-digital artefacts?	Good learning with vocabulary tests at elementary school	Good learning with vocabulary tests at elementary school	Good learning with vocabulary tests at elementary school
What did characterise these digital or non-digital artefacts?	Far past: the playful Near past: the expressive and exploratory	Far past: the playful Near past: the expressive and exploratory	Far past: the playful Near past: the expressive and exploratory

Digital and non-digital artefacts

Tim told me that he used mostly the English language when playing real strategy games, such as *Call of Duty* and *Minecraft*. He used to play *Minecraft* quite frequently when he was young, but rather less frequently in recent years. He was amazed when he could talk about *Assassin's Creed* with one of his former English teachers. Gaming appeared to be predominant in the near past of Tim. This seemed to be the same case with Ken. Listening to music on his mp3-player helped him a lot to improve his English. Tim mentions for example that he knows now the difference between "vane" and "vein" by means of a song. He remembers having listened to the song "Time of your life" during English class. When the teacher asked him why he did not read the lyrics at the same time, he explained him that he knew the text already by heart. His teacher was amazed when he was able to sing the whole song without looking at the lyrics.

Ned used to communicate in English while playing *Minecraft* in earlier years and *Bob the Builder*. He thinks that he learnt a great deal of vernacular language and swearwords during this early gaming. He believes that his English speaking was limited while playing *Minecraft*. There was only some writing and reading. In the near past Ned has written a blog and a wiki and has played quite a lot *League of Legends*.

Ken mentioned in the interview some kind of first gaming with *Nintendo DS* and *Minecraft*. In recent years he played much more videogames such as *Call of Duty* combined with *Skype* sessions. He used sometimes social media, but not regularly.

More recently Grace has been using quite a lot *Netflix* for watching films in English and *Facebook*. But the use of social media is seldom in English, except for their *Facebook* group created by their English teacher. In this *Facebook* group all members have to ask and answer questions in English. When she was younger, she played *Minecraft*. An interesting artefact used much more at elementary school than at secondary school are vocabulary tests which are mentioned several times by the female students. Faith remembers having used the English language while playing *Supermario* in earlier years. However, she was much more interested in social media in recent years, such as *Facebook* which did not necessarily imply the use of English. *ITL* (itslearning) was used as a communication channel between school and home and mostly for handing in

homework. Claire also used social media quite a lot in the near past, in English only the *Facebook* group of their English class. She emphasized the use of *Netflix* for watching films in English. At elementary school Claire was mostly interested in *Nintendo DS* and *Pokemon,* which was only partially in English. Non-digital artefacts as songs and vocabulary tests were also used by her English teacher. She remembered especially the song "Bloody Sunday" they used once in English class.

The reasons for using certain digital or non-digital artefacts

Tim asserts that playing *Grandturismo* with his father helped him a lot to improve his English. At the same time reading instructions in English for example on *Playstation1* where you had to press "yes" or "no" were according to him quite easy because after a while you knew the result of having pressed "Yes" or "No".

Ned reports that reading comments on *YouTube* can make somebody angry. He read himself some "useless comments" on *YouTube* which did not address his problem. Thus, he had to write a wiki himself to help other users who had to cope with exactly the same problem. Ned thinks that the design of a homepage can be decisive for reading or not reading a text, but he points out that the content is often much more important.

Ken reports that starting to surf on http://major-gaming.com made him become a professional gamer. This site made it possible to create new peer communities and to improve his English considerably.

All female students had only positive remembrances of vocabulary tests at elementary school. These tests gave them a real sense of accomplishment and learning.

Characterisation of the used digital or non-digital artefacts

Tim was mainly interested in gaming when he used ICT. The action in videogames was really important for him. Learning the English language was only a side-effect.

Ned was also interested in gaming, but in addition he liked to write a *wiki* or comment on a blog in English. He often gave constructive criticism on *YouTube* comments.

Grace seemed to be interested in playing the English version of *Minecraft* as a child. But she was recently much more interested in communicating with friends and expressing herself by *Facebook*. This is more or less the same case for Claire and Faith.

4.1.2 Pedagogy in School and out of School

The following two tables give us an overview of the answers given to research question number two:

Table 5: The male students and pedagogy in the past

	Tim	Ned	Ken
Who was involved in the learning situation?	Peer communities while gaming and contemporaneous skyping	- Peer communities while gaming and skyping - His British father (homework) - *YouTube* commentators: constructive criticism	Far past: his parents for doing homework Near past: peer communities while gaming and skyping
What can you tell me about your past deliberate learning?	Often linked to school work Mostly initiated by their teacher Googling some words	Often linked to school work Frequent use of *www.ordnet.no* for looking up words	

Table 6: The female students and pedagogy in the past

	Grace	Claire	Faith
Who was involved in the learning situation?	Her parents English teacher	Her British father and her relatives in Great Britain English teacher	Mostly her mother English teacher
What can you tell me about your past deliberate learning?	Often linked to school Mostly initiated by teacher Googling some words	Often linked to school work	*www.ndla.no* Frequent use of www.ordnet.no for looking up words

Involvements in the learning situation related to digital and non-digital artefacts

All three boys report having improved their English through peer communities while playing games. Tim puts it in these words:

> *Me spiller i lag nesten hverdag og dei kan jo ikke norsk. Dei er jo fra England og Tyskland. Da må vi snakke engelsk og sånn. Engelsk snakker eg med dei omtrent hver eneste dag.*

> *(We play together, almost every day and they can't speak Norwegian. Thus, we have to speak English. I speak English with them almost every day).*

Ned remembers that homework at home was quite efficient for improving his English, especially when he went through grammar exercises with his British father and had to understand the difference between the indefinite article *a* and *an*. Ned mentions a situation in which he was contacted by a *YouTube* commentator who thought that Ned was good at giving constructive criticism. He asked him to comment on his video, too. Ned commented on the *YouTube* file of this commentator and even went back to his own comments to spell and grammar check the text he had sent him.

Tim also reports on having improved his English through peer gaming communities.

Ken mentions especially situations in earlier years when his parents helped him to do his homework at home. In recent years he seemed to have learnt English mainly through peers while gaming.

Grace reported that both her parents were important in her learning ecology. Claire mentioned that especially her British father and her relatives in Great Britain had helped her to improve her English. In the case of Faith, it was much more her mother who played an important role. All three girls emphasised the role of their English teacher at school. They characterised most of their teachers as really good teachers.

Deliberate learning

There have been occasions where Tim has had to google some words he did not understand in English. He mentions especially one episode where he tried to find some new pc equipment. He had to find out the English word for buying it. Tim emphasises that deliberate learning in out-of-school contexts is mostly initiated by his teacher who asks him for example to read the news or different articles on the net. He mentions that deliberate learning had helped him to improve his writing skills. Thanks to in-school learning he knows now the difference between "witch" and "which".

Ned remembers having used quite frequently *www.ordnet.no* for looking up words, but he admits that this deliberate learning often was linked to school work. Deliberate

learning was generally rather infrequent in non-school related contexts. Incidental learning occurred at school and out of school.

Claire and Grace declared that they did not surf frequently on the internet in the sole purpose of learning English. It happened rather infrequently in out-of-school learning situations, but quite often at school. Faith seemed to have more frequent recourse to deliberate learning even in out-of-school learning situations. She used quite often *www.ordnet.no* and *google*. She even knew *www.ndla.no* which was not known by the other two girls Claire and Grace. Faith indicated some semiformal learning contexts when she talked about her preparations for vocabulary tests, about *www.ndla.no* and about reading texts via links added by her English teacher in the *Facebook* group of their English class. This happened out of school, but was school related.

4.1.3 Content in School and out of School

The following two tables summarise the findings which can be related to the past:

Table 7: The male students and content in the past

	Tim	Ned	Ken
Which of the four skills were developed?	Far past: more receptive skills Near past: more productive skills In school: writing, reading Out of school: listening	Receptive and productive skills In school: writing, reading Out of school: listening	Far past: more receptive skills Near past: more productive skills. In school: writing, reading Out of school: listening
Was there a main focus on input or output?	High exposure through gaming while skyping	High exposure through gaming while skyping	High exposure through gaming while skyping
How did you develop your input or output?	By reading books (such as *Gone*) and guessing words in context	- Through interaction with his cousin from Great Britain - Through interaction with his grandpa - Working together with an ambitious pupil	Through communication problems due to British English

Table 8: The female students and content in the past

	Grace	Claire	Faith
Which of the four skills were developed?	- At school: speaking, scarce writing - At home: scarce speaking and writing - Scarce writing for out-of-school purposes	- At school: speaking - At home: scarce writing - Productive skills: use of vernacular language on *Facebook*	- At school: speaking - At home: scarce writing - Scarce writing for out-of-school purposes

Was there a main focus on input or output?	Mainly listening to music and watching series and serials	Speaking and listening at home with her British father	Mainly listening to music and watching series and serials
How did you develop your input or output?	Through communication problems while travelling abroad	Through discussions with her British father	- By reading the news in English - Through communication problems with her teacher - Embarrassing communication problems while travelling

The four skills

Ken, Ned and Tim report on a high exposure to the English language through gaming while skyping. Ken and Tim think that there was more focus on receptive skills at elementary and lower secondary school. According to him the productive skills were developed more in recent years, especially by speaking on *Skype* while gaming. He did not write at home for out-of-school purposes, only at home and at school for homework and exams. This seemed to be the same case for the other two students.

Grace mentioned that she had rather exceptionally written mails or messages on *Facebook* in English in out-of-school learning contexts. She complained about not having enough opportunities for writing at school and for speaking and writing at home. Grace is used to listening to music and watching series and serials in English.

Based on the findings we can assert that all three girls experienced scarce writing out of school and much speaking at school, except for Claire who has a British father. Faith tells us that she reads sometimes the news in English.

In regard to productive skills, it is emphasised that *Facebook* often made Claire use some kind of vernacular language, especially smaller words such as "loll" or "happy". Claire has a bilingual education, but it happens that she communicates in Norwegian with her father.

Output

Ken says that he learnt English by means of communication problems while gaming. He was for example used to speaking American English whilst other gamers spoke British English. He puts it in these words:

> *Det har bare blitt sånn…. Men det har skjedd et par kommunikasjonsproblemer…Bare fordi … Som eg har lært meg engelsk, så er det mest mer amerikansk engelsk. Når dei snakker, forstår de mer en sånn storbritannisk engelsk… Også det er veldig mange sånne ord som er helt forskjellig som du ikke har noe peiling på… Då blir det litt merkelig av og til når vi snakker om to helt forskjellige ting. (It has become a matter of fact… But some communication problems occurred… Just because… I have mostly learnt American English. When they speak, they understand British English better… And in addition to that, there are many words which are completely different and you do not understand them at all… Then it becomes sometimes odd when we talk about two completely different things).*

Ned also mentioned communication problems when he was in Spain with his cousin from Great Britain and he did not know the word "waves" in English. He had to mime the word in his sentence "Let us go to the beach and watch the ___". In addition to that, he has some remembrances of having worked together with another pupil who was very ambitious. They wrote texts for each other and commented on them. In these situations Ned remembers episodes where this pupil explained him why he could not use certain words and why certain structures were grammatically wrong in English.

Grace mentioned learning situations instigated by communication problems while travelling abroad. Faith remembers communication problems with her teacher when she was confusing the words "bear" and "beard".

> *Hun skjønte jo hva eg mente, men hun lo litt av meg når eg skulle si skjegg på engelsk og eg klarte det ikke å si og blandet bear med beard. (She understood what I meant, but she laughed a little bit at me when I was supposed to say beard in English and I didn't manage to pronounce it correctly and confused bear and beard).*

The teacher used the opportunity to teach to the class different pronunciations of the spelling "ea", that means the diphthongs /eə/ and /ɪə/. Faith also remembers other embarrassing communication problems while travelling in Germany. She had to speak English with Germans and her teacher helped her. Claire remembers testing words with her British father. Since her father is a teacher, he often explained rules to her.

Input

All three male interviewees reported on being exposed to the English language much more in out-of-school learning situations than at school. The input became allegedly more comprehensible after they had left elementary school. Ken indicated ages 6 and 12-13 and Tim 12-13 as important ecological transitions. Ned mentioned the 8th and 9th grade as decisive moments, that means ages 13-14. Ken and Tim referred to the ability of watching English films or emissions without reading the subtitles in Norwegian. Tim asserted that he had learnt quite a lot by reading books (such as *Gone*) and guessing words in context. All male informants mentioned that there is a big difference between reading and listening. Reading seems to be mainly initiated within in-school contexts while listening is of greater importance in out-of-school learning.

Ned remembered how he learnt the word "door" with the help of his English speaking grandpa. His grandpa had visited him and asked him to open the door when arriving at Ned's home:

> *Eg husker når eg lærte meg hva dør var for noe på engelsk fordi bestefaren min fra England var på besøk og han sa: «You can open the door.» Og eg spurte: «Door? What's that?» Og han pekte på det. Og jeg sa: «Oh dør!» Han pekte en gang til på døren og sa da: «No, door in English!» Jeg sa til slutt: «Oh. It is called door in English." (I remember when I learnt the word "door" in English because my grandpa from England said: You can open the door. And I asked: "Door? What's that?" And he pointed at it. And I said: "Oh dør!" He pointed again at the door and answered: "No, door in English!" And I said: "Oh, it is called door in English.")*

Grace remembered a really good teacher who came from South Africa. According to her the understanding of the English language developed extensively in this period of time.

All three girls reported directly and indirectly on being exposed quite a lot to the English language in out-of-school situations due to the media. They listened to music and watched series and serials in English. The exposure to the English language seemed to be higher in out-of-school context than in-school contexts.

4.2 The Present and the Practical-evaluative Element

4.2.1 Technology in School and out of School

The following two tables give an overview of the male and female students' answers to research question number one:

Table 9: The male students and technology in the present

	Tim	Ned	Ken
Where are you when you learn English?	*ITL* for school-related work, *Skype* Videogames and *Minecraft* *Kahoot* quizzes	*ITL* for school-related work, *Skype* Real-time strategy games: *League of Legends*	*ITL* for school-related work, *Skype* Videogames *Kahoot* quizzes
What are recent reasons for using certain digital or non-digital artefacts?	*Minecraft*: Newer functions such as "riding horses"	Thinking before doing Skyping, chatting while gaming	
What characterises these digital or non-digital artefacts?	The playful	The playful	The playful and exploratory

Table 10: The female students and technology in the present

	Grace	Claire	Faith
Where are you situated when you learn English?	Seldom social media, but *Facebook* group in English *Instagram* hashtags *Netflix* Serials and soaps *ITL*	Seldom social media, but *Facebook* group *Instagram* hashtags *Netflix* *Snapshot* Serials and soaps *ITL*	Seldom social media, but *Facebook* group *Instagram* hashtags *Twitter* *Netflix,* Serials and soaps *ITL*
What are recent reasons for using certain digital or non-digital artefacts?		*Snapshots*, i.e. real-time pictures, and the writing of smaller texts under the pictures	*Instagram*: more photos and less other things; more response from others

What characterises these digital or non-digital artefacts?	*Instagram*: To express myself Social media: The communicative	Social media, *Instagram*: The communicative	Social media, *Instagram*: The communicative

Digital and non-digital artefacts

All three male students encounter the English language when they use *ITL* for school-related work. Tim uses an updated version of *Minecraft* in English. When he plays games and skypes contemporaneously, he often speaks English. He likes serials such as *Dexter* or *Skins*. English is rarely used in social media.

Ned is now only interested in real-time strategy games such as *League of Legends*. He uses *Netflix* quite a lot in out-of-school contexts for watching films in English. He only plays the English version of *Minecraft* when the internet connection is bad.

Ken tells us that English in his out-of-school learning is predominant and that the tools he uses here are most regularly videogames and *Skype*. Ken and Tim report on *Kahoot* quizzes almost every Friday in their English class. They emphasise that this method is beneficial to their own English learning and improves their factual knowledge.

Grace, Claire and Faith are all frequent users of social media, such as *Facebook*. But the use of English seems to be limited, except for the *Facebook* group created by their English teacher and hashtags on *Instagram*. Faith is the sole girl who also uses *Twitter,* in Norwegian and English. All three use *Netflix* for watching TV on the net. Grace likes serials like *Vampire Diaries* and *Gossip Girl*. Faith likes watching *Grace Anatomy*, *One Tree Hill*. Claire reports on a high use of *Snapshot* where smaller texts under the photos are often written in English. All three girls use sometimes *google*. *ITL* is mostly used for school-related issues.

The reasons for using certain digital or non-digital artefacts

In contrast to older versions of *Minecraft*, some newer versions with functions such as "riding horses" make Tim still play *Minecraft*. Although *Minecraft* starts being a little bit boring for his age, he still plays it because of these newer functions. According to Ned gaming affords thinking before doing and gaming also affords writing since you

want to chat while gaming with other peers. *Skype* affords speaking, but not all gamers like speaking. Some of them prefer chatting in English according to Ned.

The fact that *Instagram* mainly includes photos and less other elements leads to more response from other *Instagram* users. All hashtags are written in English. She puts the advantages in the following words:

> *Det har vel blitt en ny trend. Det er ikkje så mange som legger ut på Facebook. Du får mer respons på Instagram fordi det bare er bildene det går ut på. På Facebook er det litt mye annet. (…) Faktisk mange ganger har de svart på engelsk. (It has become a new trend. There are not many who use Facebook. You get more response on Instagram because only the pictures are important. On Facebook, there are too many other things. (…)Actually, I often got answers in English).*

Claire is very interested in the use of *Snapshots* and the writing of smaller texts in English under the pictures.

Characterisation of the used digital or non-digital artefacts

All three boys seem to be mostly interested in gaming. Not only the action, but also strategic thinking was important to them when they used English while gaming.

Faith, Claire and Grace are probably more interested in watching films and communicating with their friends through social media. In these cases the English language can appear, but often in a limited way. Especially Grace reports on how important it is for her to express herself by the use of *Instagram*. All three girls confirm that the social media are predominant now.

4.2.2 Pedagogy in School and out of School

The following two tables give an overview of the answers given to research question number two related to the present:

Table 11: The male students and pedagogy in the present

	Tim	Ned	Ken
Who is involved in the recent learning situation?	Gaming communities Parents English Teacher	Gaming communities A friend at school His British father English teacher	Parents, English teacher Gaming communities through *http://major-gaming.com*

What can you tell me about your recent deliberate learning?	Out-of-school: quite rare Initiated by the English teacher: *Kahoot* quizzes	Out-of-school: quite rare Initiated by the English teacher Not interested in deliberate learning	Out-of-school: quite rare Initiated by the English teacher: *Kahoot* quizzes Not interested in deliberate learning

Table 12: The female students and pedagogy in the present

	Grace	Claire	Faith
Who is involved in the recent learning situation?	Respondents on *Instagram* English teacher	Her British father Evaluations from English Teacher	English teacher
What can you tell me about your recent deliberate learning?	Infrequent Homework: semiformal	Infrequent Homework: semiformal *Wikipedia* *Google* for presentations	Often *www.ordnet.no* and *google.no*

Involvements in learning situations related to digital and non-digital artefacts

Ned reports that he often meets a friend in the break at school who can't speak proper Norwegian and likes speaking English with him. Ned's father is British and speaks English to Ned every day. Gaming communities are mentioned by all. Ken reports that he learnt English from others after having used the website *http://major-gaming.com*.

Undoubtedly, teachers and parents play an important role. Ned's and Claire's fathers are British. There is apparently some English learning on *Facebook*, too. This is due to their English teacher who wants all questions of the *Facebook* group to be asked and answered in English. The teacher also often asks them to look at some links and to download texts for reading purposes. The English teacher is mentioned by all three girls.

Instagram is quite important to Grace and she asserts that her English learning improved due to many responses on *Instagram.*

Deliberate learning

In the case of the male students, deliberate learning in out-of-school contexts seems to be infrequent. My informants rarely have an explicit purpose of improving their English or their knowledge in for example English culture, civilisation and literature in out-of-school contexts. When deliberate learning occurs, it is often initiated by the English teacher who gives homework to his students or focuses on factual knowledge by using *Kahoot* quizzes. Deliberate learning, for example in the sense of actively visiting websites such as *google* or *ordnet.no*, is much more frequent at school.

Deliberate learning is rather infrequent in the case of Claire and Grace. They only can relate it to in-school learning and semiformal contexts. The sole girl to relate it to out-of-school learning is Faith who tells us that she quite often visits websites such as *www.ordnet.no* and *google.no* where she easily finds dictionaries for translating words.

4.2.3 Content in School and out of School

The following two tables summarise the findings of the male and female students related to content at and out of school in the present.

Table 13: The male students and content in the present

	Tim	Ned	Ken
Which of the four skills are developed?	Receptive and productive skills At school: more writing; At home: speaking, more listening, writing by chatting	Receptive and productive skills At school: more writing At home: speaking, more listening	Receptive and productive skills At school: more writing At home: speaking, more listening
Is there a main focus on input or output?	Both	Both	Both
How do you develop your input or output?	Through communication problems	Through communication problems	Through communication problems

Table 14: The female students and content in the present

	Grace	Claire	Faith
Which of the four skills are developed?	At school: mostly speaking, scarce writing, good reading At home: scarce speaking	Speaking at school and at home Scarce writing	At school: mostly speaking, scarce writing, good listening At home: scarce speaking
Is there a main focus on input or output?	Input	Input Output	Input
How do you develop your input or output?	At school: more input and output High input through the media	At school and at home: output and input High input through the media	At school: output High input through the media

The four skills

All three male interviewees (Ken, Ned and Tim) report on a high exposure to the English language through gaming while skyping. Ken, Ned and Tim also tell us that there is much more focus on writing at school. Only Tim asserts that he writes quite often while chatting and gaming. The other two students have a much greater emphasis on speaking while gaming. The interesting thing is that Tim is the sole student to mention problems with spelling mistakes, such as the personal pronoun *I* with a capital letter. Writing English happens mostly at school, whereas speaking and listening mostly at home. They have sometimes homework like reading news. Ned tells us that he reads some books and news in English, but it doesn't seem to be on a regular basis.

According to Ken speaking English occurs mostly at home and not at school, while writing has a greater focus at school. When it comes to receptive skills, listening to English is predominant in out-of-school context whilst reading is often initiated by the teacher and the school. Ken can't remember having written mails to his friends. In out-of-school contexts, he only remembers having written a mail to get back his username and password for a gaming site.

Grace does not speak English at home. She writes some texts in English on *Instagram*. She qualifies the use of her vocabulary on *Facebook* as limited. In her opinion English is only used for giving compliments. She emphasises the role of the English teacher when it comes to feedback:

"Det (sic: å bli rettet på engelsk) skjer bare i engelsktimen, ville eg har sagt. Hvis eg seier feil ord og sånn, da er det stort sett i engelsktimene det skjer (I would say that it (sic: the fact of being corrected) only happens in my English class. When I use the wrong words or something like that, it mostly happens in English class)".

Faith does not write a lot in out-of-school contexts. She sometimes writes hashtags in English on *Instagram*. Her speaking skills are good, but she has problems with writing and grammar. Her father being British, Claire has developed a high level of oral proficiency in English, but writing English is a real challenge. Due to her bilingual education, she is the sole girl who reports on speaking more English at home than at school. All three female students report on the fact that they seldom write. If they write, it is initiated by the English teacher. Faith says that she has quite good reading and listening skills. Grace tells us that she reads a lot in English. She listens more to English at school than at home. She reads the news only when initiated by her English teacher. Claire is used to listening to the English language because of her bilingual education and her British father. All girls, except for Claire, report scarcely speaking at home whereas all boys develop their oral proficiency by gaming and contemporaneously skyping at home.

Output

Ken, Ned and Tim sometimes experience communication problems and notice that they have to improve their English. They talk about grammar rules and vocabulary mostly at school and not in out-of-school learning situations. Ned reports several occasions where he noticed a lack of communication and where he had to test out the meaning of different words. He had to make himself understood. The communication problems on *Skype* are often due to other gamers who are not English native speakers and come from Germany and even Japan. Everything has to happen quickly while gaming. Ned mentions having talked about rules and vocabulary with a school friend out of school who helps him sometimes to write texts and to be well prepared for tests. Tim mentions some usual communication errors while chatting. Sentences such as "You have to come at me" can - according to Tim - easily be misunderstood and confused with sentences such as "You have to come after me".

Claire reports mostly on communication problems in the past and not in the present. Grace tells us that she tries out new English words mostly at school. And only at school

they talk about rules and other linguistic issues. Faith does not explicitly mention output, but by reading all her other comments it is possible to assume that the output is higher at school than at home. She does not report on any special situation where she had communication problems.

Input

Ned tells us that there is more exposure to oral English at home. This is due to gaming and skyping. It seems to be the same case for the other two male students.

Claire probably receives a lot of comprehensible input both at home and at school due to her bilingual education. Grace thinks that she receives greater direct exposure to the English language at school than at home, but that the media play a dominant role for the exposure at home. Faith does not explicitly mention the input, but by reading all her other comments it is possible to assume that the input is quite high due to her media use.

4.3. The Future and the Projective Element

4.3.1 Technology in School and out of School

The main focus of this chapter is on how the students perceive their possible future learning ecologies. An overview of the findings to research question number one is given in the following two tables.

Table 15: The male students and technology in the future

	Tim	Ned	Ken
Where will you be when you learn English?	- On digital artefacts: gaming at school - Games about WW2 - *Twitter* at school - At home: listening to music, gaming	- Not *Facebook*: learning output limited - Gaming in English lessons only if the teacher is a gamer	No gaming at school
What will the reasons be for using certain digital contexts or non-digital artefacts?	Gaming	*Minecraft*: English terms for building a house. *Spore* in English class	Gaming

What will characterise these webtools?	The playful and the exploratory	The playful and the exploratory	The playful, the exploratory and the reflective

Table 16: The female students and technology in the future

	Grace	Claire	Faith
Where will you be situated when you learn English?	At school: neither *Facebook* nor *Ipad* Out-of-school: social media, e.g. *Facebook* and *Instagram*	At school: more *ICT* and *Facebook* Out-of-school: social media, e.g. *Facebook* and *Instagram*	At school: - - - Out-of-school: social media, e.g. *Facebook* and *Instagram*, even *Twitter*
What will the reasons be for using certain digital contexts or non-digital artefacts?	At school: no *Facebook* because of procrastination At home: lot of *Facebook* and *Instagram* for communication purposes	At school: use of *Facebook* to communicate with an English speaking person At home: social media for communication	At home: social media for communication purposes
What will characterise these webtools?	The expressive and the exploratory	The expressive and the exploratory	The expressive, the exploratory and the reflective

Digital and non-digital artefacts

Tim mentions that it could perhaps be a good idea to introduce more gaming in school. He mentions games about WW2 that could be useful in subjects such as English civilisation. He mentions his English teacher who wants to use *Twitter* in his lessons.

Tim is quite focused on tools. He wants to try out new games on *Playstation 3* and to buy a mechanical keyboard for quicker writing while gaming. He does not think that quicker writing will lead to more spelling and grammar mistakes in English. The communicative element in gaming is in his opinion the most important issue. He thinks that he will improve his English skills considerably by listening to music and gaming.

Ned thinks that the learning output from the use of *Facebook* will be limited in English lessons because students will tend to use *Facebook* for other things. He also mentions that gaming can only be used in English lessons if the teacher is a gamer, too. If a

teacher used gaming in his lessons without being a gamer himself, the teaching would be strange and disappointing in his opinion.

Ken does not want to introduce gaming in school. He likes to go to school, but he does not want school to imitate his leisure activities. He thinks that it would be unfair to force everybody in class to be interested in gaming. Ken wants to distinguish common interests from personal interests.

Claire wants to use more ICT at school and more *Facebook*, even at school. Grace does not want to use *Facebook* at school. She criticises the use of *Ipad*s and wants to reduce the use of it. Her *Ipad* is too little and gives her a headache. She makes a link between the use of *Ipad* and her concentration problems. She wants to limit the use of ICT at school and mentions explicitly the danger of procrastination.

All three female students will probably use social media, e.g. *Facebook* and *Instagram*, especially in out-of-school learning situations. Faith will even use *Twitter*.

Reasons for using digital or non-digital artefacts

Ned believes that it could be smart to use *Minecraft* for example to learn English terminology on house construction. He mentions *Spore* which in his opinion could be used in subjects such as English and biology. Covering many genres including action, real-time strategy and role-playing games, *Spore* allows a player to control the development of a species from its beginnings as a microscopic organism, through development as an intelligent and social creature, to interstellar exploration as a spacefaring culture. Ned thinks that he developed his English terminology and proficiency considerably by playing this game.

Claire wants to have even more ICT at school. She could even imagine having *Facebook* in English class where you use it to communicate with a person in English.

Grace does not want to have *Facebook* at school because of the danger of procrastination. She uses *Facebook* and *Instagram* a lot in out-of-school situations for communicating with friends. She will probably also do it in the future. Paradoxically, she is the sole female student who wants to limit the use of ICT at school. All three girls will use social media, e.g. *Facebook* and *Instagram*, in the future because it is the main

communication channel between them and their friends. The English language can't be excluded, but is commonly rather limited.

Characterisation of the used digital or non-digital artefacts

All three male students will be mostly influenced by the playful and the exploratory in their learning ecologies. Ken is the sole male student who mentions the reflective. All three female students will be mostly influenced by the expressive and the exploratory in their learning ecologies. Faith is the sole female student who mentions the reflective. The reflective seems all in all to be underrepresented.

4.3.2 Pedagogy in School and out of School

In the following two tables an overview is given to research question number two:

Table 17: The male students and pedagogy in the future

	Tim	Ned	Ken
Who will be involved in future learning situations?	- The teacher and the students - Peer communities	- The teacher and the students - Other peers while studying, gaming	- The teacher and the students - Peer communities
What can you tell me about your future deliberate learning?	Mostly at school: initiated by teacher evaluating and commenting essays	More deliberate learning by reading and writing, initiated by school	More deliberate learning by reading and writing, initiated by school

Table 18: The female students and pedagogy in the future

	Grace	Claire	Faith
Who will be involved in future learning situations?	My parents My English teacher	- My parents and my English teacher - Others peers and people while travelling during vacation	- Others peers and people while travelling during vacation - Users within the *Facebook* group in English
What can you tell me about your future deliberate learning?	More deliberate learning initiated by school	More deliberate learning initiated by school	More deliberate learning: vocabulary tests, googling words?

Involvements in the learning situation related to digital and non-digital artefacts

Ned thinks that his teacher and the other students in class will be involved in future learning situations at school. Ned conceives new learning possibilities when he will study abroad in an English speaking country. Peers in gaming communities in out-of-school contexts are mentioned by all male students. But all three male students think that their English teacher will also play an essential role in the future.

Faith tells us that she will probably experience some scaffolding while travelling during vacation. In addition to that, she comments positively on the learning ecology created by their *Facebook* group in English where they have to ask and answer questions in English.

Grace and Claire mention that their parents and especially their English teacher will play the most important role in their learning ecology. Other situations Claire can imagine are related to English speaking while travelling during vacation.

Deliberate learning

Tim thinks that deliberate learning will mostly happen at school. Ned and Ken foresee much more deliberate learning in the future, but they are currently not really interested in deliberate learning. The English teacher will ask them to read and write more and they will have to look up words more often.

All three female students underline the role of school when it comes to deliberate learning. Faith is the sole student who can imagine looking up words in out-of-school situations. She also requests more vocabulary tests at school. The other two girls have positive reminiscences of vocabulary tests in the past, but they enjoy the absence of vocabulary tests at upper secondary school.

4.3.3 Content in School and out of School

The following two tables summarise the findings of the female and male students related to possible future skills in and out of school:

Table 19: The male students and content in the future

	Tim	Ned	Ken
Which of the four skills will or will have to be developed?	Writing	Writing	Writing
Will there be a main focus on input or output?	Output: writing skills	School: reading, writing Out of school: listening	Output: writing skills
How will you develop your input or output?	- Through in-school learning: more writing	Speaking at home and in English class, writing best at school because greater focus on evaluation	- Speaking and listening to native speakers while studying abroad - More reading and writing - Watching video clips on *YouTube* as homework

Table 20: The female students and content in the future

	Grace	Claire	Faith
Which of the four skills will or will have to be developed?	-At school: speaking - Speaking more important than writing	- At school: writing, reading - More writing, not only at school	- At school: writing, with a new focus on grammar
Will there be a main focus on input or output?	- Output mostly at school - Input mostly through media <u>and</u> the teacher	- Output mostly at school - Input mostly through media, not necessarily the teacher	- Output mostly at school - Input mostly through media, not necessarily the teacher
How will you develop your input or output?	More focus on speaking Mostly listening to English at school	Writing without any evaluation by a teacher meaningless	Mostly listening to English by watching series and serials

The four skills

Writing will be the biggest challenge according to Ken, Ned and Tim. Ned wants to write more mails to his grandfather. He says that it is good to write mails to him because his grandfather wants to have a quick answer and can't stand waiting too long for answers. But he thinks that the further development of writing skills have to occur at school because there will be a greater focus on evaluation. His grandfather will not necessarily improve his writing skills. Ned believes in school and in his teacher's abilities to improve his English. School should have a greater focus on writing. The best thing is according to him the evaluation of the teacher who marks his text and comments on it. Writing essays without any evaluation is meaningless according to him. *ITL* could even be used more in these cases.

Ken wants to study abroad and thinks that he will have to test his real knowledge of the English language by speaking and listening to native speakers. Ken underlines the importance of English writing skills when studying abroad. He thinks that his English teacher could force his students more to read and write English. Watching a video clip on *YouTube* could for example be given more as homework. Ned admits that his reading has to improve.

The need for more writing in English, not only at school, is emphasised by Claire. On the one hand, she wants to write more in out-of-school learning situations, but on the other hand she thinks that out-of-school writing without any evaluation by a teacher is often meaningless. Faith wants to improve her writing, too. She needs a new focus on grammar. In opposition to Claire and Faith who need more writing, Grace, wants to focus more on speaking. Speaking is for her more important than writing. Writing ranks at a second place.

The further development of reading skills will also be important to Claire. Faith emphasises that she will mostly listen to English by watching series and serials. Grace mentions that she will mainly listen to English at school and in out-of-school situations. Grace gives a greater importance to listening to the English teacher than Faith and Claire, but the interview could be biased in this case.

Output

According to Ned speaking will mostly occur in out-of-school contexts and a little bit with his teacher at school. Tim thinks that there should be a greater focus on writing in school because it is what he needs most. There is enough English speaking at home according to him. His teacher who evaluates and comments on his essays will improve his writing skills.

In contrast to the boys, all three girls confirm that they will mostly use English at school and not at home. It is at school that they have to make themselves understood – orally and by written. This is even the case for Claire who has a British father.

Input

Tim reports that he during gaming uses difficult words which sometimes are not easy to understand. He hopes that he in the future will have less difficulties understanding the

vocabulary when gaming. Ned thinks that listening skills will mostly be developed out of school while reading skills at school. During gaming it is important to understand what the other peers say, as this is a prerequisite for playing games such as *League of Legends* or *Call of Duty*. All three girls confirm that the input of the English language will mostly occur through the media and not necessarily the teacher.

4.4 Ecological Transitions

The main research question on the students' trajectories of English learning ecologies is under scrutiny in this chapter. An overview of all self-perceived ecological transitions indicated by the interviewed students is given in the following two tables.

Table 21: The male students and ecological transitions

	Tim	Ned	Ken
Approximate age or school	1. From elementary to lower secondary school: 12-13 years 2. Upper secondary	1. Elementary school 2. 8th and 9th grade	1. 12-13 years 2. Elementary school: 6 years 3. Upper secondary school
Digital or non-digital artefacts	1. Songs 2. *Kahoot* quizzes	1. Grammar exercises 2. *League of Legends*	1. *http://major-gaming.com* 2. Blackboard 3. *Kahoot* quizzes
Situation	1. Singing without lyrics 2. Digital quizzes in the English classroom, factual knowledge	1. Grammar teaching: doing exercises related to the indefinite articles *a* versus *an* with his father 2. Playing *League of Legends* for the first time	1. New peer community, development to a good English user 2. Grammar teaching: the conjugation of the verb *to be* 3. Digital quizzes, factual knowledge

Table 22: The female students and ecological transitions

	Grace	Claire	Faith
Approximate age or school	1. Last year 2. Elementary[3] school: year 13	Elementary school	1. Last year 2. Elementary school: year 13 3. Lower secondary
Digital or non-digital artefacts	1. From *Facebook* to *Facebook* and *Instagram* 2. Vocabulary tests	Vocabulary tests	1. From *Facebook* to *Facebook*, *Instagram* and *Twitter* 2. Vocabulary tests 3. Non-digitally process oriented writing via *ITL*

---

[3] The elementary or primary school in Norway lasts from year 6 to 12 or 13.

Situation	1. Sudden frequent use of *Instagram* 2. Real sense of accomplishment after vocabulary tests	Real sense of accomplishment after vocabulary tests	2. Real sense of accomplishment 3. Very efficient, but negative reminiscences, only conceivable in the future when totally anonymous

In terms of important ages and situations, Tim mentions the transition from primary to secondary school. He remembers a great deal of situations where he had to sing songs at elementary school (such as *Time of Your Life*) and where he could show his teacher that he was able to sing it by heart without looking at the lyrics. The same happened to Ned. They report on a real sense of accomplishment in these situations.

Both Ken and Ned mention grammar teaching as decisive moments at primary school. Ken remembers a whole lesson of his English teacher who explained the conjugation of the verb *to be* at the blackboard. This was in his opinion a decisive moment. Ned mentions grammar, too, but in a different context, that is to say while doing homework with his father and trying to understand the difference between the indefinite articles *a* and *an*. He thinks that he now can distinguish between the indefinite articles *a* and *an* without any problem.

The shift from primary to lower secondary school seems to be really important when it comes to ecological transitions. Ken indicates ages 6 and 12-13 and Tim 12-13 as important ecological transitions. Ned mentions the 8th and 9th grade as decisive moments.

Grace and Faith report on some interesting ecological transitions between the past and the present. Grace mentions that she used *Facebook* first and that it was only last year that she started to use *Instagram*. Faith reports on a transition from *Facebook* to *Instagram*, too. In addition to that, she started to use *Twitter* last year. *Twitter* made it possible for Faith to be updated about everything.

Faith, Grace and Claire remember the vocabulary tests they had at elementary school and the sense of accomplishment they experienced after the tests. Faith recalls this moment more or less at the age of 13 where she really felt having learnt English. They do not have any vocabulary tests now at school. She compares herself with her brother at 7th grade who has much more vocabulary tests than her. She could imagine having vocabulary tests now.

An illustrative overview of ecological transitions and agentic moments in the interviewees' learning ecologies is given in appendix B. We now only take a look at an excerpt of the main findings related to one male and one female student. The most interesting cases are Ned and Faith. The following radiographic representations highlight essential moments in their learning ecologies.

Figure 7: Ned's ecological transitions
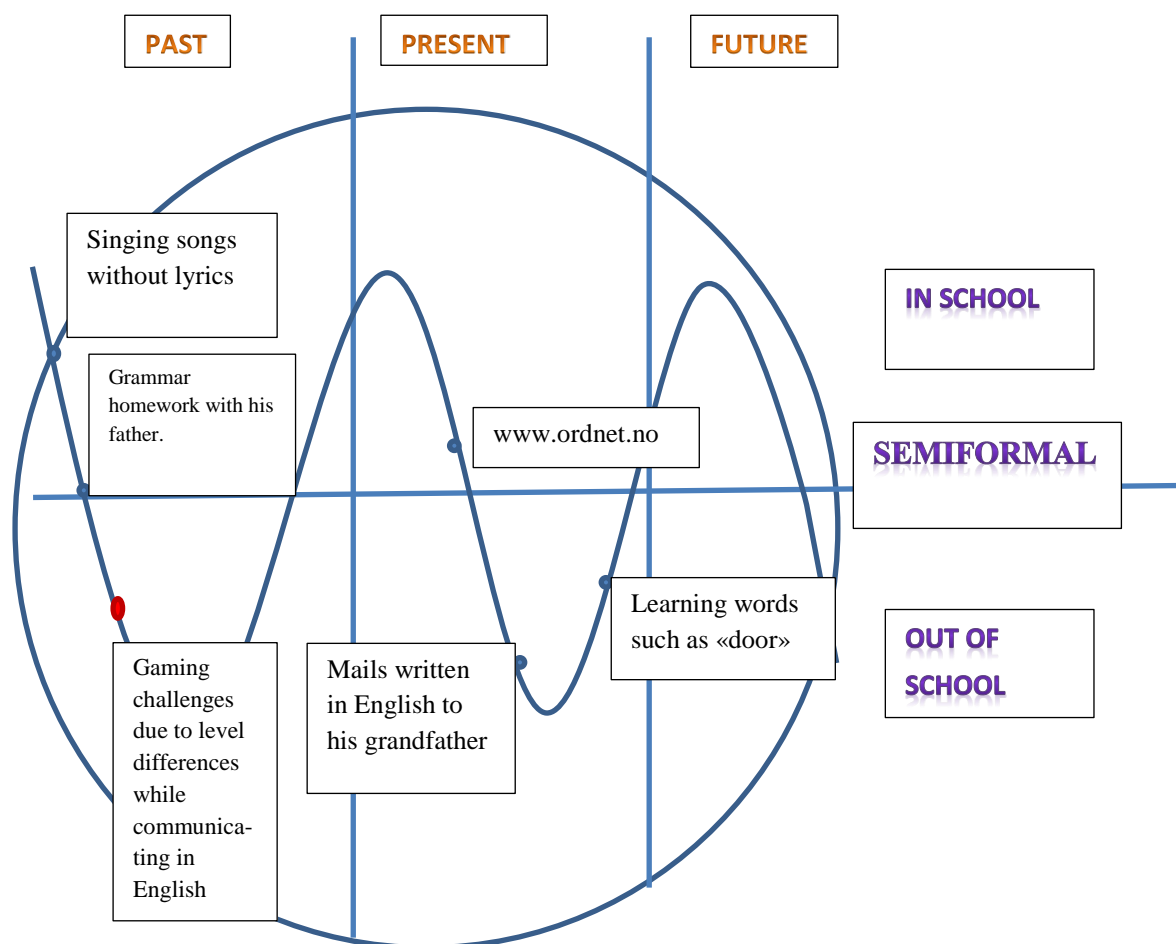
Ned remembers having played *League of Lege*nds for the first time with his friend Matthias who was a much better gamer and spoke English better than him. He was at the highest level and Ned at level 1. When they started playing in a gaming community, they were placed with people being at a level between him and Matthias. All the other gamers started to tell Ned that he was a bad player because he did often not understand what they said in English. The stress provoked by these negative comments pushed him

to improve his English and gaming. After several weeks he managed to improve his English and gaming. This essential moment is highlighted in red in figure 7.

The following radiographic representation of Faith's essential moments is also interesting and facilitates an analysis of her learning ecology.

Figure 8: Faith's ecological transitions
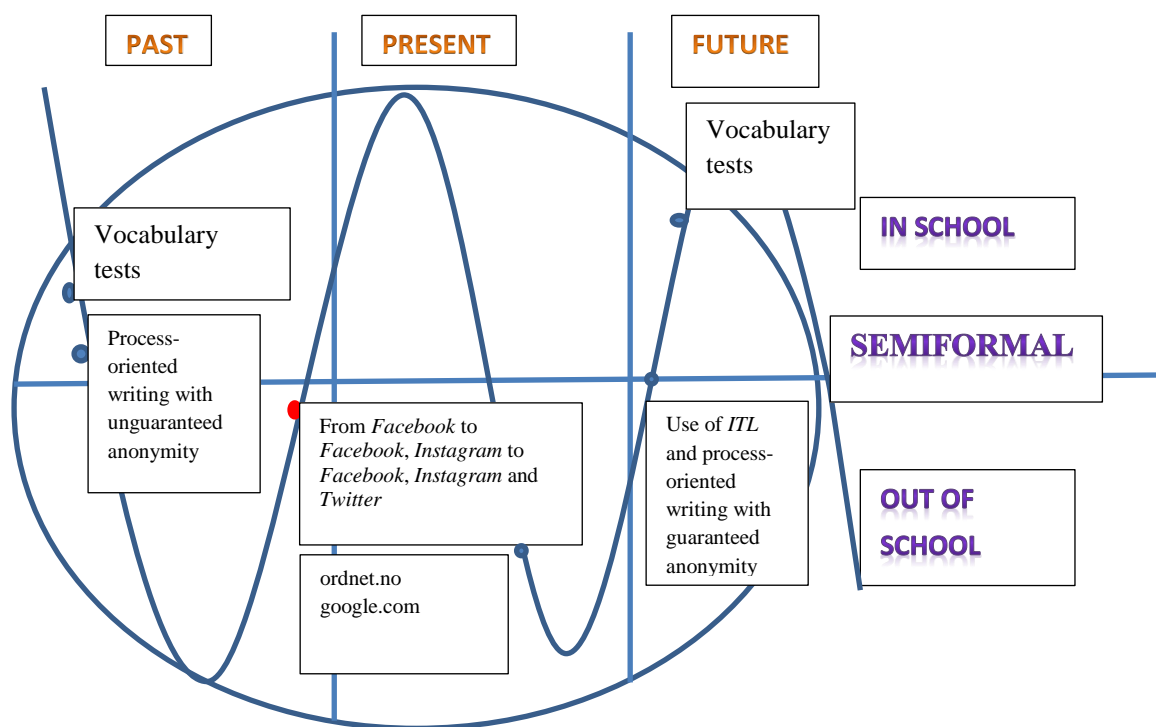
Faith qualified the use of mainly non-digitally process-oriented writing at lower secondary school as beneficial for her English learning. The students only used *Microsoft Word* to write the texts and the teacher wrote his comments with a pen on the printed paper. She also recalled some negative experiences.

> *Det va litt skremmende. Du måtte det lese om igjen… Kanskje du lett ble kjent igjen av de andre i klassen. Du ble jo som regel positiv overrasket selv om det var ganske negativt før du fikk levert det, men (…). Det var anonymt, men allikevel, vi kjente hverandre sine tekster og visste hvordan vi skrev. (It was a little bit scary. You had to read it again… Perhaps you were easily recognized by the others in class. You generally got a positive surprise although it was rather negative before handing it in, but (…). It was anonymous, but nevertheless, we knew each other's text and knew how we used to write.)*

Only if anonymity is better guaranteed, she could imagine having some process-oriented writing again in her English class. She qualified this method as efficient and she thinks that it becomes even more efficient when it is more digital, for example by using *ITL*.

Faith experienced quite recently an interesting ecological transition when she extended her use of social media. In addition to all other social media, it became a habit to use *Twitter* to keep in contact and be updated. She had a clear understanding of the advantages of using *Twitter* and the relevant use of it. She wanted to use it and will probably use it in the future. She is happy with her use of social media.

It is not always possible to exactly point out the artefact that caused a change in the students' learning ecologies. But one good example is Ken who mentions that starting to use *http://major-gaming.com* made him become a professional gamer and more proficient user of English.

> *A: Du har sagt at du har blitt en mer profesjonell spiller hvor du bruker aktivt det engelske språket. Husker du når og hvordan det skjedde? (You told me that you became a more professional gamer who actively uses the English language. Do you remember when and how it happened?)*

> *B: Det var bare noe som kom med en eller annen gang hvor jeg plutselig følte at nå har jeg lyst å bli bedre liksom spiller ... Så eg var... Det var en nettsida som heter major-gaming.com. Min engelsk ble plutselig mye bedre. (It was something that just happened when I suddenly felt that I want to become a better gamer now ... And so I was ... It was the site major-gaming.com. Suddenly, my English improved considerably.)*

5 Discussion and Reflections

5.1 Technology

This study has tried to find an answer to the following research question:

Technology framework: Where are upper secondary students when they learn English? What is the reason for using certain digital or non-digital artefacts? What characterises these artefacts? Background: artefactual English learning ecologies (PELE). **Where, why and which digital or non-digital artefacts?**

The findings of this study will be linked to theories in the following chapter.

5.1.1 Agentic Triggers and Affordances in Learning Ecologies

The interviewed students mentioned several digital (e.g. *Facebook, Instagram, Twitter, Snapshot, Minecraft, Call of Duty, League of Legends*) and non-digital artefacts (e.g. vocabulary tests, the blackboard, homework). Each digital or non-digital artefact creates itself a learning context which can be part and parcel of a student's learning ecology. Barron (2006) uses the following definition for learning ecologies: "A learning ecology is defined as the set of contexts found in physical or virtual spaces that provide opportunities for learning" (Barron 2006, p. 195). In this first section on technology we called this phenomenon artefactual English learning ecologies since the purpose of this study is to describe and analyse artefacts used by some specific upper secondary students in the context of English as a foreign language.

Affordances can play an important role within artefactual English learning ecologies. Affordance is the quality of an object or an environment, which allows an individual to perform an action. A knob affords twisting, and perhaps pushing, while a cord affords pulling. Gibson (1979, p. 127) defined affordances as "all action possibilities latent in the environment, objectively measurable and independent of the individual's ability to recognize them, but always in relation to the actor and therefore dependent on their capabilities." In opposition to Gibson, Salomon and Perkins (2005) relate the term much more to cognitivism. According to their theories gaming and contemporaneous skyping for example cannot be characterised as an "effect with", neither an "effect of" nor "an

effect through" ICT (Salomon & Perkins 2005, p. 74ff.). This is the case of Tim, Ken and Ned in our study. According to Salomon and Perkins "effects with technology emerge through the interaction when certain intellectual functions are downloaded onto the technology (spelling, computing, ready rearranging), thus establishing an intellectual partnership with the user." It is important to understand rightly Salomon and Perkin's term of amplification of cognitive capability and "person plus" (Salomon & Perkins 2005, p. 84). The technology has to do things actively which increase the cognitive capability of the user. One example given by Salomon is spelling. There are no devices like a spell check which actively correct a text written by a pupil in the chatting field. It is only the pupil who uses his computer and *Skype* like a phone for speaking English. The spell check plays an important role and was even mentioned by all interviewed students, but not in the case of gaming. In the case of spell check we could talk of a real added value of technology because "the partnership frees the user from the distractions of lower level cognitive functions" (Salomon and Perkins 2005, p. 74).

As illustrated above, the term affordance can be misused and is difficult to apply. This is the reason for introducing the term *agentic trigger* as a new term in our study. Affordance is often used as a synonym of latent possibilities. We defined this term sensu lato, that means as the trigger for future actions resulting from an interaction between a user and a technology which can be decisive for a learner's learning ecology. In this sense one could assert that *ITL* in most cases only affords school related work. The *Facebook* group mentioned by the three students affords comments and questions written in English since the English teacher had introduced the rule to ask and answer all questions in English. This learning context is quite similar to what Rogoff and Lave (1984, quoted in Barron 2006, p. 197) call structured social arrangements. But in this case the digital artefact *Facebook* or *ITL* itself is neither the trigger nor the affordance, but the use of it, namely the introduction of certain rules while using the *Facebook* group or *ITL*. We could talk about 'didactic' triggers or affordances.

With regard to affordances, the case of Ned is of particular interest. Ned reports that reading comments on *YouTube* can make somebody angry. He read himself some "useless comments" on *YouTube* which did not address his problem. That was a trigger for him to write a wiki himself to help other users who had to cope with the same

problem. Trying to analyse the affordance of the digital artefact *YouTube* is a real challenge, but it seems that the digital artefact *YouTube* itself is again not the real trigger, but the content of the digital artefact. Ned himself admits that the design of a homepage can be decisive for reading or not reading a text, but that the content mostly is much more important. The term affordance can in this case only be used related to the content used within a digital artefact, such as *YouTube* in our case. We could talk about content triggers or affordances.

Tim mentions some newer functions such as "riding horses" in newer versions of *Minecraft* that make him still play the English version of *Minecraft*. Although *Minecraft* starts being a little bit boring for his age, he still plays it because of these newer functions. At the same time he practices his English while playing *Minecraft* and chatting. "The riding horses" are in this case a trigger for playing newer versions of *Minecraft* in English. We could talk about digital triggers or affordances.

According to Ned gaming, especially real strategy gaming, affords thinking before acting and gaming also affords writing since you want to chat while gaming with other peers. *Skype* affords speaking, but not all gamers like to speak. Some of them prefer chatting according to Ned. However in all these cases, it is the use of the digital artefact which is decisive and not the digital artefact themselves. It could easily be possible to speak Norwegian and not English while skyping.

5.2.2 The Playful, the Expressive, the Exploratory and the Reflective

The description and analysis of the artefacts used by the students is made easier by having recourse to Selwyn's theory (2008, p. 9) on "the playful, the expressive, the reflective and the exploratory". Some students are interested in playing real-time strategy games, like Ned, Tim and Ken in our study (the playful). Some other students want to express their feelings and opinions (the expressive). Another group of students wants to reflect and find a deeper meaning or the real importance of a feeling or experience (the reflective). The last group behaves like explorers on the net (the explorative). It goes without saying that all four groups can intertwine.

The playful could be represented by the interviewees' use of *Call of duty* for example, the expressive by *Instagram*, the reflective by *ITL* and *Microsoft Word* and the exploratory by *Google*.

Playful artefacts were predominant for all those who played games, especially for the male informants Ned, Tim and Ken. This is the case for the girls, too, but only at primary school. With regard to expressive artefacts, Hashtags on *Instagram* are a good example for the expressive although the texts written in English are often rather short. *Instagram* is not used at all by the boys. The reflective is in my opinion related to digital artefacts such as *ITL,* reading news, blogs and wikis or non-digital artefact such as homework. However, the subsequent use of *google* and the surfing from one news, wiki or blog to another can be referred to the exploratory. Writing or answering to wikis and blogs can be related to the expressive and reflective. The distinction does not always seem to be easy. Especially the notion of "exploratory" is difficult to operationalise since this term could include a series of subsequent reflective, playful and expressive habits.

Tim was mostly interested in the playful and the expressive when he used ICT. By the playful I mean in the case of Tim playing games and by the expressive listening to songs and contemporaneous singing.

Ned is also mostly interested in the playful, but he tended to be a little bit more expressive and reflective in the past since he had written a wiki and a blog and often gave constructive criticism on *YouTube* comments. According to Corder (1978, p. 83) motivation and interest play a decisive role for the development of an interlanguage. The playful motivation influences Ned's choice of certain artefacts and thus the development of his interlanguage. This is for example also reported by Ken who tells us that he is used to speaking American English while gaming and therefore had some communication problems with gamers who suddenly spoke British English.

Tim is mostly interested in artefacts which are playful and expressive. He was mostly interested in the playful and the expressive when he used ICT. But it seems that he is now less interested in the expressive, that is to say listening to songs and singing contemporaneously. The playful is predominant now.

Faith, Claire and Grace are probably more interested in the expressive. The playful was more dominant for them in the past (*Minecraft, Nintendo DS, Pokemon*). Especially Grace reports on how important it is to express herself by the use of *Instagram*. Thus, comparing past and present, it is possible to assert that there was an evolution from the playful to the expressive in the case of the girls and from the expressive to the playful in the case of some boys.

5.2 Pedagogy

The research questions related to pedagogy had the following wording:

Pedagogical framework: Who is involved in the learning situation? Is there any deliberate learning? Background: interpersonal English learning ecologies, interpersonal relationship between the English learner and other English learners or more knowing environments. **With whom and what kind of deliberate learning?**

The English teacher is mentioned often by the girls, especially in the past. The boys mention the English teacher mostly in the present. Vocabulary tests are not mentioned by the boys, only the girls. These vocabulary tests seem to have given a great sense of accomplishment to the girls. These main findings will now be related to theories.

5.2.1 Zone of Proximal Development within Interpersonal English Learning Ecologies

Our study is inspired by Vygotsky's sociocultural philosophy (Vygotsky 1978; Vygotsky 1986). Most situations in which the gamers' English is used within a peer community can resemble a zone of proximal development (ZOP) where scaffolding occurs. Such situations identify the important relationship between a learner's context and the learning that occurs as a result of his interactions within that context. The teaching and the learning[4] are highlighted through the emphasis that Vygotsky places upon interaction between a learner and a more knowing partner. Scaffolding is a term which - according to Vygotsky - occurs in 'asymmetric' interactions. However, other researchers have noted (Fernández, Wegerif, Mercer & Drummond 2001; Littleton &

---

[4] Vygotsky uses the Russian term "obuchenie" which means "teacher" and "learner" at the same time. The translation" instruction" is inadequate and only reflects the lack of an appropriate term within the English language to describe the learning and teaching process as one.

Light 1999; Cowie & van der Aalsvort, 2000) that learning can also result from 'symmetrical' interactions where the students have similar levels.

The findings of this study report mostly on 'asymmetric' interactions. My informants have undoubtedly experienced 'symmetrical' interactions, but these were mostly not emphasised or remembered as essential moment in their learning ecologies. The need for a more able partner in asymmetric interactions to provide appropriately challenging activities is for example given in many learning situations mentioned by Ned. He remembers having learnt English with another ambitious pupil. When he played *League of Lege*nds for the first time, his friend Matthias was a better gamer and a more proficient English user. He was at the highest level and Ned at level 1. When they started to play in a gaming community, there were placed with people being at an intermediate level between him and Matthias. All the other gamers started to tell Ned that he was a bad player because he did often not understand what they said in English. This stress provoked by these negative comments pushed him to improve his gaming and English. After several weeks he managed to improve. As mentioned above, it was rather difficult for the informants to distinguish between the purpose of gaming and English learning.

Even other learning situations described by Ned give us an idea of the importance of the more knowing partner. Ned remembers that homework at home was quite efficient for improving his English, especially when he went through grammar exercises with his British father and had for example to understand the difference between the indefinite article *a* and *an*. Ned mentions also a situation in which he was contacted by a *YouTube* commentator who thought that Ned was good at giving constructive criticism. He asked him to comment on his video. Ned commented on the *YouTube* file of this *YouTube* commentator and even went back to his own comments to spell and grammar check the text he sent him. In this case Ned became himself the more knowing partner.

The development of the individual learner is the result of his internalisation of the interactions with his environment. Wertsch (1985) calls this internalisation "decontextualization of mediational means". Ned recognised the true meaning of Learning English in interactions with his grandfather when he had to write mails to him under time pressure because his grandfather wanted to have a quick answer back. His plans for the future are to write even more mails to his grandfather. In this last case we

can see a "decontextualisation of mediational means" which will perhaps create a new habit within Ned's learning ecology. Wertsch (1985, p. 33) defined this principle as "the process whereby the meaning of signs becomes less and less dependent on the unique spatiotemporal context in which they are used". This definition of decontextualisation fits in the ecological perspective of this study and the dynamic interplay between relational and temporal dimensions in our approach to *agency*.

Zones of proximal development exist both at school and at home. All informants of this study mentioned their English teacher, their parents, one parent or at least one relative like Tim's British grandfather as important stimulator for learning interactions in the past. We called this phenomenon interpersonal English learning ecology. There is a plethora of learning ecologies which create a zone of proximal development. Due to the limitations of this Master's thesis format, only some of them are taken into consideration.

5.2.2 Deliberate Learning

Many informants of my enquiry did not necessarily have the purpose of learning English. But they improved their English because this language was used in their interpersonal English learning ecology. Put in other words, the sole purpose of improving one's English does not always lead to success, but many other purposes in a learning ecology will probably improve a pupil's English. Implicit or incidental learning can occur at any time and everywhere, at school and in out-of-school learning situations. It is per se difficult to know exactly when and where this form of learning occurs in English learning ecologies. Thus, this Master's thesis took mainly into consideration the opposite of incidental learning, namely deliberate learning which was easier to operationalise. Deliberate learning was defined (cf. chapter 2.2.2) as actions carried out by students who want to learn English actively and use digital or non-digital artefacts for getting specific answers and improving their level of knowledge.

All interviewed students state that deliberate learning is mostly initiated by the English teacher, often through homework or *Kahoot* quizzes to check out factual knowledge. This kind of learning is typical for in-school learning. Ned and Faith mention concretly *www.ordnet.no*, Tim mentions *www.google.com*. Faith even mentions the use of *www.ndla.no*, even as an out-of-school phenomenon. The current study has some

limitations since the interviewees did perhaps not remember all deliberate learning that occurred in their out-of-school learning. Most of my informants declared that they were not interested in deliberate learning outside school. The sole exception seemed to be Faith who used deliberate learning quite often.

Notwithstanding the fact that many informants declared not being interested in deliberate learning outside school, they did not comment negatively on deliberate learning at school. Many informants gave even examples of activities which could be related to deliberate learning and occurred at home, but could not be considered as real out-of-school activities. We called these learning contexts semiformal learning.

Many positive reminiscences of my informants which might be described as agentic moments or ecological transitions can be related either to deliberate semiformal learning or deliberate in-school learning: deliberate semiformal learning (vocabulary tests (Grace, Claire and Faith), grammar homework (Ned)) and deliberate in-school learning (verb conjugation at the blackboard (Ken)). Nation (2007) talks about the importance of deliberate and language-focused learning which he describes in the following words:

> *Some activities in the language-focused learning strand, such as dictation, go in and out of fashion, but there is plenty of evidence, certainly in vocabulary learning, that deliberate learning can make a very useful contribution to a learner's language proficiency.*

Elgort's (2011, p. 399) research has also shown that "deliberate learning is not only an efficient and convenient but also a very effective method of L2 vocabulary acquisition". This seems to be confirmed by the female students who have positive reminiscences of vocabulary tests which they have been preparing for at home. Vocabulary tests are only the result of a prior deliberate learning situation and can be included in our definition of deliberate learning. In this study, we considered cases of deliberate learning in which students carried out specific actions to learn actively and use digital or non-digital artefacts for getting answers and improving their level of knowledge. Deliberate learning in this case is considered as learning with a conscious intention of improving his knowledge for example in English vocabulary, culture or civilisation. Most of my data material shows generally little deliberate learning. The shown deliberate learning is mostly initiated by the English teacher. School seems to have a compensatory function.

The finding of this study can also be related to Bernstein's distinction between horizontal and vertical discourse. According to Bernstein (1999, p. 159) "there is little systematic organising principles and therefore only tacit recontextualising" in horizontal discourses. It can be argued that the informants of this study have not been exposed to "a coherent, explicit and systematically principled structure, hierarchically organised" when they game or chat on social media and focalise on what the other students do. They develop an everyday knowledge which is "oral, local, context dependent and specific". According to Bernstein (1999, p. 159) "a horizontal discourse entails a set of strategies which are local, segmentally organised, context specific and dependent, for maximising encounters with persons and habitats". Most of the discourse in which the informants' present learning take place – especially in the case of the gamers – seem to be not explicit, but implicit and unstructured, i.e. horizontal and not vertical.

The girls comment positively on being forced to use the English language within their *Facebook* group introduced by their English teacher at upper secondary school and the vocabulary tests they had at elementary school. Both cases – the first case being situated in the present and the latter in the past – can be linked to Bernstein's "vertical discourse" since the learning took

> *the form of a coherent, explicit, and systematically principled structure, hierarchically organised, (…) or it takes the form of a series of specialised languages with specialised modes of interrogation and specialised criteria for the production and circulation of texts, as in the social sciences and humanities (Bernstein 1999, 159).*

The use of a *Facebook* group created by the informants' English teacher implied the obligatory use of the English language. All students had to ask and answer all questions in English. This was probably a challenge for some students who were used to writing Norwegian on *Facebook*. In the case of vocabulary tests and the use of *ITL* which is often used for school-related work such as handing-in essays, the vertical aspect of the discourse is even more visible. Learning seems to be structured and hierachically organised. The students have to answer a specific essay question and – like my informants mention in the interviews – they explore the internet by using tools such as *Google* and wikis – to get some specific answers to a specific topic which has been chosen by their English teacher who wants them to learn English. Generally speaking, the deliberate or vertical learning appears to be scarce in out-of-school contexts. Only

Faith comments on some use of digital artefacts such as *www.ndla.no* or *www.ordnet.no,* even during her spare time out of school.

In the case of Tim we are informed that he had to google some words he did not understand in English. He mentions especially one episode where he tried to find some new pc equipment. The purpose in this case was not necessarily to improve his English in culture, literature and civilisation, but to understand terminology related to pc equipment and to upgrade his computer. The purpose and horizontal discourse seem often to be important for the choice of digital learning situations. It looks like research has given little attention to the questions why, how, when and where adolescents create English learning opportunities for themselves by using ICT (cf. Barron 2006, p. 197).

5.3. Content

The research question related to content had the following wording:

Content framework: Which of the four skills are developed? Is there a main focus on input (receptive skills) or output (productive skills)? How do the learners develop their input or output? Background: language oriented English learning ecology. Questions on the students' skills are under scrutiny in the following chapter.

5.3.1 Productive versus Receptive Skills

The competence aims in the English subject curriculums (Utdanningsdirektoratet 2013) for upper secondary schools in Norway explicitly mention communication as an important aim. Thus, it is important to take into consideration questions on the two skills, that means the receptive and the productive skills. It is interesting to know whether the students either spoke, wrote, read or listened to English. This is of particular interest for describing some students' language oriented English learning ecology.

The interviewed students reported on several communicative problems which were beneficial for their learning. Faith remembers for example communication problems with her teacher when she was confusing the diphthongs /eə/ and /ɪə/ in the words "beard" and "bear". Since she remembers now the correct pronunciation of the word, we could to a certain extent assert a non-fossilisation of a mistake she made earlier. This

can be related to Selinker's (1972, p. 214) and Corder's (1978, p. 83) interlanguage theory in which communicative needs are emphasised to avoid fossilisation of mistakes. Students need to experience communicative needs for improving their interlanguage. It is of particular interest to know to what extent learning ecologies make the students come one step forward in the construction of their interlanguage.

Writing occurs rarely in out-of-school learning. All my informants complain about an important lack of writing opportunities. These are mostly initiated by the teacher. Ken can't remember having written mails to his friends. He only remembers having written a mail to get back his username and password of a gaming site. In this case we can see a communicative need.

Listening to English is predominant in out-of-school context. Reading is often initiated by the teacher. All female students – except for Claire - report on scarce speaking at home whereas all male students develop their speaking skills by gaming and contemporaneously skyping. Our data indicates that the boys are probably better at active speaking skills whereas the girls excel mostly in passive listening skills. The overfocus of passive skills in the case of female students in out-of-school learning is partially confirmed by existing research (Pickard 1996, Pearson 2004). In this context the difference between out-of-school and in-school learning is flagrant. In the following chapter, I will try to describe in details how the receptive (input theory) and the productive skills (output theory) of the informants were developed. Since reading and writing are rather infrequent in out-of-school activities, the following chapters focus on listening and speaking skills only.

5.3.2 The Input Theory

Ned tells us that there is more exposure to English at home than at school. This is due to gaming and skyping. The input is often comprehensible (Krashen 1985). This is an important prerequisite for gaming, unless it is not possible for Ned to play games such as *League of Legends* or *Call of Duty*. Ned thinks that listening mostly will occur out of school while reading at school. The input can be comprehensible and even slightly more advanced than the students' current level (i+1) (Krashen 1985). Tim mentions for example that he learnt the difference between "vane" and "vein" by means of a song.

All three girls confirm that the input of the English language will mostly occur through the media and not necessarily the teacher. Ned mentions the importance of linguistic input. He remembers how he learnt the word "door" with the help of his English speaking grandfather. He had visited him and asked him to open the door when arriving at home. And Ned asked him: "The door? What's that?" His grandpa answered him by pointing at the door and Ned answered: "Oh, yes, *dør*". His grandpa pointed again at the door and replied: "No, door in English". Ned remembered this episode because he understood that some English words are slightly different from Norwegian and that there are possibilities of transfer or interference between the two languages. In this case Ned managed to recognise the lexical meaning of a word in an interaction with his English speaking grandfather. In this authentic example the input "dør (door in English)" was modified non-verbally (the grandpa pointed again at the door) and verbally (no, door in English"). We can recognise the importance of *interactionally modified* input which - according to García May and Alcon Sóler (2013, p. 215) – appears to have the greatest effect when it is accomplished through confirmation and comprehension checks and clarification requests.

5.3.3 The Output Theory

With regard to communicative needs, Swain's (1985) theory on "the pushed output" correlates with the above mentioned (cf. chapter 5.3.1 and 2.2.3) theory on interlanguage (Selinker 1972; Corder 1978, 1982). According to Swain there are good opportunities for output when the learner is stretched to express messages clearly and explicitly. This "pushed output" is beneficial for language acquisition. Swain (1995, p. 128) proposed three functions of output in the second language learning process: 1. the noticing function, 2. the hypothesis formulation and testing, and 3. the metalinguistic function. Based on the findings of this study, writing is rather infrequent out of school. Thus, the study only considers speaking in this chapter.

Ned mentioned the "noticing function" of output when he was in Spain with his cousin from Great Britain and he did not know the English word "waves". He had to mime the word "Let us go to the beach and watch the __". This example illustrates that the noticing function can play a major role in out-of-school learning.

As already mentioned in chapter 5.3.1., Faith recalls communication problems with her teacher when she was confusing the words "bear" and "beard". The teacher used the opportunity to teach different pronunciations of the spelling "ea", namely the diphthongs /eə/ and /ɪə/. In this situation we had the noticing function, the hypothesis formulation and testing and eventually the metalinguistic function of output.

Grace mentioned some learning situations instigated by communication problems while travelling abroad. In this case we could also see the two first stages of output in out-of-school learning. However, all female students, except for Claire whose father is British, say that the testing of words and the subsequent metalinguistic explanations predominantly occurred at school. Faith explicitly mentions that the output is greater at school than at home. Grace emphasises the role of her English teacher when it comes to feedback: «*When I use the wrong words or something like that, it mostly happens in English class*». With regard to the third stage, i.e. the metalinguistic function of output, it seldom occurs at home. Since Swain's (1985) metalinguistic function of output mostly occurs at school and not at home, the function of in-school learning in relation to out-of-school learning can be considered as compensatory.

As regards communication problems, Claire reported that this mostly occurred in the past and less in the present. She remembers testing words with her British father. Since her father is a teacher, he regularly explains rules to her. In this case we can again see Swain's (1985) hypothesis formulation and testing and a subsequent metalinguistic function of output in out-of-school situations. However, also Claire emphasises the role of her teacher. In her case, school seems to have a more complementary function.

Ken, Ned and Tim have experienced communication problems and noticed that they had to improve their English. Ned reports that he on several occasions had difficulties communicating and had to test out the meaning of different words. He had to negotiate for meaning. The communication problems on *Skype* were often due to other gamers who were not English native speakers. The hypothesis formulation and the testing were not followed by a metalinguistic phase since everything had to happen quickly during gaming. Ned is the sole student to mention the metalinguistic function out of school with a school friend who helped him to write texts and to be well prepared for tests.

All three male students mainly speak English when they are gaming. Thus, the noticing function and the testing/hypothesis formulation can be deemed relatively high in their out-of-school learning. However, the metalinguistic function of output plays a minor role in out-of-school learning. It seems to be part and parcel of in-school learning in the case of all informants. My informants report on talking regularly about vocabulary and grammar at school. They never talk about this with other gamers or social media users.

Tim mentioned some usual communication problems while chatting. Sentences such as "You have to come at me" could according to Tim easily be misunderstood and confused with sentences like "You have to come after me". This hypothesis formulation and testing phase was not followed by a metalinguistic phase in which Tim could have learnt that the phrase "to come at me" is a popular, but incorrect way of speaking English. The English teacher will have to talk about informal language. In-school learning could have an important and compensatory function here (cf. Swain 1993). The following figure could illustrate our main findings in relation to the output hypothesis:

	Noticing	Testing, Hypothesis	Metalinguistics	
Out-of-school learning→	M: 2 F: 1	M: 2 F: 1	M: 1 F: 1	←Equal need
In-school learning→	M: 2 F: 2	M: 2 F: 2	M: 2 F: 2	

1 = low, 2 = high, M = male, F = female
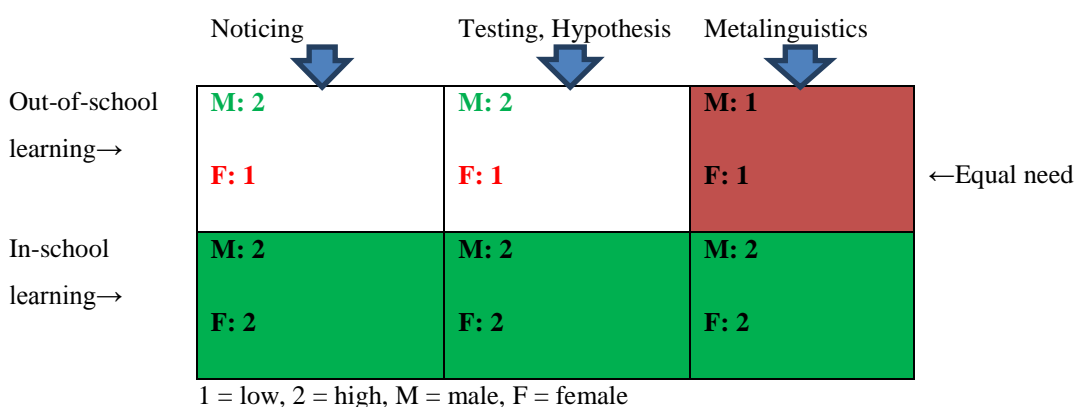
Figure 9: Male and female self-perceived oral output at and out of school

All three girls confirm that they mostly speak English at school and not at home. It is at school that they have to make themselves understood. This could mean that all the three functions of output are mostly present at school and not necessarily out of school. In the case of the male students, the first and second function of output can be found out of school. Only the third stage, the metalinguistic function, is missing. The male students seem to have an advantage in out-of-school learning because they experience more lack of communication and can test out new words more frequently. Based on these findings the role of in-school learning is important as regards the metalinguistic function of both the male and female students, whereas for the female students the in-school learning is particularly important for the noticing function and the testing/hypothesis formulation.

5.4. Ecological Transitions and Agentic Moments in English Learning Ecologies

The main research question of this study was: What role do digital and non-digital artefacts and 'agency' play in upper secondary students' self-perceived trajectories of English learning ecologies in the past, present and future? This main research question regroups the domains technology, pedagogy and content which have been treated in the previous chapters 5.1 to 5.3. The main purpose of this chapter is to analyse some essential features of the students' artefactual (related to technology), interpersonal (related to pedagogy) and language oriented (related to content) learning ecologies.

We had an overall look at the use of technology in the past, present and future of the informants. By focalising on some interactions between these temporal dimensions, it is possible to detect the phenomenon which has been defined as agency *(cf. chapter 2.1.1).*

The following subcategories of the chordal triad (Biesta, Tedder 2006, p. 15; Emirbayer, Mische 1998, p. 970) were operationalised: past (*selective attention* (mostly Faith, Claire, Grace and Ned) and *recognition of type* (Ned)), present (*problematisation* (mostly Ken, Grace, Faith) and *decision (*mostly Ken and Faith)) and future (*narrative construction* and *hypothetical resolution* (mostly Faith)).

According to Greeno (2006, 538) agency means "participation in interaction". It means that the person has learnt to "act authoritatively and accountably". The female students' ability to shape their responsiveness to a situation which is 'problematic' because they do not learn enough English could be called agency. Agency is the transaction between actor and structure and this transaction is characterised by the dynamic interplay between relational and temporal dimensions. On the one hand, there is a temporal perspective where a student has to relate himself to the past, the present and the future, and on the other hand, there is a relational perspective where the student uses the past for developing habits, the present for evaluation and assessment and the future for purposes. In our case, Emirbayer and Misches' (1998) practical-evaluative element (judgment related to the present) and iterational element (habits related to the past) shown in the 'chordal triad' (cf. chapter 2.2.4) are applicable. In a more specific way we can talk about a *selective attention* of Faith, Claire and Grace because they are able to only focus their mind and attention upon a small area of reality of the past, that means

in our case the positive learning output of vocabulary tests. Faith recalls this moment more or less at the age of 13 (*selective attention*) where she really felt that she experienced learning of English by means of vocabulary tests at lower secondary school. She compares herself with her brother at 7th grade who has many more vocabulary tests than her (*problematisation*). She thinks that it is useful to focus more on vocabulary and that it could beneficial for her English learning to have vocabulary tests in the future (*hypothetical resolution*). She wants to ask her English teacher to use vocabulary tests (*decision*). Emirbayer og Mische (1998) talk about *selective attention* in the past. Our mind is selective. What we consciously or unconsciously remember from the past can influence our present or future behaviour. The *problematization* in the present encompasses our ability to recognise "ambiguous, unsettled or unresolved situations" (Emirbayer and Mische 1998, p. 998). In the case of the female students we could talk about a lack of sense of accomplishement. But it is only Faith who really problematises and wants to experience the same sense of accomplishement with the same method in the future. That is the reason for her request of vocabulary tests in future English lessons at school. The temporal dimension between the past, present and future seems to be quite strong in the case of Faith. In this particular case of Faith's vocabulary tests we could talk about agency instigated by non-digital artefacts.

With regard to interpersonal English learning ecology, the case of Ned is of particular interest. He has some positive reminiscences of his English teacher and his grammar teaching, that means the conjugation of the verb *to be* at the blackboard. We could also talk about *selective attention* in the past, but he does not go as far as Faith in his argumentation for using more grammar in his English lessons. Ned recognises "sameness" or "likeness" in games he played in the past when he chooses new games in the present (*recognition of type*). He likes now more real strategy games where he has to build castles and speak English in peer communities on the net. He rarely plays *Minecraft* now. The English language was used more in real strategy games and was less used when he played Minecraft (*problematisation*). He wants to keep on gaming and skyping contemporaneously because it is beneficial for his English learning (*hypothetical resolution*). Many transitions within Ned's learning ecologies can be called agentic moments. He improved his English when he was challenged by his friend Mathias and his new peer community which were at a higher gaming level than him. In addition to Emirbayer and Mische's views, Biesta and Tedder's (2006, p. 18 or 22)

more ecological and less individualistic approach can be seen here because Ned 'achieved' agency by means of this specific and particular situation. It was the context or structure that 'engaged' with Ned and made him improve his English. Ned also remembers doing grammar homework with his father at home and writing mails in English to his grandfather. He understands now that these non-digital and digital artefacts (grammar homework, mails) can be used in his learning ecology for developing grammar skills and writing skills (*problematisation*). All these essential moments can be qualified as agentic moments because Ned has some reminiscences (*selective attention*) which are positive.

Grace relates the present to the future when she comments on the recent use of *Ipads* and disadvantages of using an *Ipad* at school (*problematisation*). She complains about difficulties to read the English texts because of her *Ipad* which is too little. In addition to that, she has headaches and concentration problems while using it. She wants to limit the use of the *Ipad* and, generally speaking, ICT at school *(hypothetical resolution)*. Notwithstanding, she thinks that ICT is important and will influence her English learning in the future (*narrative construction)* (Emirbayer and Mische 1998, 990).

With regard to language oriented English learning ecologies, the case of Faith is of particular interest. She recognises that writing English is her biggest challenge (*problematisation*) and she wants to do something about it (*decision*). She qualifies process-oriented writing as an efficient method for developing writing skills. She has both positive (because of the feedback) and negative (because of the lack of anonymity) reminiscences of process-oriented writing, but the positive reminiscences seem to be predominant (*selective attention*). She problematises the past use of it because all the other students could easily guess who had written the text. Faith could imagine having some process-oriented writing with ITL (*Itslearning*) in the future, provided that anonymity is better guaranteed. She somehow hopes achieving a learning output which will be as good as in the past (*narrative construction in the future*).

The most convincing agentic moment or ecological transition is given by Ken who mentions that starting to use *http://major-gaming.com* made him improve his English (*selective attention*). Ken thinks that his English is now really good (*problematisation*) and that he can improve it by further gaming (*decision*). In this case we could talk about agency instigated by digital artefacts.

Many agentic moments seem to be important. One essential moment in Ned's learning ecology when he had to face new challenges in English and gaming due to level differences is highlighted in red in figure 7 (cf. chapter 4.4). This moment seems to be more important in his learning ecology than the grammar homework with his father. Playing *League of Legends* became a habit of mind and created Ned's identity in a peer gaming community. Kumpulainen (2010, p. 23) talks about "an identity that has been formed through participation". Doing grammar homework with his father was only a single episode and not necessarily creating an identity.

Faith's recent ecological transition (cf. figure 8, chapter 4.4) when she suddenly extended her use of social media to *Twitter* can be related to "the expressive" (Selwyn 2008, p. 9). Her former experience with other social media (*Facebook*, *Instagram*) led to a new habit which satisfied even more her expressive needs. Greeno's (2006, 538) and Kumpulainen's (2010, p. 23) definitions of agency can explain why these transitions occur. Agency was in the case of Faith an "authoritative and accountable act" being the result of an identity that had been formed through participation. She had a clear understanding of the available resources and the relevant use of *Twitter*. She wanted to use and experience *Twitter* and is now satisfied with her decision to do it. This will "to act, to experience, to exist" is according to Kumpulainen (2010, p. 23) called agency". In addition to Greeno's and Kumpulainen's approach, Emirbayer and Mische's (1998) and Biesta and Tedder's (2006) theories give us an explanation which is more at an analytic level. Digitally instigated agency seems to play an essential role in the temporal dimension between the present and the future of Faith because she wants to keep on using *Twitter* (*hypothetical resolution*).

The particular situation in which Faith achieved agency is less visible than in Ned's and Ken's above mentioned agentic moments (gaming level challenge and first use of http://major-gaming.com). This does not mean that Biesta and Tedder's (2006, p. 18) ecological approach in which "actors act by-means-of-an environment in a particular situation rather than simply *in* an environment" is not applicable. Ecological transitions and changes sometimes occur and it is not always possible to detect a particular situation. Biesta and Tedder's understanding seems to be important, but also complementary to Emirbayer and Mische's temporal-relational approach.

6 Conclusions, Limitations and Implications

This study mapped and analysed personal English learning ecologies (PELE) in the past, present and future of six students at upper secondary school. The students' digital and non-digital artefacts in their learning trajectories were described in the chapters on technology. The students' interpersonal and language learning oriented personal English learning ecology were discussed in the chapters on pedagogy and content.

The dichotomy "out-of-school learning" versus "in-school learning" does not seem to be always convincing when we talk about learning ecologies. In many situations we have in-school learning out of school and out-of-school learning at school. The case of homework and vocabulary tests which have to be prepared at home is only one example. More and more learning situations are blended. These contexts were called "semiformal" learning. It was argued that, when it comes to out-of-school and in-school learning, rather than trying to forcefully close or attempt to bridge this gap, it is much more fruitful to find ways to work in the "in-between" space of the gap. This space provides opportunities for newness.

It seems that school is particularly important for the metalinguistic function. The hypothesis formulation and testing was of greater importance at home than at school only in the case of those students who either had English speaking relatives or were used to gaming. For all other students, especially the female students, the hypothesis formulation and testing mostly occurred at school. The students remembered mostly asymmetric interactions in their zone of proximal development which were beneficial for a further development of their interlanguage.

This can also be linked to the main findings related to deliberate learning. Deliberate learning in out-of-school contexts is rather infrequent in this study. It is only present at school and in semiformal contexts where it is mostly initiated by the English teacher who asks the students to prepare vocabulary tests and presentations, to do grammar homework, to write essays or to read the news on the net. Most of my respondents declared that they were not interested in deliberate learning outside school. They supposedly only learnt English incidentally. The sole exception seemed to be Faith who

used deliberate learning quite often, even outside school. Notwithstanding the fact that many informants declared not being interested in deliberate learning outside school, they did not comment negatively on deliberate at school and in semiformal contexts.

My enquiry reveals that playful artefacts are now more predominant for the male students than the female students. The expressive artefacts are more in use by the girls. There was allegedly an evolution from a playful past to an expressive present in the case of the girls and from an expressive past to a playful present in the case of the boys.

With regard to learning skills, the female students of my study were more focused on receptive skills in out-of-school learning and the male students much more on productive skills. To find a good balance between productive and receptive skills can be quite a challenge. All informants emphasised the role of school for writing skills.

My informants enjoyed their English lessons, even formal grammar teaching. The female students commented positively on vocabulary tests. Gaming was important mostly for speaking, only partially for written skills while chatting. One informant advised formally against capitalising real strategy games in the English teaching. An important implication of this study is that school has a complementary function in relation to out-of-school learning and that capitalizing out-of-school learning is not necessarily a panacea. In the cases of writing skills, the metalinguistic function of output and deliberate learning school has apparently even a compensatory function.

The findings of my study indicate that agency was created in the past with digital (e.g. *Facebook, Instagram, Twitter, Call of Duty, League of Legends*) and non-digital artefacts (e.g. vocabulary tests, blackboard, homework), whilst the present and the future is or will be influenced by digital artefacts (e.g. *Minecraft*, *Kahoot* quizzes, *www.ordnet.no*, mails) (cf. appendix B). Many theories were used to analyse the data. This theoretically broad approach is justified by the ecological perspective of this study. Biesta and Tedder's more ecological understanding of agency compared to Emirbayer and Mische's temporal-relational approach is linked to the existence of particular situations where actors act by-means-of-an environment. These particular situations are not always visible. It could be useful to carry out other qualitative studies to analyse more exhaustively students' ecological transitions and development of agency.

Sources

Barron, B. (2006). Interest and Self-Sustained Learning as Catalysts of Development, *Human Development*, 49(4), 193-224. DOI: 10.1159/000094368

Befring, E. (2010). *Forskningsmetode, med etikk og statistikk*. Oslo: Det Norske Samlaget.

Bernstein, B. (1999). Vertical and horizontal discourse: an essay. *British Journal of Sociology of Education 20(2),* 157-173. Retrieved from http://www.jstor.org/stable/1393106

Biesta, G. (2013). Interrupting the Politics of Learning, *Power and Education*, 5(1), 4-15. http://dx.doi.org/10.2304/power.2013.5.1.4

Biesta, G. (2012). The future of teacher education: Evidence, competence or wisdom? *Research on Steiner Education 3(1),* 8-21.

Biesta, G., & Tedder, M. (2006, February). *How is agency possible? Towards an ecological understanding of agency-as-achievement* (Working Paper 5. Learning Lives). Hentet fra http://www.tlrp.org/project%20sites/LearningLives/papers/working_papers/Working_paper_5_Exeter_Feb_06.pdf

Blikstad-Balas, M. (2012): Digital Literacy in Upper Secondary School – What Do Students Use their Laptops for During teacher Instructions, *Nordic Journal of Digital Literacy*, Nr. 02. Retrieved from idunn.no: http://www.idunn.no/ts/dk/2012/02/digital_literacy_in_upper_secondary_school_-_what_do_studen?mode=print&skipDecorating=true&textSize=

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design.* Cambridge: Harvard University Press.

Carlson, J. A. (2010). Avoiding traps in member checking. *The Qualitative Report*, 15 (5). Retrieved from http://www.nova.edu/ssss/QR/QR15-5/carlson.pdf.

Corder, S. P. (1978). Language-learner language. In J.C. Richards (ed.). *Understanding Second and Foreign Language Learning*: Issues and Approaches. Rowley, MA: Newbury House Publishers.

Corder, S. P. (1982). *Error Analysis and Interlanguage*. Oxford: Oxford University Press.

Cormon, F. (1992): « L'interlangue », i: *L'enseignement des langues. Théories et exercices pratique*. Lyon: Chronique Social, pp. 89-120.

Cowie, H., & van der Aalsvort, G. (Eds.) (2000). *Social Interaction in Learning and Instruction*. Oxford: Pergamon.

Dabbagh, N., & Kitsantas, A. (2012). Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The internet and higher education, 15*(1), 3-8. Retrieved from: Science direct.com.

Dalsgaard, C. (2011). Personlige læringsmiljøer: Universitetsuddannelse på internettet. *Dansk universitetspædagogisk tidsskrift, 6*(11), 8-13. Retrieved from: http://ojs.statsbiblioteket.dk/index.php/dut/article/view/5534/4840

DeKeyser, R. (1998). Beyond focus on form: Cognitive perspectives on learning and practicing second language grammar. In C. Doughty&J. Williams (eds.), *Focus on form in classroom language acquisition* (pp. 42-63). New York: Cambridge University Press.

Dysthe, O. (Red.) (2005): *Ulike perspektiv på læring og læringsforskning*, Oslo: Cappelen Akademisk Forlag as.

Dysthe, O. (Red.) (2008): *Dialog, samspel og læring*, Oslo: Abstrakt forlag.

Elgort, I. (2011): Deliberate learning and Vocabulary Acquisition in a Second Language. *Language Learning 61:2*, June 2011, pp.367-413. DOI : 10.1111/j.167-9922.2010.00613.x

Ellis, R. (2008): Principles of Instructed Second Language Acquisition. *CALdigest*, December 2008, pp. 1-6.

Emirbayer, M., & Mische, A. (1998). What Is Agency? *American Journal of Sociology*, *103*, 962-1023. DOI: 10.1086/231294

Eshach, H. (2007). Bridging In-school and Out-of-school learning: Formal, Non-Formal, and Informal Education, *Journal of Science education and technology*, Vol. 16, No 2, April 2007, pp. 171-188. DOI: 10.1007/s10956-006-9027-1

European Commission (2013). *Survey of Schools: ICT in Education. Benchmarking Access, Use and Attitudes to Technology in Europe's Schools. Final Study Report 2013*. Digital Agenda for Europe, Brussels, February 2013. Retrieved from https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/KK-31-13-401-EN-N.pdf

Fernández, M., Wegerif, R., Mercer, N., & Rojas-Drummond, S. (2001). Re-conceptualizing "scaffolding" and the zone of proximal development in the context of symmetrical collaborative learning. *Journal of Classroom Interaction*, *36*(2/1), 40-54.

García Mayo M. P., & Soler Alcón, E. (2013). Negotiated input and output / interaction in: Herschensohn J, Young-Scholten M. (eds.). *The Cambridge Handbook of Second Language Acquisition*. Cambridge: University Press, pp. 209-229.

Gibson, J.J. (1979). *The Ecological Approach to Visual Perception.* New Jersey: Lawrence Erlbaum Associates, inc.

Greeno, J. (2006). Commentary: Authoritative, accountable positioning and connected, general knowing: Progressive themes in understanding transfer. *Journal of the Learning Science*, *15*(4), 537-547. DOI: 10.1207/s15327809jls1504

Grønmo, S. (2011). *Samfunnsvitenskapelige metoder*. Bergen: Fagbokforlaget.

Hammond, M. (2010). What is an affordance and can it help us understand the use of ICT in education? *Education and Information Technologies*, Vol.15 (No.3). pp. 205-217. ISSN 1360-2357

Hatano, G, & Oura, Y. (2003). Reconceptualizing school learning using insight from expertise research. *Educational Researcher 32 (8),* pp. 26-29.

Holec, H. (1981): *Autonomy and foreign language learning*. Oxford: Pergamon. (Firstpublished 1979, Strasbourg: Council of Europe).

Horgen, S. A. (2012): *Presentasjon om PLN i Tromsø*: Retrieved 15.5.2013 from: http://plnprosjekt.blogspot.no/2012/10/presentasjon-om-pln-i-troms.html

Kleven, T.A. (Red.). (2011). *Innføring i pedagogisk forskningsmetode. En hjelp til kritisk tolkning og vurdering* (2. utg.). Oslo: Unipub forlag.

Krashen, S. D. (1985). *The input hypothesis*. Harlow, Essex, UK: Longman.

Kumpulainen, K., Krokfors, L., Lipponen, L., Tissari, V., Hilppö, J. & Rajala, A. (2010). *Learning Bridges. Toward Participatory Learning Environments*, Helsinki: Cicero Learning, Helsinki University Print.

Kvale, S., & Brinkmann S. (2009). *Interviews. Learning the Craft of Qualitative Research Interviewing*. London: Sage Publications.

Kvale, S. (2007). Domination through interviews and dialogues, in: Petersen, K.A., Glasdam, S., & Lorentzen, V. (editors): *Livshistorieforskning og kvalitative interview*. Viborg: Forlaget PUC.

Littelton, K., & Light, P. (1999). Learning with Computers: *Analysing Productive Interaction.* London: Routledge.

Long, M. (1996). The role of the linguistic environment in second language acquisition. In W., Ritchie & T. Bhatia (eds.), *Handbook of second language acquisition*. San Diego: academic Press, pp. 413-48.

Luckin, R., Clark, W., Logan, K., Graber, R., Oliver, M. & Mee, A. (2009). "Do web 2.0 tools really open the door to learning: practices, perceptions and profiles of 11-16 year olds students' learning?" *Media and Technology 34*, 2, pp. 87-104

Luckin, R. (2008). The learner centric ecology of resources: A framework for using technology to scaffold learning. *Computers & Education 50*, pp. 449-462.

Martindale, T., & Dowdy, M. (2010) Personal Learning Environments, in: Veletsianos, G. (editor). *Emerging Technologies in Distance Education*, Edmunton: AU Press Athabasca University, pp. 177-194.

Mishra, P., & Koehler, M. (2008). *Introducing Technological Pedagogical Content Knowledge. Paper presented at the Annual Meeting of the American Educational Research Association*, New York City, March 24-28, 2008, http://punya.educ.msu.edu/presentations/AERA2008/MishraKoehler_AERA2008.pdf

Nagy Hesse-Biber, S., & Leavy, P. (2011): *The Practice of Qualitative Research*. London: Sage Publications.

Nation, I. S. P. (2007). The four strands. *Innovation in Language Learning and Teaching, 1*, pp. 1-12.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.

Pearson, N. (2004). The idiosyncrasies of out-of-class language learning: a study of mainland Chinese students studying English at tertiary level in New Zealand, in: H. Reinders, H. Anderson, M. Hobbs, & J. Jones-Parry (eds). *Supporting Independent learning in the 21st Century. Proceedings of the inaugural conference of the Independent Learning Association*, Melbourne AUS, 20 September 2003. Retrieved from http://www.independentlearning.org/uploads/100836/ila03_pearson.pdf

Pica, T. (1994). Review article: research on negotiation: what does it reveal about second-language learning conditions, processes and outcomes? *Language Learning 44*, pp. 493-527

Pickard, N. (1996). Out-of-class language learning strategies. *ELT Journal, 50 (2),* pp. 150-159.

Salomon, G., & Perkins, D. N. (2005). Do technologies make us smarter? Intellectual amplification with, of and through technology. In: D. D. Preiss & Perkins, R. Sternberg (Eds.), *Intelligence and technology* (s. 71-86). Mahwah, NJ: LEA.

Selinker, L. (1972). 'Interlanguage'. *International Review of Applied Linguistics in Language Teaching*. volume 10, issue 1-4, pp. 209–232. DOI: 10.1515/iral.1972.10.1-4.209

Selwyn, N. (red.) (2008). *Education 2.0? Designing the web for teaching and learning.* ESRC Teaching and Learning Research Programme commentary. Retrieved from: http://www.tlrp.org/pub/documents/TELcomm.pdf

Schmidt, R. (1995). Consciousness and foreign language learning: A tutorial on the role of attention and awareness in learning. In R. Schmidt (Ed.). *Attention and awareness in foreign language learning* (Technical Report #9) (pp. 1-63). Honolulu, Hawai'i: University of Hawai'I, Second Language Teaching & Curriculum Center.

Sundquist, P. (2009). *Extramural English Matters: Out-of-school English and Its Impact on Swedish Ninth Graders' Oral Proficiency and Vocabulary*. Karlstad: Karlstad University Press.

Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible output in its development. In S. Gass & C. Madden (Eds.), *Input and second language acquisition*. Rowley, MA: Newbury, pp. 235-252.

Swain, M. (1993). The output hypothesis: Just speaking and writing aren't enough. *The Canadian Modern Language Review*, volume 50, number 1, pp. 158-164.

Swain, M. (1995). Three functions of output in second language learning. In G. Gook and B. Seidlhofer (eds.), *Principle and practice in applied linguistics*. Oxford: Oxford Universitiy Press, pp. 125-144.

Sylvén, L. (2004). *Teaching in English or English Teaching? On the effects of Content and Language Integrated Learning on Swedish Learners' Incidental Vocabulary Acquisition*. Göteborg: Acta Universitatis Gothoburgensis.

Uuskoski, O. (2011). *Playing video games: A waste of time… or not? Exploring the connection between playing video games and English grades*, Pro gradu, English philology, Department of Modern Languages. Helsinki: University of Helsinki.

Utdanningsdirektoratet (2013). *English subject curriculum*. Established as a Regulation by the Ministry of education and research on 21. June 2013. Applicable from: 01.08.2013. Retrieved from http://www.udir.no/kl06/ENG1-03/Hele/?lplang=eng

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John Steiner, S. Scribner, E. Souberman, Trans.). Cambridge, MA: Harvard University Press

Vygotsky, L. S. (1986). *Thought and language*. Cambridge, MA: MIT Press.

Wenger, E. (2004). *Praksisfællesskaber. Læring, mening og identitet*. København: Hans Reitzels Forlag.

Wertsch, J. V. (1985). *Vygotsky and the social formation of mind*. Cambridge, MA Harvard University Press.

Appendix A

Interview Guides

The following questions were asked in Norwegian and only used as a starting point. In many situations the questions had to be reformulated and adapted ad hoc.

Interview 1: Focus-group interviews

Spørsmål 1 (Learning ecologies (Barron 2006)): Hvor og hva har du brukt IKT til ubevisst eller bevisst for å lære engelsk? Hjemme, på skolen, på jobb, på distribuerte ressurser (online-groups f. eks.), hos eller med venner eller i forskjellige felleskap (libraries, community technology centers, club and contests)?

Spørsmål 2 (Mishra & Koehler): Hvilket IKT-verktøy brukte du mindre eller mer? Hvilken IKT-relaterte kontekster var mest nyttige for å forbedre dine engelsk kunnskaper?

Spørsmål 3 (Agency (Emirbayer and Mische (1998, p. 971)): Hva utløste hos deg en vilje til å gjøre noe, svare eller sende en kommentar på denne bloggen, sende dette innlegget på Facebook som var på engelsk?

Interview 2: Face-to-face (Ftf) interviews

Category 1: The iterational element (related to the past)

Spørsmål 1: (**Barron (2006) and Emirbayer and Mische's (1998, p. 971): iterational element of agency in the 'chordal triad')** Hvordan og hvor har du brukt i fjor/siste skoleåret IKT ubevisst eller bevisst for å lære bedre engelsk? Hjemme (Family hobbies, projects, games), på skolen (computer science classes, discipline-based classes, technology classes, after-school clubs), på jobb (webdesign, teaching assistant, video editor), på distribuerte ressurser (e-books, tutorials, on-line groups), hos eller med venner (games, projects, homework collaboration) eller forskjellige felleskap (libraries, community technology centers, club and contests)? Hvor ofte har du vært eksponert til det engelske språket via IKT? Var det gjentakende og regelmessig med et spesielt IKT-verktøy? Har du følelsen av at du har skapt vaner som du virkelig ha i dag og som har en høy nytteverdi og grunnes i fortiden?

Spørsmål 2: (**Mishra & Koehler's (2008, p. 4) content knowledge**) Hadde du bruk for dette IKT-verktøyet fordi ditt mål var å vite innholdsmessig mer om dette, å

utvide horisonten og kunnskapen din? Rett og slett for å bli bedre i engelsk? Hva var ditt formål?

Spørsmål 3: **(Mishra & Koehler's (2008, p. 4) content knowledge)** Når du tenker tilbake på innholdet i IKT-verktøyet du brukte, i hvilken ferdighet ble du flinkere i engelsk? Etter din mening hvilken ferdighet (the four skills) ble mest trent? Ble du flinkere i *productive skills* eller i *receptive skills*? Ble du flinkere å snakke eller å skrive? Ble du flinkere å lese eller å lytte? Hvilke nye ord har du lært deg? Hvilke nye leksikalske områder ble berørt? Husker du hvor du har lært deg grammatikk?

Spørsmål 4: **(Mishra & Koehler's (2008, p. 6) pedagogical knowledge)** Føler du at du har klart å utvikle din nærmeste utviklingssone? Hvem var involvert i interaksjonen? I hvilken grad har engelsklæringen din vært situert, grunnleggende sosialt, distribuert, mediert, fokusert på språket og preget av et praksisfellesskap? Var det noen viktige momenter i utviklingen din hvor du plutselig forandret fokus og interesseområder og lærte mer engelsk (ecological transitions (Bonfenbrenner 1979))?

Spørsmål 5: **(Mishra & Koehler's (2008, p. 6) pedagogical knowledge)** Når du tenker på nytteverdien og din egen læring, hvorfor var det så interessant å være på denne nettsiden? Var det mye uformell læring? Var interaksjonen for deg viktig? Var det viktig å få raskt et svar? Hva ville du oppnå med surfingen på dette stedet?

Spørsmål 6: **(Biesta's (2006) agency and Mishra & Koehler's (2008, p. 6) pedagogical knowledge)** Hva var det som trigget interessen din? Var det de forskjellige bildene som ble brukt på bloggen eller var det bare det innholdsmessige **(affordance)**? Hva utløste hos deg en vilje til å svare eller sende en kommentar på denne bloggen, dette innlegget på *Facebook*, selv om det var på engelsk **(agency)**? Følte du deg godtatt som medlem i en gruppe? I hvilken grad ville du ta kontroll over ditt eget virtuelle liv? Hvor ofte tok du gjerne ansvar for en virtuell handling? Hva utløste hos deg en følelse av å ville handle? Skjedde det regelmessig/flere ganger? Var det mest en personlig interesse hos deg selv **(actor)** eller den gitte strukturen, en IKT relatert eller ikke-IKT-relaterte microstruktur **(structure)**? **(Agency)**

Spørsmål 7: **(Barron's (2006) learning ecology)** Har du noen bestemte minner eller glimt fra hukommelsen hvor dere virkelig følte at dere lærte engelsk? Var dette en IKT-relatert kontekst eller ikke?

Spørsmål 8-10: **(Emirbayer and Mische's (1998, p. 971): iterational element of agency in the 'chordal triad'):**

   a) Selective attention: Er det noen IKT-verktøy, f. eks. spill, sosiale medier, blog, som du ikke bruker lenger? Husker du hvorfor du brukte dem og hvorfor du ikke bruker dem lenger? Har du utviklet en vane å ikke bruke det lenger fordi du minnes en negativ tidligere erfaring? Klarer du å huske de fleste fordeler eller ulemper med disse verktøyene?

b) Recognition of type: Er det noen typiske trekk som du finner igjen i IKT-verktøy nå som ble introdusert til deg før?

Category 2: The practical-evaluative element (related to the present).

Spørsmål 1: **((Barron 2006 and Emirbayer and Mische's (1998, p. 971): practical-evaluative element of agency in the 'chordal triad'):** Hvordan og hvor bruker du nå/i dette skoleåret IKT ubevisst eller bevisst for å lære bedre engelsk? Hjemme (Family hobbies, projects, games), på skolen (computer science classes, discipline-based classes, technology classes, after-school clubs), på jobb (webdesign, teaching assistant, video editor), på distribuerte ressurser (e-books, tutorials, on-line groups), hos eller med venner (games, projects, homework collaboration) eller forskjellige felleskap (libraries, community technology centers, club and contests)? Hvor ofte har du vært eksponert til det engelske språket via IKT? Hva synes du om din bruk av disse IKT verktøyene? Er det fordi det er praktisk at du bruker disse verktøyene akkurat nå?

Spørsmål 2-7: Jamfør spørsmålene i kategori 1, men små forandringer i ordlyden vil foretas.

Spørsmål 8-10: (**Emirbayer and Mische's (1998, p. 997): practical-evaluative element of agency in the 'chordal triad'):**

a) Problematisation: Klarer du å problematisere IKT-verktøyene du bruker for engelsk læringen? Hvilken fordeler og ulemper finnes det der for å lære seg engelsk?
b) Decision: Har det hendt at du har bestemt deg plutselig å ikke bruke Facebook eller ditt dataspill? Hvorfor gjorde du det?

Category 3: The projective element (related to the future)

Spørsmål 1: **((Barron 2006 and Emirbayer and Mische's (1998, p. 971): projective element of agency, imagination in the 'chordal triad'):** Hvordan og hvor kunne du har tenkt deg i framtiden å bruke IKT for å lære deg bedre engelsk? Hjemme (Family hobbies, projects, games), på skolen (computer science classes, discipline-based classes, technology classes, after-school clubs), på jobb (webdesign, teaching assistant, video editor), på distribuerte ressurser (e-books, tutorials, on-line groups), hos eller med venner (games, projects, homework collaboration) eller forskjellige felleskap (libraries, community technology centers, club and contests)? Hvor ofte kommer du til å være utsatt til det engelske språket via IKT eller via andre ikke-digitale artefakter?

Spørsmål 2-7: Jamfør spørsmålene i category 1, men små forandringer i ordlyden vil foretas.

Spørsmål 8-10: ((**Emirbayer and Mische's (1998, p. 988): projective element of agency in the 'chordal triad'):**

a) Narrative construction: Klarer du å tenke deg hvordan du kan klare å lære deg engelsk med andre nye IKT-verktøy? Ellers ser du for deg hvordan du kan forandre bruken av dette verktøy og hvorfor du skulle forandre din bruk for å øke læring i engelsk?

b) Hypothetical resolution: Klarer du å tenke på noen mål for framtiden? Er det noen forsetter eller mål du har lyst å sette deg for å øke læringen i engelsk?

Interview 3: Member checking

Oppfølgingsspørsmål: Interviews 9. Mai 2014

Tredelt struktur av interviewet: 1) En oppsummering av det første intervjuet hvor informanten kan bekrefte eller avkrefte det jeg fant ut etter det første intervjuet. 2) Eventuelle tilleggsspørsmål (jfr. følgende spørsmål) for å finne mer informasjon om det som eventuelt manglet etter første intervju; 3) Den grafiske figuren fra appendiks B blir vist for å få en bekreftelse av funnene og enda mer informasjon om eventuelle økologiske overganger og *agency*.

1.) Framtiden: Kommer du til å bli mest påvirket av "the playful, the reflective, the exploratory or the expressive"? Engelsklæring og "the playful, the reflective, the exploratory or the expressive (Selwyn)"?

2.) Nåtiden: Er du mest påvirket av "the playful, the reflective, the exploratory or the expressive"?

3.) Fortiden: Ble du mest påvirket av "the playful, the reflective, the exploratory or the expressive?"

4.) Framtiden: Deliberate learning in the future

5.) Framtiden: Output hypothesis: a) Noticing function: A) Hvor kommer du til å legge merke til kommunikasjonsproblemer og mangel i forhold til ordforrådet ditt? B) Hypothesis formulation and testing: Hvor kommer du til å prøve ut nye ord? C) Hvor kommer du til å oppnå et metalinguistisk nivå? Hvor kommer du til å snakke om språket, språkets form og grammatikk? Hvor kommer du til å snakke om det engelske språket?

6.) Framtiden: Input hypothesis: Kommer du til å bli mest påvirket av læreren din eller media? Hvilken påvirkning vil bli sterkest?

7.) Agency/ecological transitions:
   a) Når tror du at din tidligere engelsklæring blir brukt nå? Husker du noen konkrete eksempler
   b) Når har du følt at du ble flinkere i engelsk (alder, skole, konkrete situasjoner)?
   c) Husker du en bestemt situasjon hvor du plutselig følte at din engelsk læring fra før har blitt brukt? Utfordret? Hvilken situasjon?

8.) Fortid: Claire: Affordance, input hypothesis, deliberate learning;
Nåtid: deliberate learning, input hypothesis; Framtid: Deliberate learning, input, playful, reflective, exploratory and expressive, negotiation for meaning

9.) Faith: Gjorde dere prosessorientert skriving via ITL eller papir? Hvor gammel var du da dere gjorde dette? I hvilken grad er det et positivt eller negativt minne?

Appendix B

Figures on ecological transitions and *agentic* moments.

Figure 1: Ken's ecological transitions and *agentic* moments
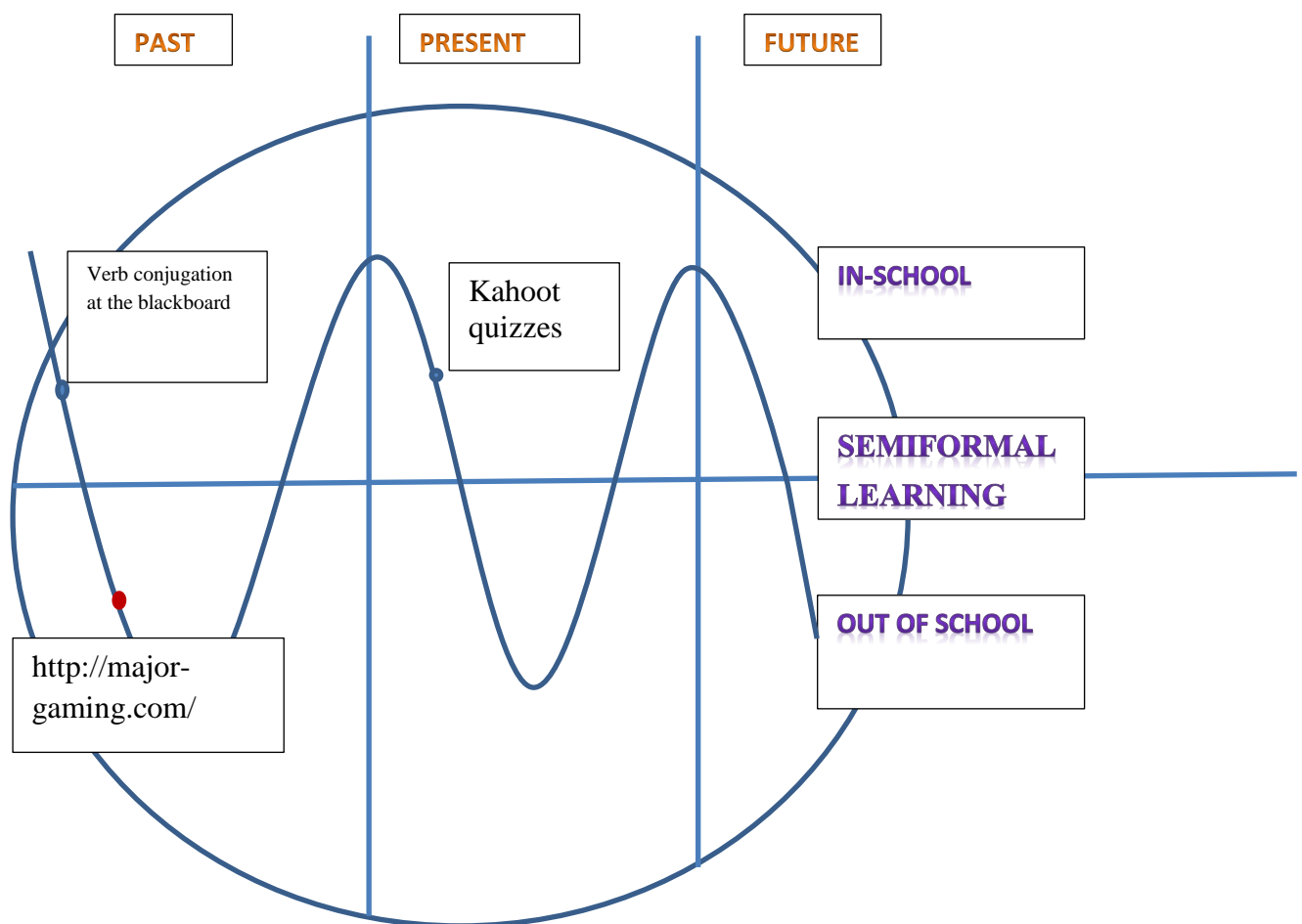
Figure 2: Ned's ecological transitions

PAST PRESENT FUTURE

Singing songs without lyrics

Grammar homework with his father.

www.ordnet.no

IN SCHOOL

SEMIFORMAL

Learning words such as «door»

OUT OF SCHOOL

Gaming challenges due to level differences while communicating in English

Mails written in English to his grandfather
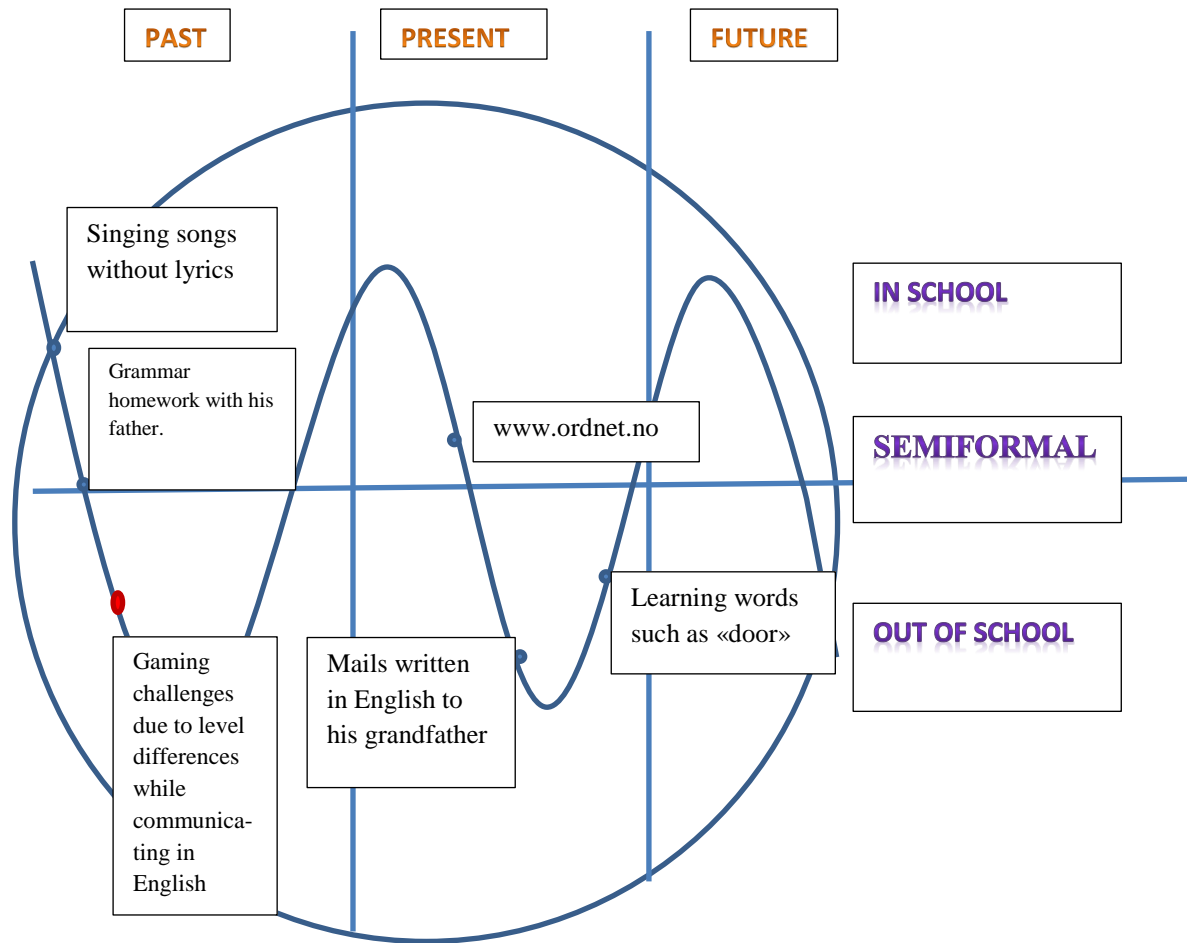
Figure 3: Tom's ecological transitions and *agentic* moments

PAST

PRESENT

FUTUR

4th-5th grade:
Singing songs
like «Time of
your life»

Kahoot
quizzes

IN-SCHOOL

SEMIFORMAL
LEARNING

More chatting in
English due to new
functions such as
«riding horses» on
Minecraft

OUT OF SCHOOL
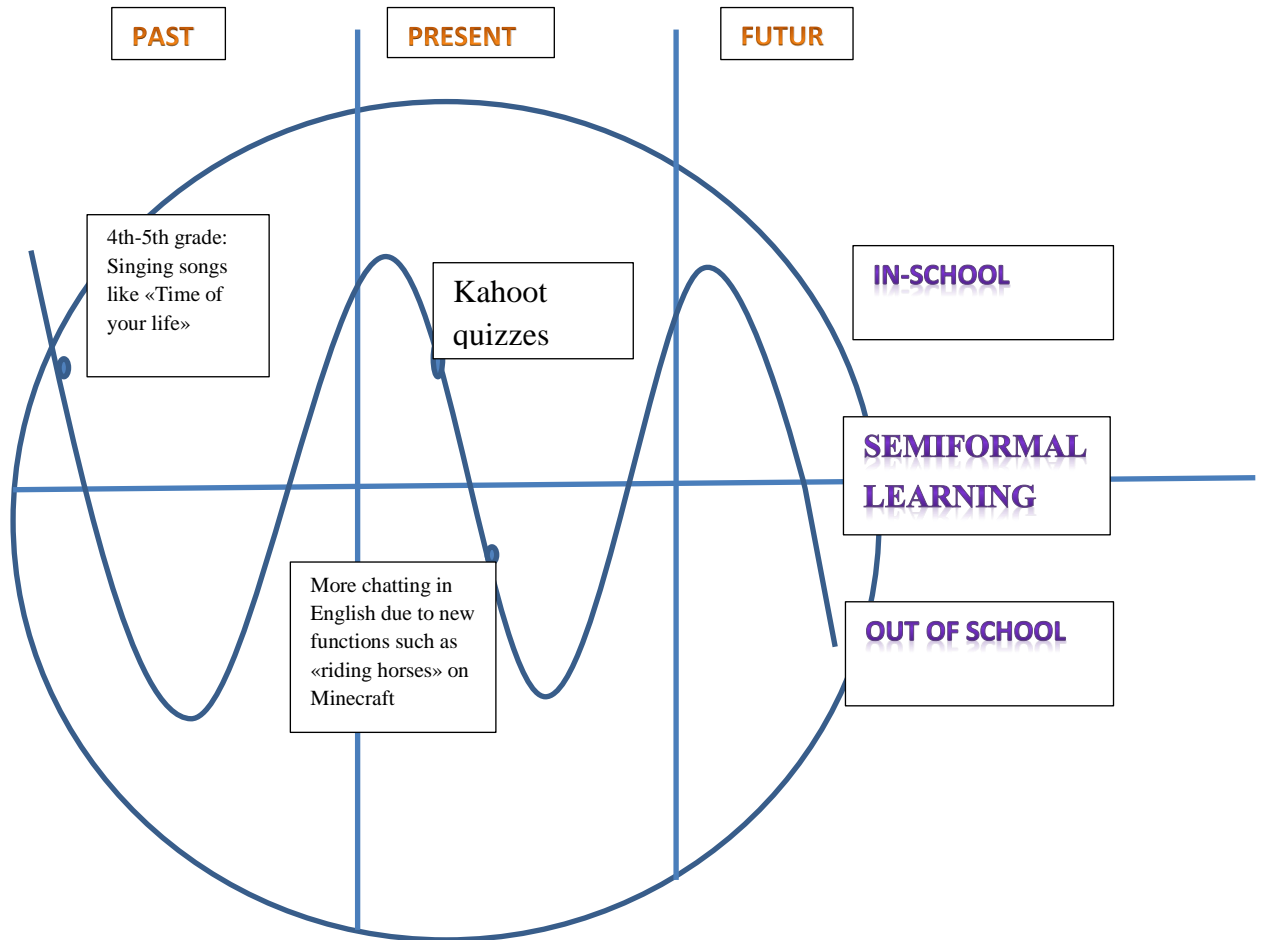
Figure 4: Grace's ecological transitions and *agentic* moments

PAST

PRESEN

FUTUR

Non-digital vocabulary tests

From Facebook to Facebook and Instagram

IN-SCHOOL

SEMIFORMAL LEARNING

OUT OF SCHOOL
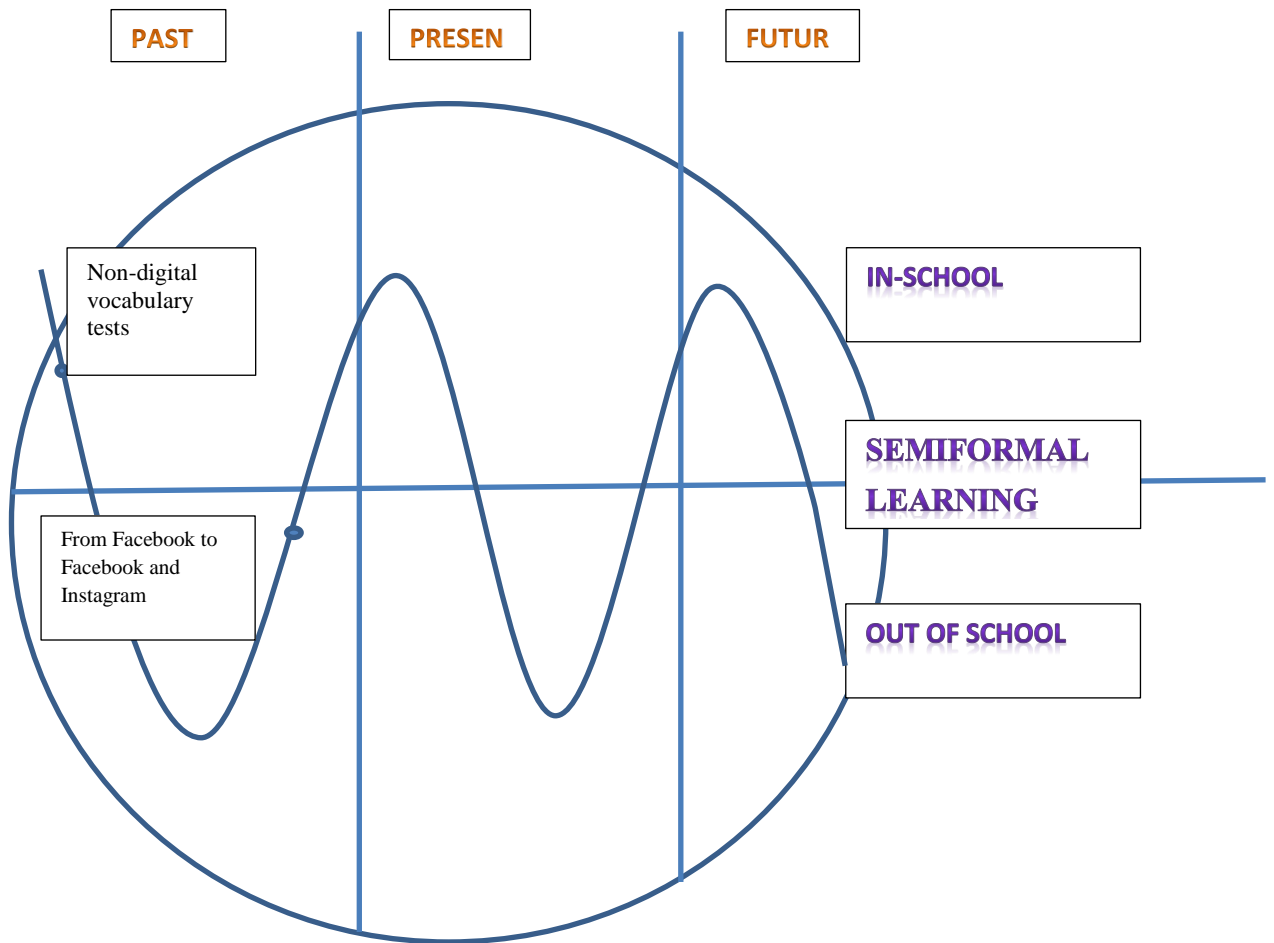
Figure 5: Claire's ecological transitions and *agentic* moments

PAST | PRESEN | FUTUR

Non-digital vocabulary tests

IN-SCHOOL

SEMIFORMAL LEARNING
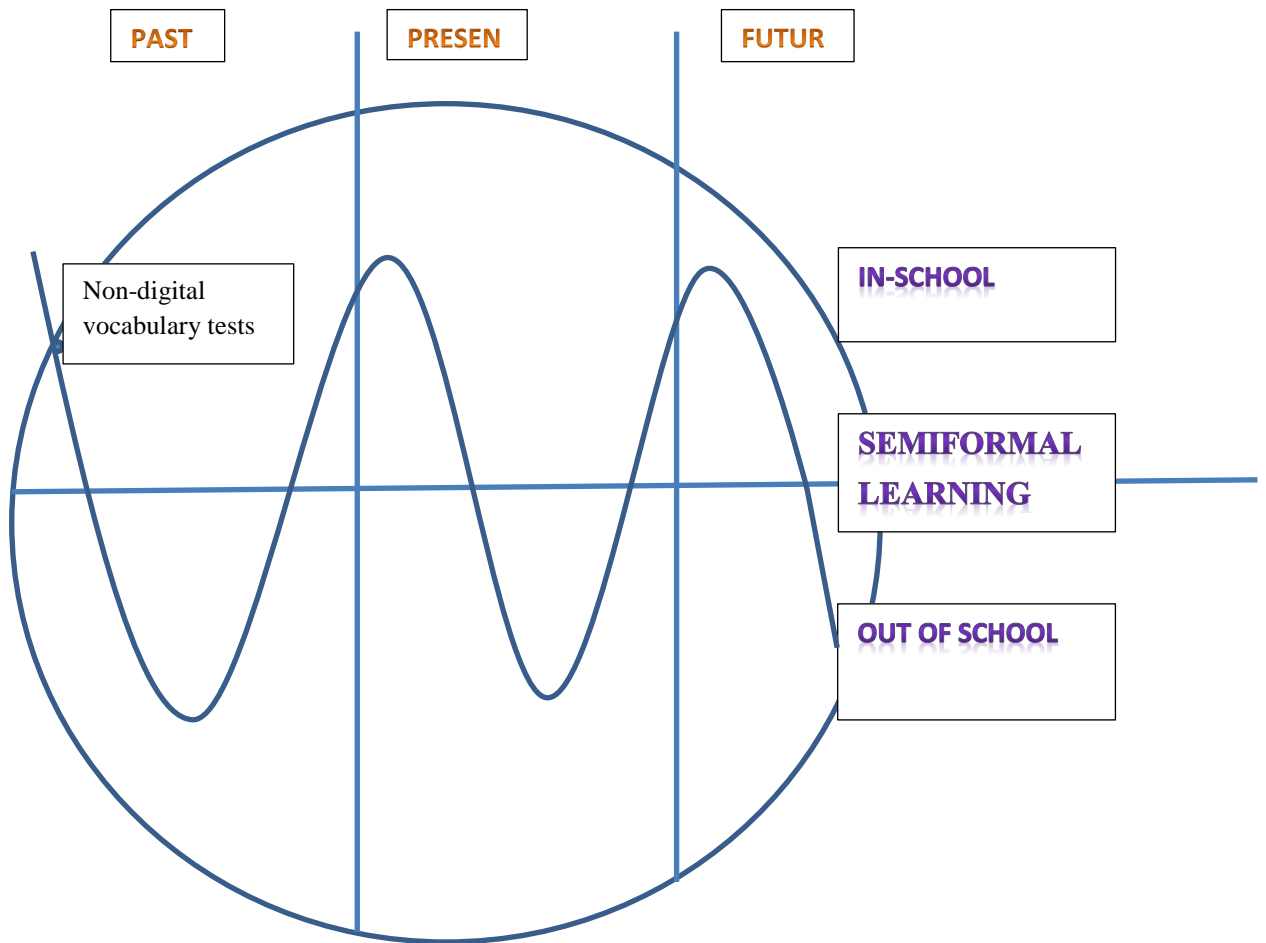
OUT OF SCHOOL

Figure 6: Faith's ecological transitions

PAST   PRESENT   FUTURE

Vocabulary tests

IN SCHOOL

Vocabulary tests

Process-oriented writing with unguaranteed anonymity

Use of ITL and process-oriented writing with guaranteed anonymity

SEMIFORMAL
LEARNING

From Facebook to Facebook, Instagram to Facebook, Instagram and Twitter

ordnet.no
google.com
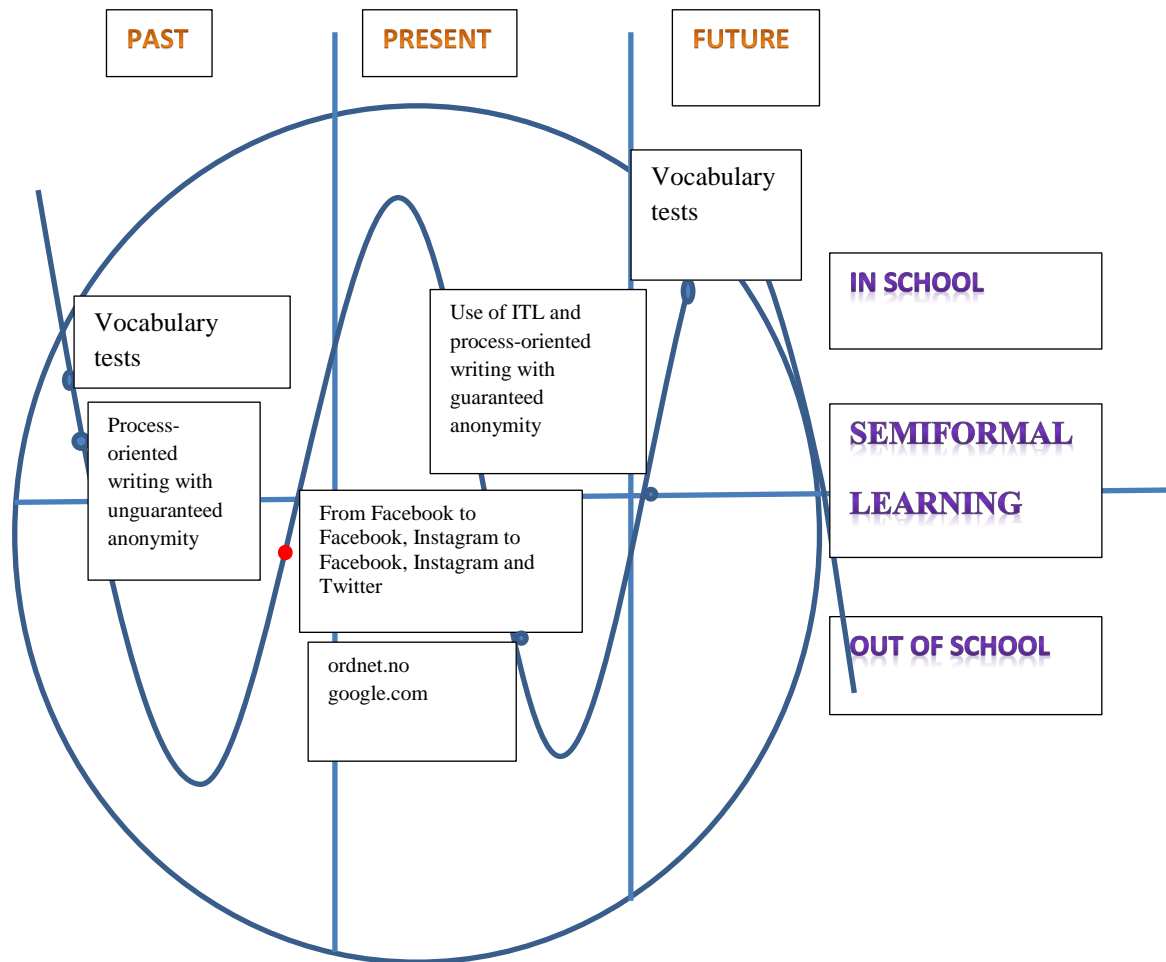
OUT OF SCHOOL

Appendix C

Figures representing learning trajectories related to technology, pedagogy and content

The Past   **Interview 3**   **Male student**   **Tim**

Technology
- Tools/artefacts: *Call of Duty*, seldom *Assassin's Creed*, some *Minecraft*; *Evernotes*, *ITL* (In-school learning).
- Agentic trigger: listening to music affords learning (vane versus vein)
- The playful, reflective, exploratory and expressive: no blogging; *Grandturismo*, *Playstation 1* (farpast).

Pedagogy
- ZPD/scaffolding: writing at school (witch vs. which); father played Grandturismo with him; learning by talking with teacher about *Assassin's Creed*; singing songs with former English teacher ("Time of your life").
- Deliberate learning: not frequent in out-of-school learning; *Google* (looking for pc equipment), no *www.ndla.no.*

Content
- Productive skills: much speaking while gaming.
- Receptive skills: listening while gaming, quite a lot of reading (books like *Gone*), guessing of words in context in books; far past: writing at school, problems with spelling (I with capital letter).
- Output hypothesis:- - -
- Input hypothesis: - - -

Near vs. far past; in-school learning vs. out-of-school learning.

- - - = not explicitly mentioned

| Ecological transitions/decisive moments- |
| Tools: - - - |
| Age: 4th-5th grade, Lower secondary school |
| Situation: singing songs at Lower secondary school ("Time of Your Life") |

The Present **Interview 3** **Male student** **Tim**

Technology

- Tools and artefacts: *ITL* at school, Evernotes on *Ipad*, updated version of *Minecraft*, social media, *Skype*, films /serials such as *Dexter*, *Skins.*
- Agentic trigger: new functions such as riding horses on *Minecraft.*
- The playful, reflective, exploratory and expressive:- - -

Pedagogy

- ZPD/scaffolding:- - -
- Deliberate learning: in-school, reading news- - -

Content

- Productive skills, out-of-school learning: some writing while chatting, but much more speaking via *Skype*, receptive skills: some reading.
- Output hypothesis: spelling mistakes (given example: You have to come after me versus at me).
- Input hypothesis: a lot of comprehensible input at home.

Ecological transitions/decisive moments

Tools: - - -

Age: 4th and 5th grade.

Situation: - - -

The Future   **Interview 3**   **Male student**   **Tim**

Technology
- Agentic trigger: mechanical keyboard affords quicker writing.
- The playful, reflective, exploratory and expressive: predominantly the playful.
- ICT-related: gaming in school, games about WW2, new games on *Playstation 3*, non-ICT related: learning by listening to music

Pedagogy
- ZPD/scaffolding:- - -
- Deliberate learning: writing probably mostly at school.

Content
- Productive skills: focus on writing biggest challenge
- Receptive skills:- - -
- Output hypothesis: - - -
- Input hypothesis: difficult English words in many games.

Ecological transitions/decisive moments

Tools: - - -

Age: - - -

Situation: - - -

102

Technology

- Agentic trigger: Useless comments on *Youtube* led to *Wiki* writing; design can be decisive, but the content is more important.
- The playful, the reflective, the exploratory, the expressive: constructive criticism on *Youtube* comments, the playful is predominant, *Minecraft* (far past).
- Tools/artefacts: *Bob The Builder* (far past) for learning vernacular language/swear words, *Minecraft* (English speaking limited, but some writing and reading), one single blogg, one *Wiki*, near past: *League of Legends.*

Pedagogy

- ZPD/scaffolding: peer communities in gaming (*League of Legends*), homework on grammar issues like *a/an* with English speaking father, English relatives, constructive criticism from a former *YouTube* commentator.
- Deliberate learning: use of *www.ordnet.no* for looking up words such as "execute", but generally infrequently occurring in out-of-school learning.

Content

- Productive skills: more speaking than writing.
- Receptive skills: more listening than reading.
- Output Hypothesis: while skyping and gaming without any metalinguistic level, with relatives in England (meaning of the word "fag"); words such as "waves" in Spain with his English speaking cousin, metacognitive function with a school friend.
- Input Hypohesis: - - -

Ecological transitions/decisive moments

Age: 8 th, 9 th grade.

Situation: challenges due to level difference in gaming, singing a song by heart without lyrics at school; grammar homework.

The Present   **Interview 2**   **Male student**   **Ned**

Technology
- Agentic trigger: thinking before doing, gaming affords writing, skype affords speaking.
- The playful, the reflective, the exploratory, the expressive: mostly the playful.
- Tools/artefacts: real time strategy game, *League of Legends*, *Netflix*, *ITL* at school

Pedagogy
- ZPD/scaffolding: with a friend speaking only English, English speaking father.
- Deliberate learning: occurring rather infrequently in out-of-school learning.

Content
- Productive skills: much speaking, not much writing, much writing at school, some writing/chatting on *Playstation*.
- Receptive skills: much listening, not much reading (some books, sometimes news reading).
- Output Hypothesis: noticing function and formulation and testing (people in Germany and Japan via *Skype*), no metalinguistic function.
- Input Hypothesis: More oral exposure at home than at school

Ecological transitions/decisive moments

Tools: - - -

Age: - - -

Situation: Learning words such as "door".

The Future   **Interview 2**   **Male student**   **Ned**

Technology
- Agentic trigger: learning output from *Facebook* limited, gaming only if teacher is a gamer, too.
- The playful, the reflective, the exploratory, the expressive: gaming in teaching can be useful, such as *Minecraft*, *Spore*.
- Tools/artefacts: *ITL* at school.

Pedagogy
- ZPD/scaffolding: while studying abroad.
- Deliberate learning: probably more frequently occurring in the future.

Content
- Productive skills: writing is the greatest challenge (more mails to his grandfather, writing best at school because focus on evaluation).
- Receptive skills: The reading has to be improved.
- Output Hypothesis: mostly speaking out of school and writing in school.
- Input Hypothesis: mostly listening out of school and reading in school.

Ecological transitions/decisive moments

Tools: - - -

Age: - - -

Situation: - - -

The Past   **Interview 1**   **Male student**   **Ken**

Technology
- Tools and artefacts: far Past; first gaming, *Nintendo DS*, *Minecraft,* near Past; videogames, such as *Call of Duty* with *Skype*, only some social media, *http://major-gaming.com.*
- Non-ICT related artefacts: far past; blackboard and grammar teaching, verb Conjugation.
- Agentic trigger: *http://major-gaming.com.*

Pedagogy
- ZPD/scaffolding:
  - Teacher: mostly far past.
  - Parents: near and far past
  - Peers: mostly near past.
- Deliberate learning: at school, probably more incidental learning at home.

Content
- Receptive skills: more focus in far past.
- Productive skill: more and more in the near past, speaking via *Skype* while gaming, scarce writing, only at school.
- Output Hypothesis: noticing function - hypothesis formulation and testing: American English versus British English while gaming.
- Input hypothesis: gaming.

Ecological transitions/decisive moments

Tools: http://major-gaming.com.

Age: 6, 12-13.

Situations: grammar/verb conjugation at the blackboard in elementary school.

Technology

- Agentic trigger:
- Tools and artefacts: in-school; ITL, Ipad, out of school; videogame, *Skype*.
- The playful, the reflective, the exploratory, the expressive: mostly the playful.

Pedagogy

- ZPD/scaffolding: peer communities such as *http://major-gaming.com*.
- Deliberate learning/Out of School: quite rare.
- Deliberate learning/In-school: frequent.

Content

- Productive skill:s: speaking mostly at home.
- Productive skill:s: writing mostly at school.
- Receptive skills: listening mostly out of school.
- Output hypothesis: metalinguistic function mostly at school.
- Input hypothesis: mostly while gaming.

Ecological transitions/decisive moments

Tools: - - -

Age: - - -

107

Technology

- Tools and artefacts: - - -
- Agentic trigger: use of gaming in-school criticised, limited.
- The playful will be predominant, but the exploratory and reflective is also represented.

Pedagogy

- ZPD/scaffolding: more learning through teacher and peers by focalising on reading and writing and not watching *Youtube* videoclips at school.
- Deliberate learning: There will be a greater focus later on.

Content

- Productive skills: speaking, writing.
- Receptive skills: listening.
- Output Hypothesis: while studying abroad.
- Input hypothesis: mostly while gaming.

Ecological transitions/decisive moments

Tools: - - -

Age: - - -

Situation: studying abroad.

The Past　　　　　　**Interview 4**　　　　　　**Female student**　　　　　　**Grace**

Pedagogy

Technology

Content

- Artefacts: near past; *Facebook, Netflix, Google, ITL, Ipad,* far past; vocabulary tests, *Minecraft*.
- Agentic trigger: sense of accomplishment after vocabulary tests.
- The playful, reflective, exploratory and expressive: the playful in the far past; the expressive and exploratory in the near past.

- ZPD/scaffolding: teacher at school, parents.
- Deliberate learning: mostly at school.

- Productive skills: some mails in English, scarce writing at school, scarce speaking and writing at home.
- Receptive skills: listening to music, watching series and serials.
- Output hypothesis: mostly at school, some while travelling, usually not at home.
- Input hypothesis: comprehensible input given by a teacher coming from South Africa.

--- = Not explicitly mentioned

Near vs. far past; in-school learning vs. out-of-school learning.

Ecological transitions/decisive moments
Tools: vocabulary tests.
Age: age of primary school until 12/13 years.
Situation: grammar teaching, conjugation of verbs.

The Present   **Interview 4**   **Female student**   **Grace**

Technology

- Artefacts: *Facebook*, *Instagram*, *Netflix* (serials such as *Vampire Diaries, Gossip Girl*)*, Google*, ITL, *Ipad*, no vocabulary tests.
- Agentic trigger: *Instagram* versus *Facebook*.
- The playful, reflective, exploratory and expressive: the expressive on *Instagram*.

Pedagogy

- ZPD/scaffolding: teacher, parents, contact via *Facebook*, *Instagram*.
- Deliberate learning: - - -

Content

- Productive skills: no speaking at home, some texts on *Instagramm*; limited vocabulary on *Facebook* (compliments).
- Receptive skills: lots of reading and listening at school, reading of news only when initiated by school.
- Output hypothesis: mostly at school.
- Input hypothesis: mostly by present teacher and media at home.

Ecological transitions/decisive moments

Tools: problematisation of *Ipad* and lack of vocabulary tests.

Age: - - -

Situation: from *Facebook* to *Instagram.*

Technology

- Artefacts: no *Facebook* at school because of procrastanation; less *Ipad* and digital books (tiring).
- Agentic trigger: use of *Facebook* in English in out-of-school situations.
- The playful, reflective, exploratory and expressive: mosly the expressive and exploratory.

Pedagogy

- ZPD/scaffolding: teacher, parents, while travelling.
- Deliberate learning: - - -

Content

- Productive skills: need for speaking and writing.
- Receptive skills: teacher at school, media at home.
- Output hypothesis: mostly at school.
- Input hypothesis: teacher at school, media at home.

Ecological transitions/decisive moments

Tools: - - -

Age: - - -

Situation: most English (productive skills) at school and less at home

Pedagogy

Technology

- Artefacts: near past; *Facebook*, *Netflix*, far past; *Gameboy, Nintendo DS, Pokemon*, no *Minecraft*, songs ("Bloody Sunday"), vocabulary tests.
- Agentic trigger: - - -
- The playful, reflective, exploratory and expressive: - - -

- ZPD/scaffolding: teacher, father, relatives in England.
- Deliberate learning: scarce.

Content

- Productive skills: on *Facebook* often only smaller words such as "loll, happy", standardphrases, vernacular language.
- Receptive skills: bilingual education.
- Output hypothesis: with her British father; metalinguistic function mostly at school, sometimes with her father.
- Input hypothesis: - - -

Near vs.far past; in-school learning vs. out-of-school learning.

Ecological transitions/decisive moments

Tools: vocabulary test and sense of accomplishment.

Age: from *Gameboy* at 3rd grade to *Nintendo DS* 6th grade, shift from primary school to secondary school.

Situation: film about Queen Elisabeth.

Pedagogy

Technology

Content

- Artefacts: *Facebook, Instagram, Snapshot, "Netflix", ITL.*

- Agentic trigger: *ITL* for school initiated hand-ins; real time pictures and texts in English via *Snapshot*.
- The playful, reflective, exploratory and expressive: - - -

- ZPD/scaffolding: teacher, parents.
- Deliberate learning: - - -

- Productive skills: best at speaking; writing is a challenge; more speaking at home due to British father, bilingual education.
- Receptive skills: bilingual education.
- Output hypothesis: mostly at home.
- Input hypothesis: mostly at home.

Ecological transitions/decisive moments

Tools: - - -

Age: - - -

Situation: - - -

Agency: - - -

The Future   **Interview 5**   **Female student**   **Claire**

Pedagogy

Technology

Content

- Artefacts: even more ICT at school, perhaps *Facebook* in English where you have to answer a person in English.
- Agentic trigger: - - -
- The playful, reflective, exploratory and expressive: the expressive and exploratory.

- ZPD/scaffolding: teacher, parents.
- Deliberate learning: - - -

- Productive skills: writing more in English, not only at school, writing without evaluation meaningless.
- Receptive skills: reading is important, too.
- Output hypothesis: - - -
- Input hypothesis: - - -

Ecological transitions/decisive moments:

Tools: - - -

Age: - - -

Situation: - - -

Agency: - - -

The Past   **Interview 6**   **Female student**   **Faith**

Technology

- Digital artefacts: far past; *Supermario,* near past; *Facebook.*
- Non-digital artefacts: vocabulary tests, homework, songs.
- Agentic trigger: response/interaction: *Facebook, Twitter* as a communication channel, ITL as a school channel.
- The playful, reflective, exploratory and expressive: mostly the expressive in the near past, the playful in the far past.

Pedagogy

- ZPD/scaffolding: teacher, mother.
- Deliberate learning: *www.ordnet.no, google*.
- Semi-formal learning: homework, preparation to vocabulary tests, reading texts via links added by the teacher, *www.ndla.no*.

Content

- Productive skills: scarce writing, speaking mostly at school.
- Receptive skills: reading sometimes news.
- Output hypothesis:
- 1. confusing words like *bear* and *beard* while speaking with teacher and metalinguistic function .
- 2. speaking English to Germans in Germany - metalinguistic function.
- Input hypothesis: - - -

Near vs. far past; in-school learning vs. out-of-school learning.

Ecological transitions/decisive moments

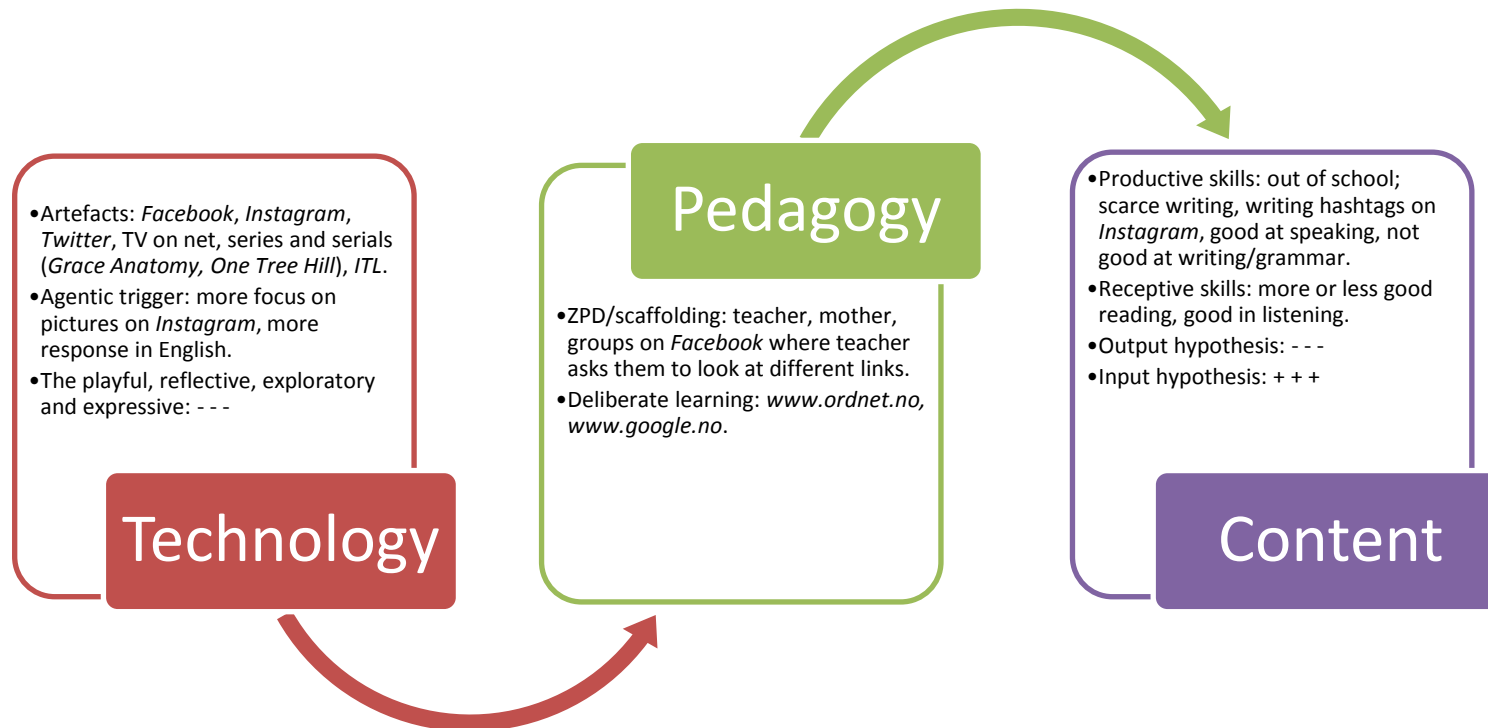Tools: vocabulary tests.

Age: 6th and 7th grade.

Situation: grammar teaching at the blackboard, in groups and through homework, conjugation of verbs (I am, you are, he is…).

The Present　　　　　　　　　**Interview 6**　　　　　　　　**Female student**　　　　　　　　　**Faith**

- Artefacts: *Facebook*, *Instagram*, *Twitter*, TV on net, series and serials (*Grace Anatomy, One Tree Hill*), *ITL*.
- Agentic trigger: more focus on pictures on *Instagram*, more response in English.
- The playful, reflective, exploratory and expressive: - - -

Technology

Pedagogy

- ZPD/scaffolding: teacher, mother, groups on *Facebook* where teacher asks them to look at different links.
- Deliberate learning: *www.ordnet.no, www.google.no*.

- Productive skills: out of school; scarce writing, writing hashtags on *Instagram*, good at speaking, not good at writing/grammar.
- Receptive skills: more or less good reading, good in listening.
- Output hypothesis: - - -
- Input hypothesis: + + +

Content

Ecological transitions/decisive moments

Tools: - - -

Age: use of *Twitter* started in 2012.

Situation: new trend; from *Facebook* through *Facebook*, *Instagram* to *Facebook*, *Instagram* and *Twitter*.
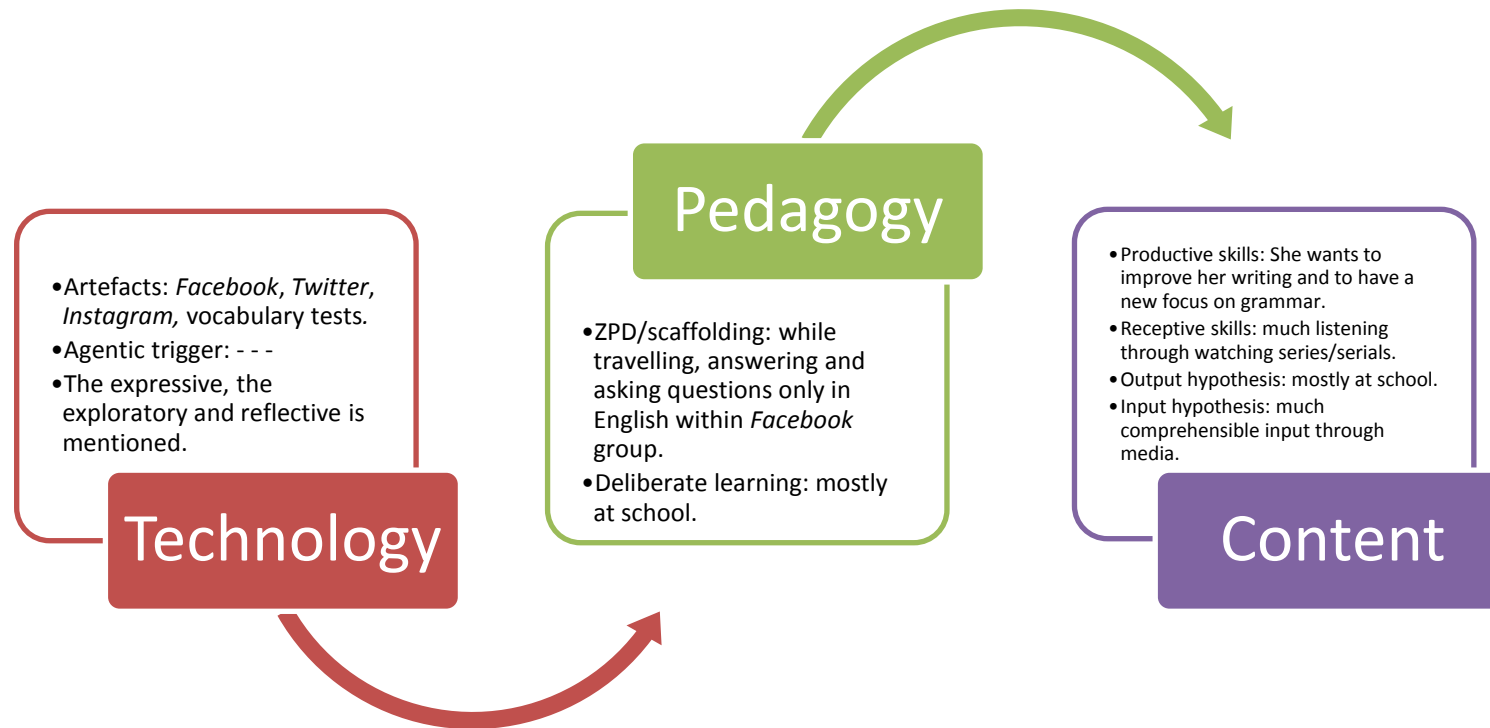
Agency: - - -

The Future   **Interview 6**   **Female student**   **Faith**

Pedagogy

Technology

- Artefacts: *Facebook*, *Twitter*, *Instagram,* vocabulary tests*.*
- Agentic trigger: - - -
- The expressive, the exploratory and reflective is mentioned.

- ZPD/scaffolding: while travelling, answering and asking questions only in English within *Facebook* group.
- Deliberate learning: mostly at school.

Content

- Productive skills: She wants to improve her writing and to have a new focus on grammar.
- Receptive skills: much listening through watching series/serials.
- Output hypothesis: mostly at school.
- Input hypothesis: much comprehensible input through media.

Ecological transitions/decisive moments

Tools: careful use of *googletranslate*.

Age: - - -

Situation: vocabulary test and sense of accomplishment.

Agency:- - -

Appendix D

Code book used on HyperRESEARCH and codes applied on interview 4

Case: Case 4

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 534,537 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 622,657 |

| Receptive Skills | Dybdeintervju 4transkripsjon.docx | Text | 791,828 |

| Productive Skills | Dybdeintervju 4transkripsjon.docx | Text | 991,1031 |

| Writing Skills | Dybdeintervju 4transkripsjon.docx | Text | 1148,1257 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 1328,1335 |

| Productive Skills | Dybdeintervju 4transkripsjon.docx | Text | 1411,1487 |

| Productive Skills | Dybdeintervju 4transkripsjon.docx | Text | 1490,1583 |

| Productive Skills | Dybdeintervju 4transkripsjon.docx | Text | 1928,2038 |

| Productive Skills | Dybdeintervju 4transkripsjon.docx | Text | 1656,1740 |

| Receptive Skills | Dybdeintervju 4transkripsjon.docx | Text | 2090,2148 |

| Receptive Skills | Dybdeintervju 4transkripsjon.docx | Text | 2527,2658 |

| The Past/selective attention | Dybdeintervju 4transkripsjon.docx | Text | 3014,3126 |

| The Past/selective attention | Dybdeintervju 4transkripsjon.docx | Text | 3161,3222 |

| The Past/selective attention | Dybdeintervju 4transkripsjon.docx | Text | 3535,3640 |

| The Past/selective attention | Dybdeintervju 4transkripsjon.docx | Text | 3699,3800 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 4062,4092 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 4096,4130 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 4160,4217 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 4267,4330 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 4371,4492 |

| Technology/Artefacts | Dybdeintervju 4transkripsjon.docx | Text | 4853,4903 |

| Affordances | Dybdeintervju 4transkripsjon.docx | Text | 4853,4903 |

| Input Hypothesis | Dybdeintervju 4transkripsjon.docx | Text | 5046,5174 |

| The Past/selective attention | Dybdeintervju 4transkripsjon.docx | Text | 5349,5547 |

| Ecological Transitions | Dybdeintervju 4transkripsjon.docx | Text | 5762,5792 |

ZOP/scaffolding   Dybdeintervju 4transkripsjon.docx   Text   5550,5687

Technology/Artefacts Dybdeintervju 4transkripsjon.docx   Text   6240,6317

Output Hypothesis/Noticing Function   Dybdeintervju 4transkripsjon.docx   Text
        6579,6689

ZOP/scaffolding   Dybdeintervju 4transkripsjon.docx   Text   6856,6867

ZOP/scaffolding   Dybdeintervju 4transkripsjon.docx   Text   6912,7157

Output Hypothesis/The Metalinguistic Function   Dybdeintervju 4transkripsjon.docx   Text
        7603,7741

Output Hypothesis/The Hypothesis Formulation and Testing   Dybdeintervju
4transkripsjon.docx   Text   7812,7947

Output Hypothesis/The Hypothesis Formulation and Testing   Dybdeintervju
4transkripsjon.docx   Text   7995,8031

Technology/Artefacts Dybdeintervju 4transkripsjon.docx   Text   8181,8184

Affordances   Dybdeintervju 4transkripsjon.docx   Text   8187,8293

Technology/Artefacts Dybdeintervju 4transkripsjon.docx   Text   8519,8525

The Past/recognition of type Dybdeintervju 4transkripsjon.docx   Text   8824,8961

ZOP/scaffolding   Dybdeintervju 4transkripsjon.docx   Text   9062,9123

Affordances   Dybdeintervju 4transkripsjon.docx   Text   9150,9224

Productive Skills   Dybdeintervju 4transkripsjon.docx   Text   9334,9354

Writing Skills Dybdeintervju 4transkripsjon.docx   Text   9488,9733

The Future/hypothetical Resolution Dybdeintervju 4transkripsjon.docx   Text   10265,10370

The Future/narrative construction   Dybdeintervju 4transkripsjon.docx   Text   10903,11059

The Future/hypothetical Resolution Dybdeintervju 4transkripsjon.docx   Text   11196,11523

The Past/recognition of type Dybdeintervju 4transkripsjon.docx   Text   11709,11813

The Present/problematization   Dybdeintervju 4transkripsjon.docx   Text   11147,11193

Affordances   Dybdeintervju 4transkripsjon.docx   Text   11973,12119

Bridging   Dybdeintervju 4transkripsjon.docx   Text   12409,12438

Affordances   Dybdeintervju 4transkripsjon.docx   Text   13260,13385

The Future/hypothetical Resolution	Dybdeintervju 4transkripsjon.docx	Text	13059,13091

The Future/hypothetical Resolution	Dybdeintervju 4transkripsjon.docx	Text	13667,13797

The Future/narrative construction	Dybdeintervju 4transkripsjon.docx	Text	13941,14114

Productive Skills	Dybdeintervju 4transkripsjon.docx	Text	14243,14272

Receptive Skills	Dybdeintervju 4transkripsjon.docx	Text	14347,14417

ZOP/scaffolding	Dybdeintervju 4transkripsjon.docx	Text	14548,14584

Output Hypothesis/The Hypothesis Formulation and Testing	Dybdeintervju 4transkripsjon.docx	Text	14661,14790

Appendix E

Registration at NSD (Norsk samfunnsvitenskapelig datatjeneste)

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES

Lars Vavik
Avdeling for lærerutdanning og kulturfag
Høgskolen Stord/Haugesund
Klingenbergvegen 8
5414 STORD

Vår dato: 12.07.2013   Vår ref: 34843 / 3 / LB   Deres dato: Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

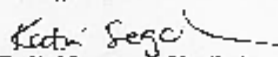Vi viser til melding om behandling av personopplysninger, mottatt 24.06.2013. Meldingen gjelder prosjektet:

34843	IKT og engelsk språklæring
Behandlingsansvarlig	Høgskolen Stord/ Haugesund, ved institusjonens øverste leder
Daglig ansvarlig	Lars Vavik
Student	Michel Cabot

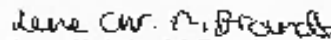Etter gjennomgang av opplysninger gitt i meldeskjemaet og øvrig dokumentasjon, finner vi at prosjektet ikke medfører meldeplikt eller konsesjonsplikt etter personopplysningslovens §§ 31 og 33.

Dersom prosjektopplegget endres i forhold til de opplysninger som ligger til grunn for vår vurdering, skal prosjektet meldes på nytt. Endringsmeldinger gis via et eget skjema,
http://www.nsd.uib.no/personvern/meldeplikt/skjema.html.

Vedlagt følger vår begrunnelse for hvorfor prosjektet ikke er meldepliktig.

Vennlig hilsen

for Vigdis Namtvedt Kvalheim

Lene Christine M. Brandt

Kontaktperson: Lene Christine M. Brandt tlf: 55 58 89 26
Vedlegg: Prosjektvurdering
Kopi: Michel Cabot, Hadlabrekko 99, 5417 STORD

Personvernombudet for forskning

Prosjektvurdering - Kommentar

Personvernombudet kan ikke se at det i prosjektet behandles personopplysninger med elektroniske hjelpemidler, eller at det opprettes manuelt personregister som inneholder sensitive personopplysninger. Prosjektet vil dermed ikke omfattes av meldeplikten etter personopplysningsloven.

Personvernombudet legger til grunn at man ved transkripsjon av intervjuer eller annen overføring av data til en datamaskin, ikke registrerer opplysninger som gjør det mulig å identifisere enkeltpersoner, verken direkte eller indirekte. Alle opplysninger som behandles elektronisk i forbindelse med prosjektet må være anonyme. Med anonyme opplysninger forstås opplysninger som ikke på noe vis kan identifisere enkeltpersoner i et datamateriale, verken direkte gjennom navn eller personnummer, indirekte gjennom bakgrunnsvariabler eller gjennom navneliste/koblingsnøkkel eller krypteringsformel og kode.